

HES MSDS: MSDS Report, 01/10/1991, CRUDE OIL

COMPONENTS:

PETROLEUM CRUDE OIL	98.00-100.00	8002-05-9
TOLUENE	0.00- 5.00	108-88-3
XYLENE	0.00- 5.00	1330-20-7
HYDROGEN SULFIDE	0.00- 4.00	7783-06-4
SULFUR COMPOUNDS	0.00- 3.00	MIXTURE
NORMAL HEXANE	0.00- 3.00	110-54-3
BENZENE	0.00- 2.00	71-43-2

EXPOSURE GUIDELINES

	LIMIT	TYPE	SOURCE
--	-------	------	--------

PRODUCT:

MAPLLC PETROLEUM CRUDE OIL NONE ESTABLISHED

COMPONENTS:

PETROLEUM CRUDE OIL NONE ESTABLISHED

TOLUENE	50.00 PPM	8 HR TWA	ACGIH
	100.00 PPM	8 HR TWA	OSHA*
	150.00 PPM	STEL	OSHA*

* THE MANUFACTURER HAS VOLUNTARILY ELECTED TO REFLECT EXPOSURE LIMITS CONTAINED IN OSHA'S 1989 AIR CONTAMINANTS STANDARD IN ITS MSDS'S, EVEN THOUGH CERTAIN OF THOSE EXPOSURE LIMITS WERE VACATED IN 1992.

XYLENE	100.00 PPM	8 HR TWA	ACGIH
	150.00 PPM	STEL	ACGIH
	100.00 PPM	8 HR TWA	OSHA*
	150.00 PPM	STEL	OSHA*

* THE MANUFACTURER HAS VOLUNTARILY ELECTED TO REFLECT EXPOSURE LIMITS CONTAINED IN OSHA'S 1989 AIR CONTAMINANTS STANDARD IN ITS MSDS'S, EVEN THOUGH CERTAIN OF THOSE EXPOSURE LIMITS WERE VACATED IN 1992.

HYDROGEN SULFIDE	10.00 PPM	8 HR TWA	ACGIH
	15.00 PPM	STEL	ACGIH
	10.00 PPM	8 HR TWA	OSHA*
	15.00 PPM	STEL	OSHA*

* THE MANUFACTURER HAS VOLUNTARILY ELECTED TO REFLECT EXPOSURE LIMITS CONTAINED IN OSHA'S 1989 AIR CONTAMINANTS STANDARD IN ITS MSDS'S, EVEN THOUGH CERTAIN OF THOSE EXPOSURE LIMITS WERE VACATED IN 1992.

LEAD COMPOUNDS

NONE ESTABLISHED

NORMAL HEXANE

50.00 PPM

8 HR TWA ACGIH

500.00 PPM

8 HR TWA OSHA

BENZENE

0.50 PPM

8 HR TWA ACGIH

2.50 PPM

STEL ACGIH

1.00 PPM

8 HR TWA OSHA

5.00 PPM

STEL OSHA

OSHA ACTION LEVEL 0.50 PPM (8 HR TWA)

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

3. HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW *****

PETROLEUM CRUDE OIL IS AMBER TO BLACK IN COLOR DEPENDING ON THE SOURCE. SOUR CRUDE POSSESSES A ROTTEN EGG OR SULFUR ODOR. CRUDE OIL IS A VOLATILE AND EXTREMELY FLAMMABLE LIQUID AND VAPORS MAY CAUSE FLASH FIRES. KEEP AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. CRUDE OIL CAN CONTAIN TOXIC LEVELS OF HYDROGEN SULFIDE VAPORS THAT ACCUMULATE IN THE VAPOR SPACES OF STORAGE AND TRANSPORT COMPARTMENTS. THESE VAPORS CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION AND ASPHYXIATION. CRUDE OIL CAN ALSO CONTAIN SIGNIFICANT CONCENTRATIONS OF BENZENE WHICH HAS BEEN SHOWN TO CAUSE CANCER OR BE TOXIC TO BLOOD-FORMING ORGANS. IF SWALLOWED, THE VOLATILE COMPONENTS OF CRUDE OIL MAY GET SUCKED INTO THE LUNGS (ASPIRATED) AND CAUSE LUNG DAMAGE OR EVEN DEATH.

OSHA WARNING LABEL

DANGER!

FLAMMABLE LIQUID

MAY VENT HARMFUL CONCENTRATIONS OF HYDROGEN SULFIDE (H₂S) GAS WHICH CAN CAUSE RESPIRATORY IRRITATION AND ASPHYXIATION. CONTAINS BENZENE WHICH MAY CAUSE CANCER OR BE TOXIC TO BLOOD-FORMING ORGANS. ASPIRATION (INADVERTENT SUCTION) OF LIQUID INTO THE LUNGS CAN PRODUCE CHEMICAL PNEUMONIA OR EVEN DEATH.

POTENTIAL HEALTH EFFECTS

EYES:

LIQUID OR VAPOR CONTACT MAY RESULT IN SLIGHT EYE IRRITATION.

SKIN:

PROLONGED AND REPEATED LIQUID CONTACT CAN CAUSE DERMATITIS, FOLLICULITIS OR

HALATION:

VAPORS AND FUMES CAN CAUSE RESPIRATORY AND NASAL IRRITATION. SEE SECTIONS 7 AND 11 REGARDING THE TOXICITY AND POSSIBLE FORMATION/ACCUMULATION OF HYDROGEN SULFIDE GAS.

INGESTION:

MAY BE TOXIC BY INGESTION. ASPIRATION (INADVERTENT SUCTION) OF LIQUID OF THE LIGHT HYDROCARBON FRACTION INTO THE LUNG CAN PRODUCE CHEMICAL PNEUMONITIS, PULMONARY EDEMA/HEMORRHAGE AND EVEN DEATH.

CARCINOGEN LISTING:

THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER (IARC) HAS DETERMINED THAT THERE IS SUFFICIENT EVIDENCE FOR THE CARCINOGENICITY OF CRUDE OIL IN HUMANS. LIFETIME SKIN PAINTING STUDIES WITH DIFFERENT WHOLE CRUDE OILS HAVE PRODUCED TUMORS IN ANIMALS FOLLOWING PROLONGED AND REPEATED SKIN CONTACT. IARC HAS DETERMINED THAT THERE IS LIMITED EVIDENCE FOR THE CARCINOGENICITY OF CRUDE OIL IN ANIMALS.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

PREEXISTING SKIN, EYE AND RESPIRATORY DISORDERS MAY BE AGGRAVATED BY EXPOSURE TO COMPONENTS OF THIS PRODUCT.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

4. FIRST AID MEASURES

EYE:

FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. IF SYMPTOMS OR IRRITATION OCCUR, CALL A PHYSICIAN.

SKIN:

WASH WITH SOAP AND LARGE AMOUNTS OF WATER. REMOVE CONTAMINATED CLOTHING. IF SYMPTOMS OF IRRITATION OCCUR, CALL A PHYSICIAN.

HALATION:

IF AFFECTED, MOVE PERSON TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF NOT BREATHING OR IF NO HEARTBEAT, GIVE ARTIFICIAL RESPIRATION OR CARDIOPULMONARY RESUSCITATION (CPR). IMMEDIATELY CALL A PHYSICIAN. IF SYMPTOMS OF IRRITATION OCCUR WITH ANY EXPOSURE, CALL A PHYSICIAN.

INGESTION:

INGESTION NOT LIKELY. IF SWALLOWED, DO NOT INDUCE VOMITING AND DO NOT GIVE LIQUIDS. IMMEDIATELY CALL A PHYSICIAN.

NOTES TO PHYSICIAN:

NO DATA AVAILABLE.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

FLASH POINT: 20-100 F
AUTOIGNITION TEMP: NO DATA AVAILABLE
EXPLOSIVE LIMITS (% BY VOLUME IN AIR)
LOWER: NO DATA AVAILABLE
UPPER: NO DATA AVAILABLE

FLAME AND EXPLOSION HAZARDS:

THIS MATERIAL HAS BEEN DETERMINED TO BE A FLAMMABLE LIQUID. VAPORS MAY TRAVEL ALONG THE GROUND OR BE MOVED BY VENTILATION AND IGNITED BY MANY SOURCES SUCH AS PILOT LIGHTS, SPARKS, ELECTRIC MOTORS, STATIC DISCHARGE, OR OTHER IGNITION SOURCES AT LOCATIONS DISTANT FROM MATERIAL HANDLING. FLASHBACK MAY OCCUR ALONG VAPOR TRAIL. FOR ADDITIONAL FIRE RELATED INFORMATION, SEE NFPA 30 OR NORTH AMERICAN EMERGENCY RESPONSE GUIDE 115.

EXTINGUISHING MEDIA:

CLASS B FIRE EXTINGUISHING MEDIA SUCH AS CO₂, DRY CHEMICAL OR WATER SPRAY CAN BE USED. FIRE FIGHTING SHOULD BE ATTEMPTED ONLY BY THOSE WHO ARE ADEQUATELY TRAINED AND EQUIPPED WITH PROPER PROTECTIVE EQUIPMENT.

SPECIAL FIRE FIGHTING INSTRUCTIONS:

AVOID USING STRAIGHT WATER STREAMS. WATER SPRAY AND FOAM (AFFF/ATC) MUST BE APPLIED CAREFULLY TO AVOID FROTHING. AVOID EXCESSIVE APPLICATION. WATER CAN BE USED TO COOL EXPOSED SURFACES FROM AS FAR A DISTANCE AS POSSIBLE. KEEP RUN-OFF WATER OUT OF SEWERS AND WATER SOURCES.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

6. ACCIDENTAL RELEASE MEASURES

ISOLATE AND EVACUATE AREA. SHUT OFF SOURCE IF SAFE TO DO SO. ADVISE

NATIONAL RESPONSE CENTER (800-424-8802) IF SUBSTANCE HAS ENTERED A WATERWAY. NOTIFY LOCAL HEALTH AND POLLUTION CONTROL AGENCIES, IF APPROPRIATE. CONTAIN LIQUID WITH SAND OR SOIL. RECOVER AND RETURN FREE LIQUID TO PROPER CONTAINERS. USE SUITABLE ABSORBENT MATERIALS SUCH AS VERMICULITE, SAND, OR CLAY TO CLEAN UP RESIDUAL LIQUIDS.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

7. HANDLING AND STORAGE

COMPLY WITH ALL APPLICABLE OSHA, NFPA AND CONSISTENT LOCAL REQUIREMENTS. USE APPROPRIATE GROUNDING AND BONDING PRACTICES. STORE IN PROPERLY CLOSED CONTAINERS THAT ARE APPROPRIATELY LABELED AND IN A COOL, WELL-VENTILATED AREA. DO NOT EXPOSE TO HEAT, OPEN FLAME, OXIDIZERS OR OTHER SOURCES OF IGNITION. DO NOT CUT, DRILL, GRIND OR WELD ON EMPTY CONTAINERS SINCE THEY MAY CONTAIN EXPLOSIVE RESIDUES.

HARMFUL CONCENTRATIONS OF HYDROGEN SULFIDE (H₂S) GAS CAN ACCUMULATE IN EXCAVATIONS AND LOW-LYING AREAS AS WELL AS THE VAPOR SPACE OF STORAGE AND BULK TRANSPORT COMPARTMENTS. STAY UPWIND AND VENT OPEN HATCHES BEFORE UNLOADING. AVOID SKIN CONTACT. EXERCISE GOOD PERSONAL HYGIENE INCLUDING REMOVAL OF SOILED CLOTHING AND PROMPT WASHING WITH SOAP AND WATER.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

8. EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS:

LOCAL OR GENERAL EXHAUST REQUIRED IN ENCLOSED AREAS OR WITH INADEQUATE VENTILATION.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION:

NOT NORMALLY REQUIRED FOR ROUTINE OPERATIONS. SUPPLIED AIR RESPIRATORS SHOULD BE USED IF OPERATING CONDITIONS CREATE AIRBORNE CONCENTRATIONS WHICH EXCEED EXPOSURE LIMITS FOR ANY INDIVIDUAL COMPONENTS (INCLUDING H₂S). OBSERVE RESPIRATOR PROTECTION FACTOR CRITERIA CITED IN ANSI Z88.2. SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED FOR FIRE FIGHTING.

SKIN PROTECTION:

NEOPRENE OR NITRILE GLOVES TO PREVENT SKIN CONTACT.

EYE PROTECTION:

NO SPECIAL EYE PROTECTION IS NORMALLY REQUIRED. WHERE SPLASHING IS

HES MSDS: MSDS Report, 0110MAR019, CRUDE OIL
POSSIBLE, WEAR SAFETY GLASSES WITH SIDE SHIELDS.

OTHER PROTECTIVE EQUIPMENT:

USE EXPLOSION-PROOF EQUIPMENT.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT:	100-1000 F
MELTING POINT:	NO DATA AVAILABLE
SPECIFIC GRAVITY (H2O=1):	0.8-1.0
PACKING DENSITY (KG/M3):	NO DATA AVAILABLE
% SOLUBILITY IN WATER:	NEGLIGIBLE
VAPOR DENSITY (AIR=1):	NO DATA AVAILABLE
VAPOR PRESSURE:	0-724 MMHG
PH INFORMATION:	NO DATA AVAILABLE
% VOLATILES BY VOL:	NO DATA AVAILABLE
EVAPORATION RATE:	NO DATA AVAILABLE
APPEARANCE:	AMBER TO BLACK VISCOUS LIQUID
ODOR:	MILD OR ROTTEN EGG ODOR
OR THRESHOLD (PPM):	NO DATA AVAILABLE

ADDITIONAL PROPERTIES:

DENSITY: 6.6-8.2 LBS/GALLON

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

10. STABILITY AND REACTIVITY

STABILITY:

THE MATERIAL IS STABLE AT 70 F, 760MM PRESSURE.

CONDITIONS TO AVOID:

EXCESSIVE HEAT, SOURCES OF IGNITION.

HAZARDOUS DECOMPOSITION PRODUCTS:

CARBON MONOXIDE, HYDROGEN SULFIDE, ALDEHYDES, AROMATIC, OTHER HYDROCARBONS.

INCOMPATIBLE MATERIALS:

STRONG OXIDIZING AGENTS SUCH AS CHLORATES, NITRATES, PEROXIDES.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR.

CONDITIONS TO AVOID:

NO DATA AVAILABLE.

ADDITIONAL COMMENTS:

NO DATA AVAILABLE.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to Full Chemical Safety Data List](#)

11. TOXICOLOGICAL INFORMATION

LIFETIME SKIN PAINTING STUDIES IN ANIMALS WITH CRUDE OIL FRACTIONS HAVE PRODUCED WEAK TO MODERATE CARCINOGENIC ACTIVITY FOLLOWING PROLONGED AND REPEATED EXPOSURE. WASHING THE ANIMALS' SKIN WITH SOAP AND WATER BETWEEN APPLICATIONS GREATLY REDUCES TUMOR FORMATION.

REPEATED DERMAL APPLICATION OF TWO DIFFERENT CRUDE OILS IN RATS PRODUCED SYSTEMIC TOXICITY IN BLOOD, LIVER, THYMUS AND BONE MARROW. REPEATED DERMAL APPLICATION TO PREGNANT RATS PRODUCED MATERNAL TOXICITY AND FETAL DEVELOPMENTAL TOXICITY.

HYDROGEN SULFIDE CONCENTRATIONS WILL VARY SIGNIFICANTLY DEPENDING ON THE SOURCE AND SULFUR CONTENT OF THE CRUDE. SWEET CRUDES (<0.5% SULFUR) MAY CONTAIN TOXICOLOGICALLY SIGNIFICANT LEVELS OF HYDROGEN SULFIDE IN THE VAPOR SPACES OF BULK STORAGE TANKS AND TRANSPORT COMPARTMENTS. CONCENTRATIONS OF H₂S AS LOW AS 10 PPM OVER AN 8 HOUR WORKSHIFT MAY CAUSE EYE OR THROAT IRRITATION. PROLONGED BREATHING OF 50-100 PPM H₂S VAPORS CAN PRODUCE SIGNIFICANT EYE AND RESPIRATORY IRRITATION. SOUR CRUDES COMMONLY CONTAIN EXTREMELY HIGH CONCENTRATIONS OF H₂S (500-70,000 PPM) IN THE VAPOR SPACES OF BULK STORAGE VESSELS. EXPOSURE TO 250-600 PPM FOR 15-30 MINUTES CAN PRODUCE HEADACHE, DIZZINESS, NERVOUSNESS, STAGGERING GAIT, NAUSEA AND PULMONARY EDEMA OR BRONCHIAL PNEUMONIA. CONCENTRATIONS >1,000 PPM WILL CAUSE IMMEDIATE UNCONSCIOUSNESS AND DEATH THROUGH RESPIRATORY PARALYSIS.

SUMMARY OF HEALTH EFFECT DATA ON CRUDE OIL COMPONENTS:

THIS PRODUCT MAY CONTAIN BENZENE AT A LEVEL OF >0.1%. REPEATED OR PROLONGED EXPOSURE TO BENZENE AT CONCENTRATIONS IN EXCESS OF THE TLV MAY CAUSE SERIOUS INJURY TO BLOOD-FORMING ORGANS. SIGNIFICANT CHRONIC EXPOSURE TO BENZENE VAPOR HAS BEEN REPORTED TO PRODUCE VARIOUS BLOOD DISORDERS, RANGING FROM ANEMIA TO CANCER (DIFFERENT FORMS OF LEUKEMIA) IN MAN. BENZENE PRODUCED TUMORS IN RATS AND MICE IN LIFETIME CHRONIC TOXICITY STUDIES, BUT THE RESPONSE HAS NOT BEEN CONSISTENT ACROSS SPECIES, STRAIN, SEX OR ROUTE OF EXPOSURE. ANIMAL STUDIES ON BENZENE HAVE DEMONSTRATED IMMUNE TOXICITY, CHROMOSOMAL ABERRATIONS, TESTICULAR EFFECTS AND ALTERATIONS IN REPRODUCTIVE CYCLES AND EMBRYO/FETOTOXICITY, BUT NOT TERATOGENICITY.

THIS PRODUCT MAY CONTAIN HEXANE AT A LEVEL OF >1.0%. STUDIES IN LABORATORY ANIMALS HAVE PRODUCED SYSTEMIC TOXICITY IN BLOOD, SPLEEN AND LUNGS. FETOTOXICITY HAS BEEN OBSERVED AT HEXANE CONCENTRATIONS THAT PRODUCED

MATERNAL TOXICITY. LONG TERM EXPOSURE TO HIGH CONCENTRATIONS OF HEXANE HAS BEEN SHOWN TO CAUSE TESTICULAR EFFECTS AND NERVOUS SYSTEM DAMAGE.

THIS PRODUCT MAY CONTAIN TOLUENE AT A LEVEL OF >1.0%. DELIBERATE INHALATION OF HIGH CONCENTRATIONS OF TOLUENE HAS BEEN SHOWN TO CAUSE LIVER, KIDNEY AND BRAIN DAMAGE AND CENTRAL NERVOUS SYSTEM EFFECTS. EXCESSIVE TOLUENE EXPOSURE MAY CAUSE CARDIAC SENSITIZATION AND POSSIBLE HEARING LOSS. EXPOSURE TO PREGNANT RATS AND MICE DURING GESTATION TO TOLUENE PRODUCED SOME MATERNAL AND DEVELOPMENTAL TOXICITY. DECREASED LEARNING CAPABILITY AND DEFICITS IN OPERANT BEHAVIOR HAVE BEEN OBSERVED IN ANIMALS EXPOSED TO TOLUENE ABOVE THE TLV.

THIS PRODUCT MAY CONTAIN XYLENE AT A LEVEL OF >1.0%. GROSS OVEREXPOSURE IN HUMANS TO XYLENES HAS BEEN REPORTED TO CAUSE LUNG, LIVER, KIDNEY, HEART AND BRAIN DAMAGE AS WELL AS NEUROLOGIC DISTURBANCES. EXCESSIVE XYLENE EXPOSURE MAY CAUSE CARDIAC SENSITIZATION. LABORATORY ANIMALS EXPOSED TO HIGH DOSES OF XYLENE SHOWED EVIDENCE OF HEARING LOSS AND EFFECTS IN LIVER, KIDNEYS, LUNGS, SPLEEN, HEART AND ADRENALS. EXPOSURE TO PREGNANT ANIMALS DURING GESTATION TO SIGNIFICANT CONCENTRATIONS OF XYLENE PRODUCED MATERNAL, FETAL AND DEVELOPMENTAL TOXICITY. REPEATED INHALATION OF HIGH XYLENE CONCENTRATIONS HAVE SHOWN BEHAVIORAL CHANGES IN ANIMALS AND MAN.

COMPONENTS OF CRUDE OIL DO NOT PRESENT A SIGNIFICANT HEALTH RISK IN THE CONCENTRATIONS PRESENT IN CRUDE OIL AT EXPOSURES NOT EXCEEDING THE EXPOSURE LIMITS STATED IN SECTION 2.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

12. ECOLOGICAL INFORMATION

COATING ACTION OF OIL CAN DESTROY BIRDS, PLANKTON, ALGAE AND FISHES. KEEP OUT OF ALL BODIES OF WATER AND SEWAGE DRAINAGE SYSTEMS.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

13. DISPOSAL CONSIDERATIONS

THIS PRODUCT AS SUPPLIED IS NOT SPECIFICALLY LISTED AS AN EPA RCRA HAZARDOUS WASTE ACCORDING TO FEDERAL REGULATIONS (40 CFR 261-271). HOWEVER, WHEN DISCARDED OR DISPOSED OF, IT MAY MEET THE CRITERIA OF AN "IGNITABLE" HAZARDOUS WASTE. THIS PRODUCT COULD ALSO CONTAIN BENZENE AT >0.5 PPM AND COULD EXHIBIT THE CHARACTERISTICS OF "TOXICITY" AS DETERMINED BY THE TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP). THIS MATERIAL COULD ALSO BECOME A HAZARDOUS WASTE IF MIXED OR CONTAMINATED WITH A LISTED HAZARDOUS WASTE. IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE IF DISPOSAL MATERIAL IS HAZARDOUS ACCORDING TO FEDERAL, STATE AND LOCAL REGULATIONS.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

14. TRANSPORTATION INFORMATION

49 CFR 172.101:

PROPER SHIPPING NAME: PETROLEUM CRUDE OIL
 DOT CLASSIFICATION: 3
 DOT IDENTIFICATION NUMBER: UN 1267
 PACKING GROUP: PG II

[Return to top](#) [Return to Crude Safety Data List](#) [Return to Full Chemical Safety Data List](#)

15. REGULATORY INFORMATION

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT:

OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200):

THIS PRODUCT HAS BEEN EVALUATED AND DETERMINED TO BE HAZARDOUS AS DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD.

EPA TOXIC SUBSTANCES CONTROL ACT (40 CFR PART 710):

THIS PRODUCT AND/OR ITS COMPONENTS ARE LISTED ON THE TSCA CHEMICAL INVENTORY.

EPA SARA TITLE III SUPERFUND AMENDMENTS & REAUTHORIZATION ACT - EMERGENCY PLANNING & COMMUNITY RIGHT-TO-KNOW ACT OF 1986.

EXTREMELY HAZARDOUS SUBSTANCES (40 CFR PART 355):

THIS PRODUCT CONTAINS THE FOLLOWING COMPONENT(S) IDENTIFIED ON APPENDIX A AND B OF THE EXTREMELY HAZARDOUS SUBSTANCE LIST (AT A LEVEL OF 1% OR GREATER IF HAZARDOUS; 0.1% OR GREATER IF CARCINOGENIC):

---COMPONENT---	REPORTABLE ---QUANTITY (LBS)---	THRESHOLD PLANNING ---QUANTITY (LBS)---
HYDROGEN SULFIDE	100	500

EMERGENCY RELEASE NOTIFICATIONS (40 CFR PART 355):

THIS PRODUCT CONTAINS THE FOLLOWING COMPONENT(S) IDENTIFIED EITHER AS AN EXTREMELY HAZARDOUS SUBSTANCE (40 CFR 355) OR A CERCLA HAZARDOUS SUBSTANCE (40 CFR 302) WHICH IN CASE OF A SPILL OR RELEASE MAY BE SUBJECT TO EMERGENCY RELEASE REPORTING REQUIREMENTS:

HYDROGEN SULFIDE (REPORTING QUANTITY = 100 LBS)

MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR PART 370):

THE FOLLOWING EPA HAZARD CATEGORIES APPLY TO THIS PRODUCT:

IMMEDIATE (ACUTE) HEALTH HAZARD
 DELAYED (CHRONIC) HEALTH HAZARD
 FIRE HAZARD

MSDS'S OR A LIST OF MSDS'S AND THEIR HAZARDS (SEE EPA HAZARD CATEGORIES ABOVE) MAY BE REQUIRED TO BE SUBMITTED TO THE STATE EMERGENCY RESPONSE COMMISSION (SERC), LOCAL EMERGENCY PLANNING COMMITTEE (LEPC) AND LOCAL FIRE DEPARTMENT (LFD).

HES MSDS: MSDS Report, 0110MAR019, CRUDE OIL

IN ADDITION, A TIER II OR TIER I FORM MAY BE REQUIRED TO BE SUBMITTED ANNUALLY TO THE SERC, LEPC AND LFD IF APPLICABLE THRESHOLD REPORTING QUANTITIES ARE EXCEEDED. CURRENT FEDERAL THRESHOLDS ARE:

10,000 POUNDS OR MORE OF AN OSHA HAZARDOUS SUBSTANCE
OR

500 POUNDS OR THE THRESHOLD PLANNING QUANTITY, WHICHEVER IS
LESS, OF AN EXTREMELY HAZARDOUS SUBSTANCE.

NOTE: THRESHOLDS MAY VARY ACCORDING TO LOCAL AND STATE REGULATIONS.

TOXIC CHEMICAL RELEASE REPORTING (40 CFR PART 372):

THIS PRODUCT CONTAINS THE FOLLOWING COMPONENT(S) (AT A LEVEL OF 1% OR GREATER IF HAZARDOUS; 0.1% OR GREATER IF CARCINOGENIC) THAT MAY BE SUBJECT TO REPORTING ON THE TOXIC RELEASE INVENTORY (TRI) FORM R:

---COMPONENT---

BENZENE
TOLUENE
XYLENE
HEXANE

---CAS NUMBER---

71-43-2
108-88-3
1330-20-7
110-54-3

STATE AND COMMUNITY RIGHT-TO-KNOW REGULATIONS:

THIS MATERIAL MAY BE REGULATED BY LOUISIANA'S RIGHT-TO-KNOW LAW
(REGULATORY STATUTE 30:2361).

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

16. OTHER INFORMATION

NFPA CLASSIFICATION

HEALTH: 1
FIRE: 3
REACTIVITY: 0
OTHER: -

HMIS CLASSIFICATION

HEALTH: 1
FIRE: 3
REACTIVITY: 0
PERSONAL PROTECTION: *

HAZARD RATING

0 - LEAST
1 - SLIGHT
2 - MODERATE
3 - HIGH
4 - EXTREME

COMMENTS:

- * SEE SECTION 8 FOR GUIDANCE IN SELECTION OF PERSONAL PROTECTIVE EQUIPMENT.

[Return to top](#) [Return to Crude Safety Data List](#) [Return to full Chemical Safety Data List](#)

dated: Friday, June.29, 2001

APPENDIX C

Certification of Hazardous Waste Training, Medical Surveillance and Fit Testing

CONCENTRA MEDICAL CENTERS

OAK RIDGE, TENNESSEE 37830

MEDICAL SURVEILLANCE CERTIFICATE

Ray, Ralph 113-04-1854

Has completed a physical exam in accordance with:

- ☒ 29CFR 1910.120 HazWaste
- ☒ 29CFR 1910.1001/1926.1101 Asbestos
- ☒ 29CFR 1910.134 Respiratory Protection
- ☒ ANSI Z117.1-1995 Sec. 16 Confined Spaces

And is MEDICALLY QUALIFIED. Restrictions on reverse

Issue date 4-17-03 Exam Due 4-17-04

Provider: Timothy R. Desack, M.D.

CONCENTRA MEDICAL CENTERS RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial) **RAY, RALPH** SIS. # **413-04-1854**
 HAS RECEIVED BASIC INSTRUCTION ON PROPER RESPIRATOR USE, AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR(S) INDICATED ON THE REVERSE SIDE.
 ISSUE DATE **2/12/03** EXP. DATE **2/12/04**
 TECHNICIAN SIGNATURE *[Signature]*

RESPIRATOR INFORMATION			
MODEL	TYPE	SIZE	App # PT

MSA			
ULTRA-TWIN	FULL		TC-84A-0181 100
MSA			
COMFO II	HALF		TC-84A-0118 10
VALID WITH CURRENT MEDICAL CLEARANCE			

Certificate of Completion

Ralph Ray

In Recognition of Having Successfully Completed

HAZWOPER 8 HOUR ANNUAL REFRESHER

On

September 09, 2003

in accordance with

OSHA 29 CFR 1910.120(e)(8)/1926.65(e)(8) HAZWOPER Standard


Steven W. Skipper, CIH, CSP

KSR-03-1788

COPY

American Red Cross

We'll be there.

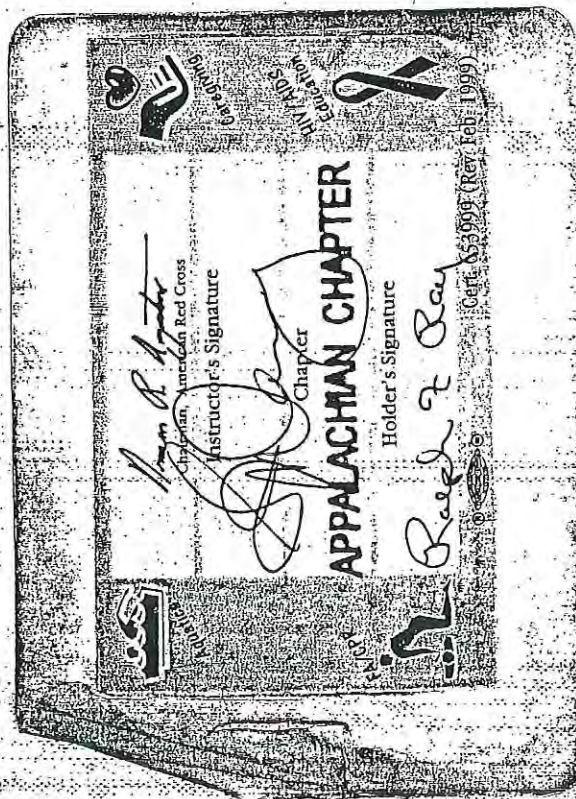


This recognizes that
RALPH RAY
has completed the requirements for
First Aid Basics

Conducted by
Appalachian Chapter

Date completed **11-9-2001**

The American Red Cross recognizes this certificate
as valid for **3** year(s) from completion date.



Ralph Ray
Chairman, American Red Cross
Instructor's Signature

Chapter

APPALACHIAN CHAPTER

Holder's Signature

Ralph Ray

Cert. AS-3999 (Rev. Feb. 1999)

American Red Cross

We'll be there.

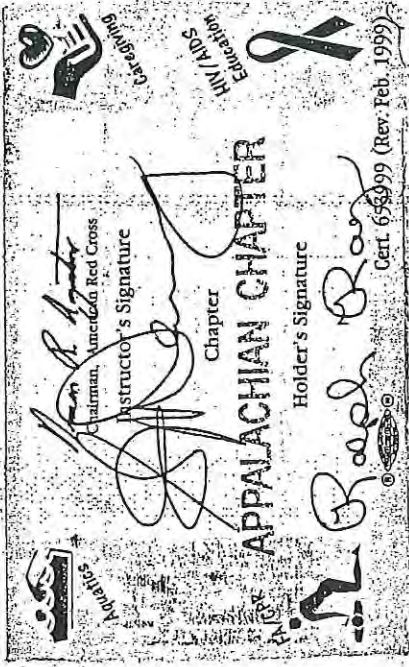


This recognizes that
Ralph Ray
has completed the requirements for
Adult CPR

Conducted by
Appalachian Chapter

Date completed **4-4-03**

The American Red Cross recognizes this certificate
as valid for **1** year(s) from completion date.



Ralph Ray
Chairman, American Red Cross
Instructor's Signature

Chapter

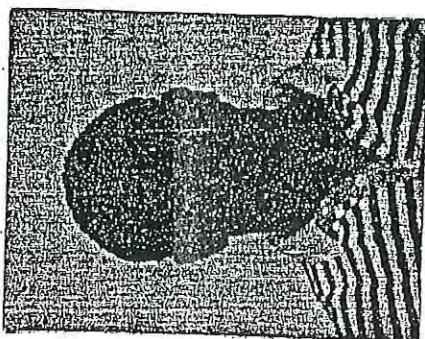
APPALACHIAN CHAPTER

Holder's Signature

Ralph Ray

Cert. 658999 (Rev. Feb. 1999)

Date Completed:
5/19/2000



International Union of Operating Engineers
Hazmat Training Program



Local DOE

This is to certify that
Ralph F. Ray

has successfully completed the 40-hour
Hazardous Waste Training Program
specifically designed for workers in
accordance with OSHA at
29 CFR 1910.120.

Receipt #
87188



Scott M. Davis
Certified Instructor

Certification of Completion

Presented to

Tim Shoffner
of

STEP, Inc.

*In Recognition of Having Successfully Completed the
40-Hour Training for
Hazardous Waste Operations and Emergency Response
in accordance with
OSHA 29 CFR 1910.120*



T.R. Crouse
T.R. Crouse

November 20, 1998

American
Red Cross
We'll be there.



This recognizes that
TIM SHOFFNER
has completed the requirements for
Adult CPR

conducted by
Appalachian Chapter

Date completed **11-9-2001**

The American Red Cross recognizes this certificate
as valid for **1** year(s) from completion date.

American
Red Cross
We'll be there.



This recognizes that
TIM SHOFFNER
has completed the requirements for
First Aid Basics

conducted by
Appalachian Chapter

Date completed **11-9-2001**

The American Red Cross recognizes this certificate
as valid for **3** year(s) from completion date.



**American
Red Cross**
We'll be there.

The American Red Cross recognizes this certificate
as valid for 1 year(s) from completion date.

Date completed **2/16/03**
Appalachian Chapter
conducted by

This recognizes that
TIM SHOFNER
has completed the requirements for
Adult CPR

Certificate of Completion

Tim Shoffner

In Recognition of Having Successfully Completed

HAZWOPER 8 HOUR ANNUAL REFRESHER

On

February 18, 2003

in accordance with

OSHA 29 CFR 1910.120(e)(8)/1926.65(e)(8) HAZWOPER Standard



Steven W. Skipper, CIH, CSP

KSR-03-1455

CONCENTRA MEDICAL CENTERS
1030 OAK RIDGE TURNPIKE
OAK RIDGE, TN 37830
(865) 425-4640
FAX: (865) 425-4646

TEMPORARY MEDICAL CERTIFICATION
(THIS CERTIFICATION EXPIRES 30 DAYS FROM DATE OF EXAMINATION)

Shottner, Tim J.

Employer: Step Inc
SSN: 41-06-4206 DOB: 06/17/1962
Case Date: 02/19/2003

A physical examination has been completed in accordance with the requirements of OSHA Standard(s):

- ☒ 29CFR1910.120 (Hazardous Waste)
☒ 1910.134 (Respiratory Protection)
☐ 1910.1001/1926.1101 (Asbestos)

on the above named individual on

2-19-03

Based upon the findings from the physical examination and spirometry test, I have determined this individual ~~may~~ may not use respiratory protection while performing ~~his~~ or her employment services.

Upon receipt and review of all test results, including laboratory test, a final report (Physician's Statement) on the above named individual will be forwarded to you, the employer.

Mandatory use of hearing protection

EMPLOYEE NOTIFICATION

The above named individual will be informed of the results of this medical examination. Detected medical conditions, which require additional examinations or treatment, will be explained and applicable follow-up recommended.

RECORD OF THE ABOVE MAINTAINED AT CONCENTRA MEDICAL CENTERS

Signature of Provider

Erin R. O'Connell, M.D.

Date: 2-25-03

1 forwarded to

** Please have employee report
hearing test, as apt. necessary
within 30 days from 2-19-03.
Be 14 hours noise free.*

TECHNICIAN SIGNATURE Donna Walker
ISSUE DATE 02-19-07
INDICED ON THE REVERSE SIDE
AND IS OBTAINED BASIC INSTRUCTION ON PROPER RESPIRATOR USE,
HAS RECEIVED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR USE,
NAME (Last, First, Middle Initial) SHOOTER, TIM J.
EXP. DATE 02-19-07
RESPIRATOR FIT CERTIFICATE
SS. # 411-06-4206
CONCENTRA MEDICAL CENTERS

RESPIRATOR INFORMATION

MODEL	TYPE	SIZE	App #	PT
MSA		<i>Small</i>		
ULTRA-TWIN/VUE FULL TC-84A-0181 100				
VALID WITH CURRENT MEDICAL CLEARANCE				

Seaver Environmental

Proudly Presents This
Certificate to

Jeffrey C. Williams

for completing the initial 40-hour training in
Hazardous Waste Operations and Emergency Response
at Oak Ridge, Tennessee on 06 Apr 92
to satisfy OSHA rules, 29 CFR Part 1910.120

Certificate Number: *4*

SSAN:

413-04-2904

Gary V. Seaver

Gary Seaver, Trainer

Seaver Environmental
Rt. 1, Box 18
Ridge Road
Lancing, TN 37770
615-346-7459

American
Red Cross
We'll be there.



This recognizes that
Jeffrey Williams
has completed the requirements for
Adult CPR

conducted by
Appalachian Chapter

Date completed *4-4-03*

The American Red Cross recognizes this certificate
as valid for *1* year(s) from completion date.

American
Red Cross
We'll be there.



This recognizes that
Jeffrey Williams
has completed the requirements for
First Aid Basics

conducted by
Appalachian Chapter

Date completed *4/4/03*

The American Red Cross recognizes this certificate
as valid for *3* year(s) from completion date.

Date Completed:

8/20/2003



International Union of Operating Engineers
Hazmat Training Program

Local DOE



This is to certify that

Jeffrey C. Williams

has successfully completed the
required annual 8-hour refresher class
specifically designed for workers in
accordance with OSHA at 29 CFR 1910.120.

Receipt #

94613



Cherred Wood
Certified Instructor

CONCENTRA MEDICAL CENTERS
OAK RIDGE, TENNESSEE 37830

MEDICAL SURVEILLANCE CERTIFICATE

Williams, Jeffrey 913-04-2904

Has completed a physical exam in accordance with:

- (x) 29CFR 1910.120 HazWaste
() 29CFR 1910.1001/1926.1101 Asbestos
() 29CFR 1910.134 Respiratory Protection
(x) ANSI Z117.1-1995 Sec. 16 Confined Spaces

And is MEDICALLY QUALIFIED. Restrictions on reverse.

Issue date 6-20-03 Exam Due 6-20-04

Provider Don C. Lopez PAC

0442SURVEILLANCE

CONCENTRA MEDICAL CENTERS
RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial)

Powers, Charles G

S.S. #

412-11-7241

HAS RECEIVED BASIC INSTRUCTION ON PROPER RESPIRATOR USE,
AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR(S)
INDICATED ON THE REVERSE SIDE.

ISSUE DATE 9/5/2003

EXP. DATE 9/5/2004

TECHNICIAN SIGNATURE

Theresa Mulick-Carr 

CONCENTRA MEDICAL CENTERS
OAK RIDGE, TENNESSEE 37830

MEDICAL SURVEILLANCE CERTIFICATE

Powers, Charles G. 402-11-1724

Has completed a physical exam in accordance with:

- | | |
|--|-------------------------|
| ☒ 29CFR 1910.120 | HazWaste |
| ☐ 29CFR 1910.1001/1926.1101 | Asbestos |
| ☒ 29CFR 1910.134 | Respiratory Protection |
| ☒ ANSI Z117.1-1995 | Sec. 16 Confined Spaces |

And is MEDICALLY QUALIFIED. Reapplications on reverse.

Issue date: 05-03-95 Exam Due 4-30-96

Provider: Don P. Coppe PA-C

C4432SURVEILLANCE



American
Red Cross

Together, we can save a life



American
Red Cross

Together, we can save a life

This recognizes that
Charles Gerald Powers
has completed the requirements for

Adult CPR

conducted by

Appalachian Chapter

Date completed 10-3-03

The American Red Cross recognizes this certificate
as valid for 1 year(s) from completion date.

This recognizes that
Charles Gerald Powers
has completed the requirements for

First Aid Basics

conducted by

Appalachian Chapter

Date completed 10-3-03

The American Red Cross recognizes this certificate
as valid for 3 year(s) from completion date.

This will certify that

Gerald Powers

has completed the 40 Hour Program
per Regulation 29CFR1910.120

HAZARDOUS WASTE OPERATIONS
AND EMERGENCY RESPONSE

Certification Expiration 07/13/2004

Andy Green

Director of Training

HazMat Training


 Aquatics


 Caregiving


 FA/CPR


 HIV/AIDS Education

Instructor's Signature
 Chapter
APPALACHIAN CHAPTER
 Holder's Signature
 Cert. 653999 (Rev. Feb. 1999)

Certificate of Completion

George Hawn

In Recognition of Having Successfully Completed

HAZWOPER 8 HOUR ANNUAL REFRESHER

On

August 11, 2003

in accordance with

OSHA 29 CFR 1910.120(e)(8)/1926.65(e)(8) HAZWOPER Standard



Steven W. Skipper, CIH, CSP

KSR-03-1729

**American
Red Cross**
We'll be there.



This recognizes that
Dove Hawn
has completed the requirements for
First Aid Basics

conducted by
Appalachian Chapter

Date completed **11-9-2001**
The American Red Cross recognizes this certificate
as valid for **3** year(s) from completion date.

**American
Red Cross**
We'll be there.



This recognizes that
Dove Hawn
has completed the requirements for
Adult CPR

conducted by
Appalachian Chapter

Date completed **11-9-2001**
The American Red Cross recognizes this certificate
as valid for **1** year(s) from completion date.

CONCENTRA MEDICAL CENTERS
1030 OAK RIDGE TURNPIKE
OAK RIDGE, TN 37830
(865) 425-4640
FAX: (865) 425-4646

TEMPORARY MEDICAL CERTIFICATION
(THIS CERTIFICATION EXPIRES 30 DAYS FROM DATE OF EXAMINATION)

Hawn, George D.

Employer: Step Inc
SSN: 413-17-6022 DOB: 06/08/1960
Case Date: 04/03/2003

A physical examination has been completed in accordance with the requirements of OSHA Standard(s):

- ☒ 29CFR1910.120 (Hazardous Waste)
- ☐ 1910.134 (Respiratory Protection)
- ☐ 1910.1001/1926.1101 (Asbestos)

on the above named individual on 4-3-03

Based upon the findings from the physical examination and spirometry test, I have determined this individual ~~may~~ may not use respiratory protection while performing his or her employment services.

Upon receipt and review of all test results, including laboratory test, a final report (Physician's Statement) on the above named individual will be forwarded to you, the employer.

EMPLOYEE NOTIFICATION

The above named individual will be informed of the results of this medical examination. Detected medical conditions, which require additional examinations or treatment, will be explained and applicable follow-up recommended.

RECORD OF THE ABOVE MAINTAINED AT CONCENTRA MEDICAL CENTERS

Signature of Provider Don E. Cape PA-C Date: 4-3-03

CONCENTRA MEDICAL CENTERS
OAK RIDGE, TENNESSEE 37830
MEDICAL SURVEILLANCE CERTIFICATE

Hawn, George D. 4/3-17-2022

Has completed a physical exam in accordance with:

- | | |
|-------------------------------|-------------------------|
| (X) 29CFR 1910.120 | HazWaste |
| () 29CFR 1910.1001/1926.1101 | Asbestos |
| (X) 29CFR 1910.134 | Respiratory Protection |
| (X) ANSI Z117.1-1995 | Sec. 16 Confined Spaces |

And is MEDICALLY QUALIFIED. Restrictions on reentry

Issue date: 4/3-03 Exam Due: 4/3-04

Provider: Ann Polype PA-C

CONCENTRA MEDICAL CENTERS
1030 OAK RIDGE TURNPIKE
OAK RIDGE, TENNESSEE 37830
(865)425-4640

PHYSICIAN'S STATEMENT

Brewer II, William E.

DATE OF EXAM: 2-3-03

Employer: Step Inc

SSN: 414-47-1566 DOB: 06/12/1969

Case Date: 02/03/2003

TYPE OF EXAM: ☐ BASELINE
☒ ANNUAL
☐ EXIT

OPINION OF RISK/MEDICAL CLEARANCE FOR HAZARDOUS WASTE OPERATIONS

I have reviewed the results of the occupational and medical history, physical examination and laboratory tests and based upon these, I certify that this individual:

- ☒ has no medical condition that would place the individual at increased risk of health impairment from hazardous waste site work, when conducted under the conditions of adequate training and a health and safety plan.
- ☐ has a medical condition that would place the individual at increased risk of health impairment from hazardous waste site work.
- ☐ has a medical condition which may require special consideration by the company.
- ☐ deferred, pending further evaluation.

MEDICAL CLEARANCE FOR RESPIRATOR USE

Based upon the examination, I certify that this individual:

- ☒ is medically qualified to use properly fitted respiratory protection equipment.
- ☐ is NOT medically qualified to use respiratory protection equipment.
- ☒ qualified for Confined Space Entry.
- ☐ is NOT qualified for Confined Space Entry.
- ☐ deferred, pending further evaluation.

Comments/Restrictions

☐ The individual has undergone a physical examination in accordance with OSHA Standards 29CFR 1910.120, 29CFR 1910.1001, 1926.1101, 29CFR 1910.134 and ANSI Standard Z117.1-1995, Section 16.

☒ The individual has undergone a physical examination in accordance with OSHA Standards 29CFR 1910.120, 29CFR 1910.134 and ANSI Standard Z117.1-1995, Section 16.

☒ Corrective lenses required

☒ Hearing protection recommended

☒ Deficient stereo depth perception.

☒ Recommend tetanus toxoid immunization be updated. Every 10 yrs.

EMPLOYEE NOTIFICATION

This individual has been informed of the results of this medical examination. Detected medical conditions which require additional examinations or treatment have been explained and applicable follow-up recommended.

Signature Of Provider:

Don Elope PA-C
Timothy R. Oesch M.D.

Date: 2-5-03

CONCENTRA MEDICAL CENTERS
RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial) BREWER, WILLIAM E. S.S. # 414-47-1566

HAS RECEIVED BASIC INSTRUCTION ON PROPER RESPIRATOR USE,
AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR(S)
INDICATED ON THE REVERSE SIDE.

ISSUE DATE 07-03-03 EXP. DATE 07-03-04

TECHNICIAN SIGNATURE

Jorie Stewart



**American
Red Cross**
We'll be there.

This recognizes that
Billy Brewer
has completed the requirements for
Adult CPR

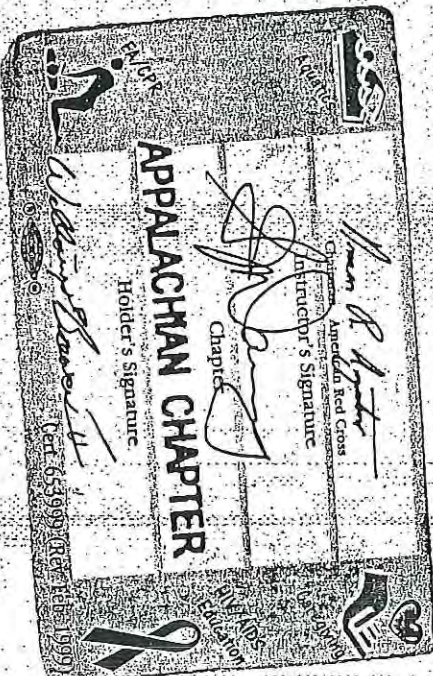
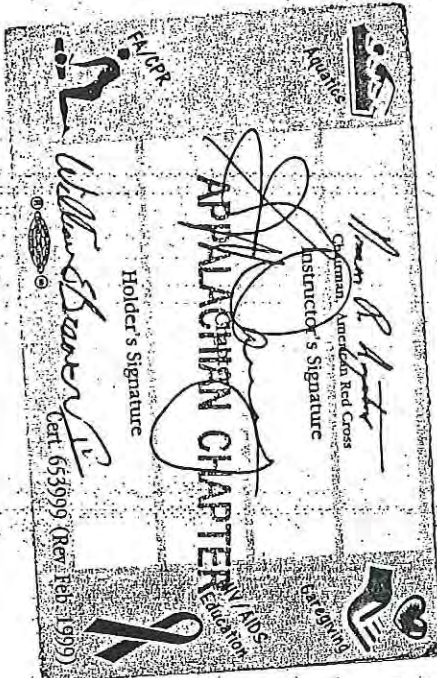
conducted by
Appalachian Chapter
Date completed **4-4-03**
The American Red Cross recognizes this certificate
as valid for **1** year(s) from completion date.



**American
Red Cross**
We'll be there.

This recognizes that
Billy Brewer
has completed the requirements for
First Aid Basics

conducted by
Appalachian Chapter
Date completed **11-9-2001**
The American Red Cross recognizes this certificate
as valid for **3** year(s) from completion date.



Certificate of Completion

William Brewer

In Recognition of Having Successfully Completed

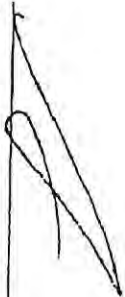
HAZWOPER 8 HOUR ANNUAL REFRESHER

On

February 07, 2003

in accordance with

OSHA 29 CFR 1910.120(e)(8)/1926.65(e)(8) HAZWOPER Standard



Steven W. Skipper, CIH, CSP

KSR-03-1437

COPY

Certification of Completion

Presented to



Billy Brewer
of
STEP, Inc.

*In Recognition of Having Successfully Completed the
40-Hour Training for
Hazardous Waste Operations and Emergency Response
in accordance with
OSHA 29 CFR 1910.120*

T.R. Crouse

T.R. Crouse

November 20, 1998

CONCENTRA MEDICAL CENTERS
OAK RIDGE, TENNESSEE 37830

MEDICAL SURVEILLANCE CERTIFICATE

Drewery II, W. Niam E. 4/4-47-1566

Has completed a physical exam in accordance with:

- | | |
|---|-------------------------|
| ☒ 29CFR 1910.120 | Haz/Waste |
| ☒ 29CFR 1910.1001/1926.1101 | Asbestos |
| ☒ 29CFR 1910.134 | Respiratory Protection |
| ☒ ANSI Z117.1-1985 | Sec. 16 Confined Spaces |

And is MEDICALLY QUALIFIED. Restrictions on reversion.

Issue Date 2-3-04 Exam Due 2-3-04
Provider [Signature] PA-C

RESTRICTIONS (if applicable)

Corrective lenses required.
NEAR VISION

Deficient stereo depth perception

7



Advanced Sciences, Inc.

In recognition of successful completion of the
8-Hour Supervisory Training Course
for hazardous waste workers,
This certificate is presented to

Daniel A. Bowser

William K. Koo
ASI Health and Safety Officer

11-31-89

Date



Advanced Sciences, Incorporated

In recognition of successful completion of the
ASI Basic 40 Hour Health and Safety Course
for hazardous waste workers,
This certificate is presented to

Dan Bowser

Mike Flavelly
ASI Health and Safety Officer

June 2, 1988

Date



Advanced Sciences, Inc.

In recognition of successful completion of the
8-Hour Health and Safety Refresher
for hazardous waste workers,
This certificate is presented to

Daniel A. Bowser

Greg McAnarney
ASI Health and Safety Officer

June 27, 1991

Date



Advanced Sciences, Inc.

In recognition of successful completion of the
8-Hour Health and Safety Refresher
for hazardous waste workers,
This certificate is presented to

Dan Bowser

William K. Koo
ASI Health and Safety Officer

7/20/90

Date



HALLIBURTON NUS Environmental Corporation

In recognition of successful completion of the
8 Hour Refresher Training
Hazardous Waste and Emergency Response
Safety Orientation Course
For Compliance with
United States Federal Regulations
8 Hours - 29 CFR 1910.120

Dan Bowser

Randall W. Odell
Halliburton Health & Safety Officer

4-12-94

Date

043-8R-94

BROWN & ROOT ENVIRONMENTAL

A DIVISION OF HALLIBURTON NUS CORPORATION

THIS IS TO CERTIFY THAT

DAN BOWSER

HAS SUCCESSFULLY COMPLETED THE 8-HOUR HAZARDOUS
WASTE OPERATIONS REFRESHER TRAINING REQUIRED
UNDER OSHA 29 CFR 1910.120 ON THE 11TH DAY OF MAY, 1991

Randall W. Odell
Course Instructor

OCCUPATIONAL HEALTH SERVICES

Robert W. Pare't M.D.

RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial)

S.S. #

BOWSER, DAN

190-38-8633

HAS RECEIVED BASIC INSTRUCTION ON PROPER RESPIRATOR
USE, AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC
RESPIRATOR(S) INDICATED ON THE REVERSE SIDE.

ISSUE DATE 03/07/95

EXP. DATE 03/07/96

TECHNICIAN SIGNATURE

Melissa Ferr

OCAW/DOE Remediation Training Grant

This card certifies that

DANIEL A BOWSER

has completed an eight-hour Refresher training in
HAZARDOUS WASTE OPERATIONS

Refresher course required by April 3, 1996

DOE-HWO-8-480

Association of
Bay Area Governments



ABAG Training Center
www.hazmatschool.com

CERTIFICATE OF COMPLETION

Daniel Bowser

has successfully completed the course titled

OSHA 8-hr Annual HAZWOPER Refresher

Satisfies 29 CFR 1910.120(e)(8)

on

January 4, 2004

and has earned

IACET authorized 0.8 CEUs (Continuing Education Units) from the program

Certificate No. 35849

(Verify at www.hazmatschool.com)

Terry Bursztynsky

Terry Bursztynsky, Training Director
Sharon Kendrick, Training Coordinator
www.abag.ca.gov, (510) 464-7964

Paul W. Gantt

Paul W. Gantt, REA
Safety Compliance Management, Inc.

Course Record Addendum

Page 1 of 2

American Red Cross Form 6418AR (P



**American
Red Cross**

We'll be there.

This recognizes that
Dan Bowser
has completed the requirements for
Standard First Aid
conducted by
KNOXVILLE AREA CHAPTER
Date completed **05/04/2001**
The American Red Cross recognizes this certificate
as valid for **3** year(s) from completion date.



**American
Red Cross**

We'll be there.

This recognizes that
Dan Bowser
has completed the requirements for
Adult CPR
conducted by
KNOXVILLE AREA CHAPTER
Date completed **05/04/2001**
The American Red Cross recognizes this certificate
as valid for **1** year(s) from completion date.

OUR REF.
NUMBER

YOUR INVOICE
NUMBER

INVOICE DATE

INVOICE AMOUNT

AMOUNT PAID

DISCOUNT TAKEN

NET CHECK AMOUNT

05/02/01

\$30.00

028453

Kimberly
For your records
Bauer

CONCENTRA MEDICAL CENTERS
1030 OAK RIDGE TURNPIKE
OAK RIDGE, TN 37830
(865) 425-4640
FAX: (865) 425-4646

TEMPORARY MEDICAL CERTIFICATION
(THIS CERTIFICATION EXPIRES IN 30 DAYS FROM DATE OF EXAMINATION)

Bowser, Daniel A.

Employer: Step Inc
SSN: 190-38-8633 DOB: 01/31/1947
Case Date: 02/03/2003

A physical examination has been completed in accordance with the requirements of OSHA Standard 29CFR 1910.120, on the above named individual, on 2-3-03

Based upon the findings from the physical examination and spirometry test, I have determined this individual may may not use respiratory protection while performing his her employment services.

Upon receipt and review of all test results, including laboratory test, a final report (Physician's Statement) on the above named individual will be forwarded to you, the employer.

Corrective lenses

CONCENTRA MEDICAL CENTERS
RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial) BOWSER, DANIEL A. SSN: 190-38-8633
HAS RECEIVED BASIC INSTRUCTION ON PROPER RESPIRATOR USE, AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR(S) INDICATED ON THE REVERSE SIDE.
ISSUE DATE 02-03-03 EXP. DATE 02-03-04
TECHNICIAN SIGNATURE Jorie Stewart

EMPLOYEE NOTIFICATION

This individual will be informed of the results of this medical examination. Detected medical conditions which require addition examinations or treatment, will be explained and applicable follow-up recommended.

RECORD OF THE ABOVE MAINTAINED AT CONCENTRA MEDICAL CENTERS

Signature of Provider Don E. Lope PA-C Date: 2-3-03

[Handwritten marks]

CONCENTRA MEDICAL CENTERS
RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial) S.S. #
BLANK, DAVID L. 473-56-3986

HAS RECEIVED BASIC INSTRUCTION ON PROPER RESPIRATOR USE,
AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR(S)
INDICTED ON THE REVERSE SIDE.

ISSUE DATE 8/19/03 EXP. DATE 8/19/04

TECHNICIAN SIGNATURE

Done with

Certificate of Completion

David Blank

In Recognition of Having Successfully Completed

HAZWOPER 8 HOUR ANNUAL REFRESHER

On

February 18, 2003

in accordance with

OSHA 29 CFR 1910.120(e)(8)/1926.65(e)(8) HAZWOPER Standard

Steven W. Skipper, CIH, CSP



KSR-03-1452

Certification of Completion

Presented to

David L. Blank
of

STEP, Inc.

*In Recognition of Having Successfully Completed the
40-Hour Training for
Hazardous Waste Operations and Emergency Response
in accordance with
OSHA 29 CFR 1910.120*

T.R. Crouse
T.R. Crouse

November 20, 1998



American
Red Cross

We'll be there.



This recognizes that

DAVID BLANK
has completed the requirements for
First Aid Basics

conducted by
Appalachian Chapter

Date completed 11-9-2001

The American Red Cross recognizes this certificate
as valid for 1 year(s) from completion date.

American
Red Cross

We'll be there.



This recognizes that

DAVID BLANK
has completed the requirements for
Adult CPR

conducted by
Appalachian Chapter

Date completed 2-17-2003

The American Red Cross recognizes this certificate
as valid for 1 year(s) from completion date.

American
Red Cross



Together, we can save a life

This recognizes that
David Blank
has completed the requirements for
Adult CPR
conducted by
Appalachian Chapter
Date completed **10-3-03**
The American Red Cross recognizes this certificate
as valid for **1** year(s) from completion date.

CONCENTRA MEDICAL CENTERS

OAK RIDGE, TENNESSEE 37830

MEDICAL SURVEILLANCE CERTIFICATE

Blank, David L. 473-56-3986

Has completed a physical exam in accordance with:

☒ 29CFR 1910.120 HazWaste

☐ 29CFR 1910.1001/1926.1101 Asbestos

☒ 29CFR 1910.134 Respiratory Protection

☒ ANSI Z117.1-1995 Sec. 16 Confined Spaces

And is MEDICALLY QUALIFIED. Restrictions on reverse

Issue date 7-19-04 Exam Due 7-19-04

Provider: Don P. Lope PA-C

CONCENTRA MEDICAL CENTERS
OAK RIDGE, TENNESSEE 37830
MEDICAL SURVEILLANCE CERTIFICATE

Arthur, Leslie B. 408-90-6887

Has completed a physical exam in accordance with:

- (X) 29CFR 1910.120 HazWaste
- (X) 29CFR 1910.1001/1926.1101 Asbestos
- (X) 29CFR 1910.134 Respiratory Protection
- (X) ANSI Z117.1-1995 Sec. 16 Confined Spaces

And is MEDICALLY QUALIFIED. Restrictions on reverse.

Issue Date 3-10-03 Exam Due 3-10-04

Provider Don O'Leary PA-C

CONCENTRA MEDICAL CENTERS
RESPIRATOR FIT CERTIFICATE

NAME (Last, First, Middle Initial) S.S.#
ARTHUR, LESLIE B. 408-90-6887

HAS RECEIVED BASIC INSTRUCTION ON PROPER USE, AND IS QUALIFIED AND FITTED TO WEAR THE SPECIFIC RESPIRATOR(S) INDICATED ON THE REVERSE SIDE.

ISSUE DATE 03-10-03 EXP. DATE 03-10-04

TECHNICIAN SIGNATURE Jerie Slack

RESTRICTIONS (if applicable)

RESPIRATION INFORMATION

MODEL	TYPE	SIZE	App#	PT
MSA				
ULTRA-TWIN	FULL	M	TC-84A-0181	100
MSA	VUE			
COMFO II	HALF	M	TC-84A-0118	10
VALID WITH CURRENT MEDICAL CLEARANCE				



Certification of Completion

Presented to

L. Burke Arthur

of

Solutions To Environmental Problems, Inc.

In Recognition of Having Successfully Completed the

40 Hour Hazardous Waste Operations Training

in accordance with OSHA 29 CFR 1910.120

Michael D. Palmer
Michael D. Palmer, CSP, CIH, CHMM

March 26, 1993

Certificate of Completion

Burke Arthur

In Recognition of Having Successfully Completed

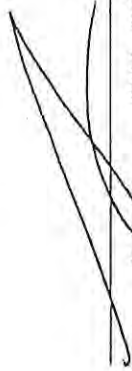
HAZWOPER 8 HOUR ANNUAL REFRESHER

On

August 12, 2003

in accordance with

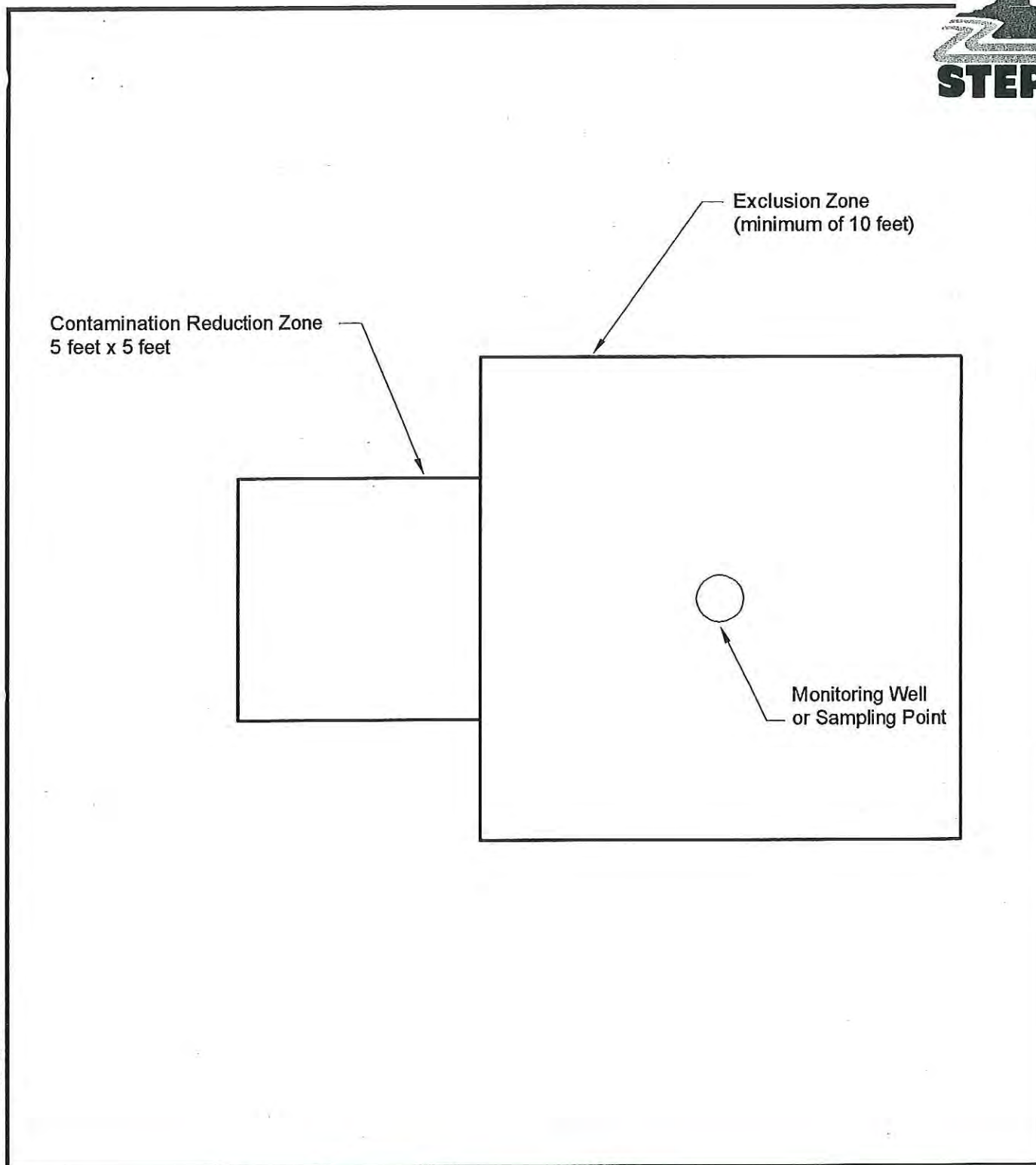
OSHA 29 CFR 1910.120(e)(8)/1926.65(e)(8) HAZWOPER Standard


Steven W. Skipper, CIH, CSP

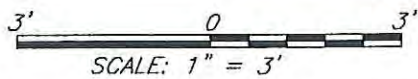
KSR-03-1733

APPENDIX D

Representative Site Control Zones



Legend



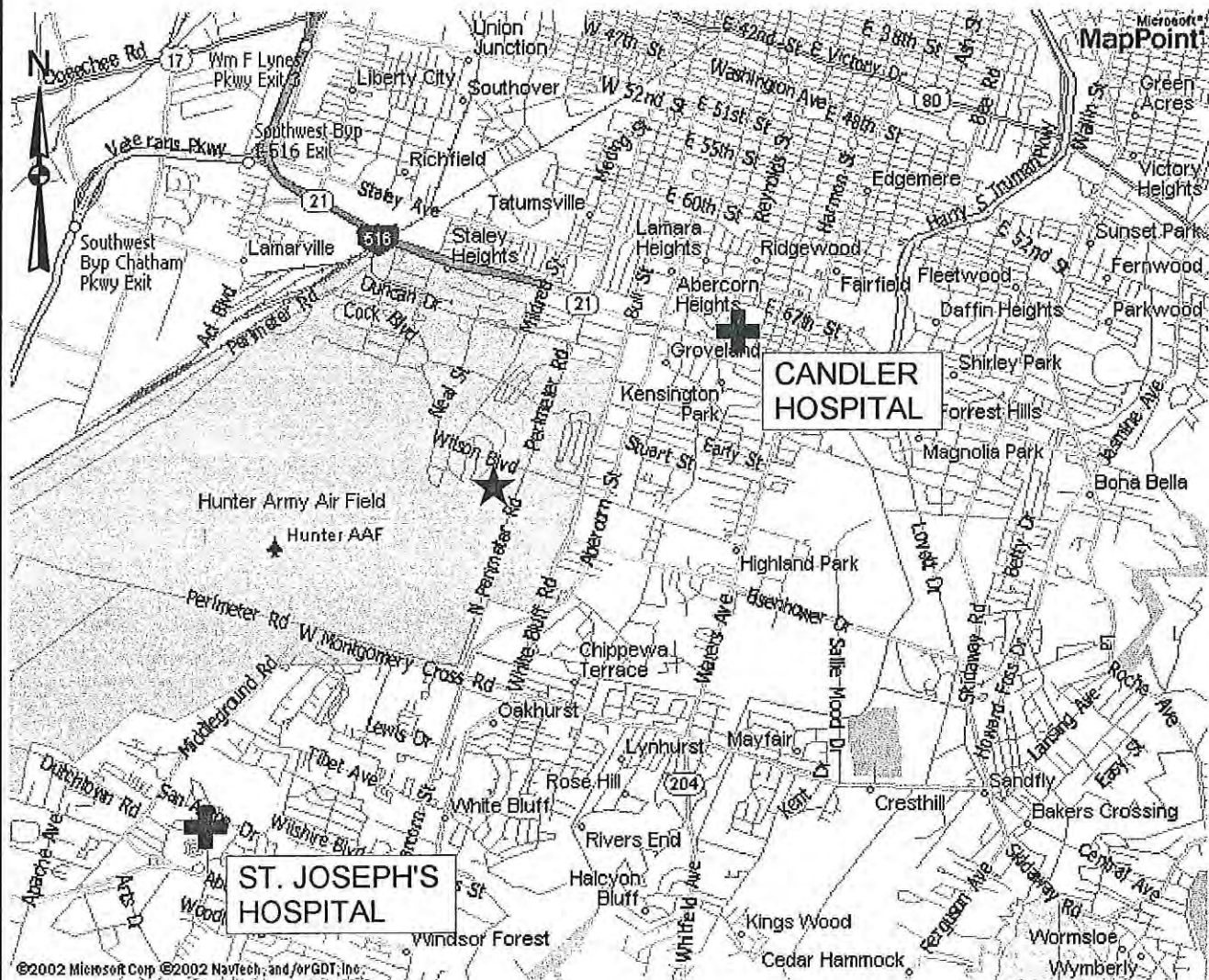
Prepared For: USACE
Savannah District

Job Title: RCRA UST's 25 & 26,
Building 1343
Facility ID: 9-025008
Hunter Army Airfield
Fort Stewart, Georgia

Figure D-1 Typical Exclusion Zone

APPENDIX E

Hospital Location Map



St. Joseph's Hospital
 11705 Mercy Blvd.
 Savannah, GA 31419
 (912)925-4100

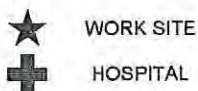
Directions: from Wilson Blvd., right onto White Bluff Rd. turn right onto W. Montgomery Cross Rd., left onto Middleground Rd., then left onto San Anton Dr.

Candler Hospital
 5353 Reynolds St.
 Savannah, GA 31405
 (912)692-6000

Directions: from Wilson Blvd. left onto White Bluff Rd., turn right onto SR-21 (W. Renne Ave.) straight. keep right onto SR-21, bear right onto E De Renne Ave.

Hunter hospitals_114-113-009 ust.apr 02/04/04

LEGEND



Prepared By: STEP, Inc. Oak Ridge, TN
 Job Title: UST's 25 & 26, Building 1343
 Facility ID: 9-025008
 Hunter Army Airfield
 Fort Stewart, Georgia

Attachment 10: Candler Hospital and St. Joseph's Hospital

APPENDIX F

Resumes

MIKE PALMER, CHH, CHP, CHMM
HEALTH & SAFETY MANAGER

Employment Status: Consultant **

Employer History:

- STEP, Inc. Consultant, 2000-Present
- PSC Safety & Health, 2000-Present
- STEP, Inc., 1992-2000
- Ogden Environmental, 1989-1992
- Rust Engineering Co., 1986-1989
- Chubb Group, 1985-1986
- OSHA, State of Florida, 1983-1985

Education:

- M.S., Public Health & Ind. Hygiene, 1988
- B.S., Industrial Risk Management / Fire Science, 1983

Active Registrations

- Certified Safety Professional 1987 (#9083);
- Certified Industrial Hygienist 1989 (#4519);
- Certified Haz. Materials Mgr. 1988 (#2008)

Signature: _____

*** Mr. Palmer was one of the founding partners of STEP in 1992 and managed our Health and Safety Services Division until 2000. At that time, this Division was spun off as an independent company, but Mr. Palmer and his company continue to provide Health & Safety support to STEP. He has provided regulatory guidance and oversight for the development of all STEP health and safety plans and programs.*

Experience and Qualifications:

Mr. Palmer's regulatory knowledge is extensive, in part due to his past employment as a compliance officer for OSHA and extensive industrial consulting experience. In

addition to OSHA requirements, he has served as a regulatory liaison and guided clients through DOT Hazmat, RCRA, CERCLA, and Coast Guard Cleanup (FEMA) requirements. Since 1985, his work has included development and implementation of health and safety plans at hazardous waste sites. He has been responsible for developing PPE and air monitoring programs since 1983.

As manager of STEP's Health & Safety Services Division, Mr. Palmer developed the company's Health & Safety Program that outlines STEP's requirements for training, describes the responsibilities of all members of a project team, and includes detailed Standard Operating Procedures for HTRW remediation projects. These procedures include PPE, confined space entry, respiratory protection, and hazard protection programs. Our H&S Program has been approved by many HTRW remediation clients and has served as a model for plans developed for other companies. In fact, Mr. Palmer has developed PPE and air monitoring programs for over 40 clients at locations throughout the EMAC 2 geographical area.

Mr. Palmer has the responsibility to review and approve all Site Specific Health and Safety Plans prepared by STEP. Over the past four years, over 80 separate Site Specific Plans for HTRW investigation and remediation have been prepared and approved.

Under a contract with the USACE Huntsville District, Mr. Palmer was Principal Instructor for 40-hour HAZWOPER courses conducted at the Huntsville Training Center in Huntsville, AL. He has conducted hundreds of HAZWOPER and other health and safety related training courses for Federal, state, and private sector employees.



AMBROSE J. (JIM) MADAJ, P.G.
HYDROGEOLOGIST / PROJECT MANAGER

Education: University of Oklahoma
B.S., Geology, 1985

Professional
Training: OSHA 40-hour Hazardous Waste Operations Training
OSHA 8-hour Annual Refresher
OSHA 8-hour Confined Space Training
OSHA 8-hour Supervisor Training
OSHA 10-hour Construction Safety and Health

Experience: *Solutions to Environmental Problems, Inc., Oak Ridge, TN. 1998 to present.*
Project Manager/Senior Hydrogeologist.

Mr. Madaj serves as Project Manager and Technical Advisor for projects at Fort Campbell and Fort Stewart. At STEP, he is responsible for coordination with the USACE – Nashville District and with Fort Campbell environmental personnel to ensure that all projects run smoothly. He is also responsible for allocating resources for simultaneous projects, review of reports to ensure technical accuracy, and ensuring that projects are completed on time and within budget. In addition, he works closely with client representatives and regulators to determine remedial options.

Mr. Madaj specializes in subsurface hydrogeology. During his career, he has installed over 1,000 wells at sites in AL, AR, CA, CO, FL, GA, IL, KS, ME, MI, MO, MS, NC, NM, NY, OK, SC, TN, TX, and WA. These wells have been installed in all types of soil and rock including fractured rock, crystalline rock, carbonate rock, sandy coastal soil, and mountainous areas. In addition, as part of a research study, Mr. Madaj installed temporary wells into coral areas near the Marshall Islands. He has drilled to depths of 1500 feet, and has used a variety of drilling technologies including horizontal and small-diameter wells. Regulatory experience includes a thorough understanding of EPA sampling and drilling guidance, as well as state-specific regulations. Using his knowledge of subsurface hydrogeology, he has managed and provided technical input on projects dealing with shallow and deep petroleum contamination, deep solvent contamination (up to 400 feet below ground surface at a site in California), and shallow pesticide and dioxin contamination.

Using his drilling and sampling expertise, Mr. Madaj has written procedures for these activities, and instructed others in soil, groundwater, sediment, and surface water sampling.

Solutions To Environmental Problems, Inc. (1998 – Present); Oak Ridge, TN
Senior Project Manager

2003; Free Product Recovery at Campbell Army Airfield, Fort Campbell, KY.

Project Manager for an ongoing product recovery effort at the Campbell Army Airfield. Directed the installation of a solar-powered product recovery pump, which automatically seeks the oil/water interface. The unit is portable and is used for pockets of groundwater contamination and hard to reach areas. Because groundwater can fluctuate as much as 20 feet at the airfield, the automatically adjusting pump reduces monitoring and maintenance that would be required with fixed pumps.

2002; USACE – Nashville District; Phase 4 RFI at Campbell Army Airfield for Bravo Parking Apron and Solid Waste Management Unit 41; Fort Campbell, KY.

Project Manager for an RFI involving the installation of two groundwater monitoring wells at SWMU 41 and the completion of three soil gas surveys at Campbell Army Airfield to delineate the extent of subsurface fuel contamination. Results were used in a human health risk assessment. Responsible for coordinating field activities and review of final reports.

2002; AIMTech; RCRA Facility Investigation at SWMU 27, Open Burn/Open Detonation Unit, Fort Campbell, KY. Project Manager responsible for a RCRA Facility Investigation to determine whether residual contamination from explosives was present at the site. The task included developing and sampling 16 existing wells, and collecting 35 surface soil samples and 21 subsurface samples from 7 Geoprobe borings. Samples were analyzed for VOCs, SVOCs, energetics, sulfites, nitrates/nitrites, and total phosphorous. All field efforts were coordinated with UXO specialists to ensure that all project activities were conducted safely.

2001-2002; USACE – Nashville District; Oil/Water Separator Removal, Ft. Campbell, KY. Project Manager responsible for oversight during removal of 42 oil/water separators. Removal activities included demolition of below ground structures and the associated influent and effluent piping. Pits were overexcavated and confirmatory samples were collected and analyzed for VOCs, SVOCs, RCRA 8 Metals, and PCBs.

2001; USACE – Nashville District; Various Projects Involving Fuel Releases at the Campbell Army Airfield, Fort Campbell, KY. Project Manager responsible for addressing fuel releases to soil and groundwater near Pumphouse 1, Pumphouse 2, and Hangar 3 at the Campbell Army Airfield. Free product recovery at the two pumphouses was performed using vapor extraction and skimmer pumps. Over the first 11 weeks, over 11,000 gallons of fuel were recovered.

2000-2002; AIMTech, UST Investigation, Fort Stewart, GA. Project Manager responsible for oversight to determine the extent of contamination related to UST and heating oil tanks at Fort Stewart. Project activities included installation of groundwater monitoring wells, and soil and groundwater sampling to determine the extent of VOC and PAH contamination.

2000; USACE – Nashville District; Investigation of Oil Pit sites at SWMU 149.

Project Manager during investigation of 40 suspected oil pits used for vehicle maintenance fluids. Intrusive investigation activities included verification of the

presence of the oil pits, removal of contaminated soil from two of the sites, installation of groundwater monitoring wells, and soil sampling. Worked with client representatives to determine remedial options.

2000; USACE – Nashville District, Pumphouse 1 Fuel Reconnaissance and Pipeline Repair, Fort Campbell, KY. Project Manager during pipeline repair near Pumphouse 1 at Fort Campbell. During April 2000, tracer testing on the active fuel line near the Pumphouse indicated the presence of a fuel leak. Project activities included excavating to a depth of 8 feet to expose the pipeline in the suspected leak area. Sampling was performed to determine appropriate disposal.

1999-2001; USACE-Nashville District; RFI and Corrective Action– Skeet Range; Fort Campbell, KY. Project Manager for RFI activities to characterize surface soil, sediment, and surface water contamination. Surface soil samples, surface water, and sediment samples were collected and analyzed for TCL PAHs and TAL metals. Responsible for project management, client interface, technical direction and oversight during removal of the top 18 inches of soil from the site.

1999-2000; USACE-Nashville District; Update Generic WP and SAP; Fort Campbell, KY. Project Manager responsible for revision of the Fort Campbell Generic Work Plan and Standard Sampling and Analysis Plan to reflect changes in regulatory requirements and better understanding of site conditions.

1999-2000; USACE-Nashville District; Fort Campbell Pumphouse RFI; Fort Campbell, KY. Project Manager conducting sampling to determine the presence or absence of fuel contamination. Two groundwater wells were installed. Surface and subsurface soil samples were collected and analyzed for TCL VOCs, SVOCs, TAL metals, and TPH and geotechnical parameters. Responsible for project management and technical oversight.

1999-2001; USACE-Nashville District; PX Service Station RFI and CMS; Fort Campbell, KY. Project Manager for a Phase II and III RFIs to delineate the extent of soil and groundwater impact, determine the future movement of contaminants, assess potential risks to human health and the environment, and determine the requirement for corrective actions. Served as technical advisor when drilling activities unexpectedly encountered a large subterranean cave. Responsible for project management, client interface, and technical direction. Provided oversight for the corrective measures study to evaluate and select appropriate remedial methods.

1999; USACE-Nashville District; Fort Campbell 801st Oil Pit Investigation; RFI; Fort Campbell, KY. Project Manager for an RFI at SWMUs 134-137 to determine the presence or absence of groundwater contamination due to past practices at the motor pool. Performed a field investigation, installed 2 monitoring wells, and conducted sampling of soil and groundwater (analyzed for TCL VOCs, TCL SVOCs, PCBs and TAL metals). Responsible for project management, client interface, and technical direction and oversight.

1998-1999; LMES-HAZWRAP; Fort Campbell RFI (Master RFI); Fort Campbell, KY. Project Manager for several RFIs and confirmatory sampling investigations at Fort Campbell ranging from UST removals to complex RFIs that delineate/investigate complex underground fuel distribution systems. Attended

meetings with state and federal regulatory agencies to expedite the review and approval of submitted plans and reports.

Ogden Environmental and Energy Services Company, Inc. (1995 - 1998); and Science and Technology, Inc. (1991-1995); Oak Ridge, TN.
Senior Hydrogeologist.

1991-1998; Lockheed Martin Energy Systems, Inc., Hazardous Waste Remedial Actions Program; Oak Ridge, Tennessee. Provided full-time technical support to HAZWRAP. Assisted in the effort to identify, control, and remediate environmental contamination resulting from past methods of storage, handling, and disposal of hazardous waste at military bases across the country. Prepared statements of work; reviewed business and technical proposals; reviewed work plans and technical reports; interacted with subcontractors, clients, and regulators; provided technical consulting support to the project manager; and provided technical oversight of field work. Ensured quality of all deliverables for CERCLA and UST projects. On several projects, acted as technical lead for the Air National Guards Rapid Response UST Program. Supervised preparation of environmental assessment plans, environmental assessment reports, and corrective action plans. Trained personnel for environmental fieldwork including drill rig supervision and sample collection techniques. DOD facilities included McConnell Air Force Base, Loring Air Force Base, Maine, Columbus Air Force Base, Chanute Air Force Base, Tinker Air Force Base, Mountain Home Air Force Base, Fresno Air Terminal, and New York Air National Guard. Managed Rapid Response Investigation at McGhee Tyson Air National Guard Base in Tennessee. Prepared work plans, sampling and analysis plans, QA plans, health and safety plans, and the final report. Maintained projects within budget and interfaced with clients and regulatory agencies.

NUS Corporation, Tucker Georgia, 1988 - 1991
Project Manager

Planned, conducted, and supervised assignments. Estimated and scheduled work to meet completion dates. Directed assistants, reviewed progress and evaluated results, made changes in methods, and designed equipment. Designed cost-effective approaches to define the extent of contamination at various hazardous waste sites in an accurate manner and for developed feasibility remedial options. Developed site safety plans for all field personnel according to NUS directives as well as OSHA, NIOSH, and other health and safety guidelines. Other duties included project manager, field drilling manager, and sampling field team member on numerous hazardous waste site investigations. Conducted site inspections. Designed and implemented environmental sampling programs. Coordinated field activities and managed sampling teams. Prepared drilling bid specifications and supervised subcontractors in the drilling and installation of groundwater monitoring wells. Prepared site investigation and hydrogeologic reports for EPA. Specific NPL sites included National Southwire Aluminum, Kentucky; Lakeland Tanning, Florida; Zellwood De-listing Project, Florida; Valley Sanitation Landfill, Kentucky; Annicola Dump, Tennessee; Southwire, Georgia; Beckwith Dump, South Carolina; Ringold Chemical, North Carolina; and Caldwell Systems, North Carolina.

Tinker Air Force Base; Midwest City, Oklahoma. 1987-1988
Hydrogeologist

- Responsible for asbestos surveys and asbestos abatement at multiple sites.

*Association of Central Oklahoma Governments (ACOG), Water Resources Division;
Oklahoma City, Oklahoma. 1986 - 1987*
Hydrogeologist

- Completed water resource studies to determine whether water supply resources were sufficient for surrounding populations.

*U.S. Geological Survey (USGS), Water Resources Division. Oklahoma City,
Oklahoma. 1982 - 1986*
Hydrologic Technician

- Conducted hydrogeologic and surface water studies at sites in Oklahoma and the surrounding states.

Professional
Affiliations:

Professional Geologist, Tennessee #0516
Professional Geologist, Alabama #0612
Professional Geologist, Mississippi #624

Awards:

Received the "Award for Individual Excellence, for exceptional individual professionalism, dedication, and loyalty demonstrated in support of the Installation Restoration Program, Fort Campbell, Kentucky during the period of October 1, 2000 through September 30, 2001" presented by the Fort Campbell Environmental Restoration Staff, 6/27/01.



L. BURKE ARTHUR, PROFESSIONAL GEOLOGIST GEOLOGIST/REMEDIAL MANAGER/SAFETY OFFICER

Education: University of Tennessee, Chattanooga
B.S., Environmental Science (Geology), 1992

Professional Training: 32-hour How To Comply With OSHA Construction Regulations, 1993
Confined Space Entrant/Attendant/Supervisor
DOT General Awareness, 1997
DOT Safety, 1997
DOT Waste Generator
First Aid/CPR
Fort Campbell UXO Training
Hazard Communications Level I
Hoisting and Rigging Inspection Training
Nuclear Criticality Safety Training
OSHA 40-hour Hazardous Waste Operations Training, 1993
OSHA 8-hour Annual Refreshers
OSHA 8-hour Supervisor Training, 1998
Rad Worker II
Risk Assessment and Modeling Training

Burke Arthur's experience includes more than ten years as a Project Geologist providing environmental support for hazardous waste sites from initial site assessments through final remedial action. He has investigated and remediated contaminants such as fuel, solvents, radioactive waste, landfill debris, pesticides, and PCBs.

Mr. Arthur has supervised the installation of hundreds of bedrock wells, overburden wells, soil borings, and extraction wells with depths up to 320 feet below ground surface. He has a thorough knowledge of a variety of drilling and direct-push type technologies including conventional auger rigs, air rotary rigs, geoprobe systems, roto sonic drilling, and core drilling. With experience gained at various military and industrial sites across the southeastern United States, he has installed numerous systems to remediate contamination. He also has experience with hydrogen release compound and oxygen release compound to stimulate natural degradation.

Mr. Arthur's sampling experience includes groundwater, surface water, surface and subsurface soil, hazardous waste, landfill gas (methane) and air. As a geologist, he has supervised the installation of landfill caps, and drainage channels for erosion control. He has also supervised the installation of underground utilities and closure of UST systems at DOE sites. For many projects, Mr. Arthur is responsible for management of all investigation derived waste (IDW) such as soil, purge water,

decontamination water, and personal protective equipment; and he tracks IDW from generation until final disposal. This includes completing manifest documentation and coordinating with site representatives, shipping companies, and waste disposal facilities to ensure proper disposal.

As a Health and Safety Officer, Mr. Arthur is responsible for health and safety oversight on a variety of projects. He has authored or reviewed over 50 site specific health and safety plans, and has completed a variety of safety training courses. He has also been an instructor for excavation/competent person training. He regularly supervises field staff in Level C and B PPE, and is familiar with the use of safety monitoring equipment such as FID/PID, LEL/ O2 meters, colormetric air sampling equipment, particulate air monitoring equipment, and radiation detectors (pancake probes). He conducts initial site entry safety meetings and daily safety briefings, inspects equipment to ensure proper working order, and calibrates and maintains all monitoring equipment.

Experience: *Solutions To Environmental Problems, Inc., 1992 – Present*
Oak Ridge, Tennessee
Geologist/Safety and Health Specialist/Remedial Manager

2003; UST Removals, Fort Campbell, KY. Project Geologist for the successful removal of three 1,000-gallon waste oil tanks in Kentucky, and one 20,000-gallon JP-8 tank located in Tennessee. Completed Notice of Intent (NOI) documentation to permanently close the tanks. Provided oversight during tank removal and prepared all closure documentation. The metal tanks were sent to a recycling facility. Collected confirmatory samples from the tank pit in accordance with Tennessee and Kentucky UST regulations. Collected samples from the excavated soil, characterized it for disposal, and prepared all soil manifests.

2003; Free Product Recovery, Campbell Army Airfield, KY. Project Geologist responsible for installation of a solar-powered mobile free product recovery system. Also responsible for operation and maintenance of the fixed soil vapor extraction system at Campbell Army Airfield which includes over 20 extraction wells. Work involves operating both the vacuum system and the internal combustion engine, operating the treatment system for effluent water (an oil/water separator and air stripper), monitoring extraction wells for changes in fuel levels, and optimizing recovery as needed.

2002-2003; AIMTech, RFI at SWMU 39, Fort Stewart, GA. Project Manager/Safety Officer responsible for installing 5 groundwater monitoring wells and two vertical profiles to delineate the extent of waste oil and TCE contamination within a motor pool area. Responsible for coordinating the field crew and subcontractors, sampling, drilling oversight, and preparation of project plans and reports.

1999-2001; USACE – Nashville District; PX Service Station RFI, Fort Campbell, Kentucky. Task Manager during Phase II and III RFIs at the PX service station (SWMU 138) to determine the vertical and horizontal extent of petroleum and TCE contamination at the site. Responsible for management of all investigation derived waste, including 10 drums of TCE contaminated soil that was disposed at a hazardous waste landfill at the LWD facility in Calvert City, KY.

2002; USACE – Nashville District, Free Product Recovery at AOC-A, Ft. Campbell, KY. Project Manager/ Safety Officer responsible for installation of eight four-inch wells for vacuum extraction, to a depth of 70 feet. Monitored for immediately dangerous to life.

and health (IDLH) conditions using a flame ionization detector (FID). Provided drilling oversight. Responsible for management and scheduling of field crew.

2002; USACE – Nashville District. SWMU 166, Ft. Campbell, KY. Task Manager responsible for installing 3 bedrock monitoring wells to delineate extent of groundwater contamination from a former UST pit that contained waste oil. Collected samples for VOC, SVOCs, PCBs, and metals analysis. Authored the work plan, health and safety plan, and final project report.

2002; USACE – Nashville District. AOC D, Ft. Campbell, KY. Task Manager for an investigation to determine whether fuel contamination was present in the bedrock aquifer at AOC D. Installed three 3 bedrock wells, and collected groundwater samples. Authored the work plan, health and safety plan, and final report.

2002; USACE – Nashville District; Removal of Two USTs., Ft. Campbell, KY. Project Manager/Safety Officer responsible for successfully removing and closing two gasoline USTs (10,000 and 12,000 gallon). Prepared the application for closure in accordance with TN UST guidance, provided oversight during fieldwork, and served as safety officer during tank removal. Collected confirmatory soil samples from excavated tank pits and waste characterization samples from excavated material. Prepared the UST closure report. Coordinated all activities with the regulatory agency and Fort Campbell, and arranged for representatives to be on site during tank removal and confirmatory samples. Tanks were sent to a salvage yard.

2002; USACE – Tulsa; Perchlorate Study; Longhorn Army Ammunition Plant: Karnak, TX. Project Geologist during a study of perchlorate contamination in nine areas of Longhorn Army Ammunition Plant. Conducted wet and dry season sampling of 113 wells (including direct push water samples) and collection of 238 surface and shallow soil samples. Collected pore water samples to monitor movement of perchlorates near surface water streams.

2000-2002; AIMTech, Corrective Action Plan and UST/Heating Oil Tank Investigation for Fort Stewart, GA. Senior geologist / and Safety Officer responsible for the preparation of the Corrective Action Plan-Part A report for the Victory Shoppette site. In addition, investigated former heating oil tanks by installing groundwater wells, and conducting soil sampling. Responsible for preparation of the Master Closure Report. Delineated methane plume at the South Central Landfill.

2001; USACE – Nashville District; Free Product Recovery at Pumphouse 1 and 2, Fort Campbell, KY. Project Geologist responsible for drilling oversight during installation of extraction wells, oversight of extraction subcontractor, and soil and groundwater sampling during free product removal at Campbell Army Airfield.

2001; USACE – Nashville District; Investigation at Hangar 3, the Paint Spray Booth, and CAAF 11 at Fort Campbell, KY. Project Geologist responsible for installation of groundwater monitoring wells, and soil and groundwater sampling.

2001; USACE – Nashville District; Installation and Sampling of AOC A Pumphouse Wells, Fort Campbell, KY. Task Manager responsible for oversight during installation

of 2 groundwater monitoring wells for a RCRA facility investigation. Collected soil and groundwater samples for VOC, SVOC, metals, JP-4, and JP-8 analysis.

2000-2001; USACE – Nashville District; UST Sites – Wickham Avenue; Fort Campbell, KY. Task Manager responsible for oversight during soil sampling, preparation of Kentucky UST ranking forms, preparation of a data summary report, and preparation of a risk assessment.

1999; USACE – Nashville District; AST Removal at the Bulk Fuel Farm, Fort Campbell, KY. Project Geologist responsible for confirmatory soil sampling following removal of three large aboveground tanks serving the Campbell Army Airfield. Responsible for completing all appropriate documentation, and arranging for shipment and disposal of off-spec JP-8 fuel that was inside the tanks to a hazardous waste incinerator at LWD in Calvert City, KY.

1998-2000; AIMTech, Master RFI Project, Fort Campbell, Kentucky. Senior Geologist and field team leader responsible for surface water, sediment, and soil sampling. Provided technical input for the project report, coordinated with client representatives, procured utility clearances, and coordinated sampling events for multiple sites to reduce cost. Received clean closure for AOC C.

1997-1998; Lockheed Martin Energy Systems, Inc., Hazardous Waste Remedial Action Program; Oak Ridge, Tennessee. Site Safety Officer and Geologist for remedial activities at Fort Campbell, Kentucky. For Landfills 7 and 9, graded sites for positive drainage, estimated vegetative cover, extended monitoring wells that were covered during grading, managed field crew, and coordinated activities and schedules of the investigative team. Also coordinated the field efforts for a RCRA facility investigation for three solid waste management units and seven areas of concern. Collected surface and subsurface soil samples, installed monitoring wells, managed wastes, supervised sampling and drilling crews, and coordinated with the analytical laboratory. Responsible for pre-construction site preparation for a new troop medical and dental facility, which was built on an old landfill. Removed landfill debris from the proposed building site and conducted QA/QC sampling to determine if all the debris was removed and whether any contaminants had leached into the soil beneath the landfill.

2001; USACE; Campbell Army Air Field Active Fuel System Integrity Testing; Fort Campbell, Kentucky. Geologist for an integrity test on twelve 50,000 gallon USTs and the associated piping. Soil gas samples were collected from approximately 5500 feet of pipeline and from around the USTs to provide information on potential leaks.

1999; USACE – Nashville District; Subsurface Investigation of Area of Concern D, Fort Campbell, Kentucky. Geologist for a confirmatory sampling project at the Bulk Fuel Tank Farm. This project involved removal of three large ASTs, and over 500 linear feet of underground and aboveground piping. Confirmatory sampling included the collection of soil samples to determine the presence and extent of contamination.

1998-1999; Tennessee Valley Authority; Knoxville, Tennessee. Geologist responsible for placement of a landfill soil cap to provide proper drainage at Land Between the

Lakes. Installed 3 groundwater monitoring wells and conducted quarterly sampling for one year. Sampling efforts resulted in site closure.

1996-1998; United States Bronze and Powders; Maryville, Tennessee. Geologist/ Site Safety Officer responsible for providing on-site supervision of the construction and installation of groundwater monitoring wells and conducting soil sampling during drilling activities as part of Phase II environmental assessment. Classified soils, conducted field screening of soil samples for VOCs, and prepared soil and water samples for laboratory analysis. Provided site supervision during confirmation sampling and sampling of partially buried 55-gallon drum. Conducted air monitoring during drum sampling using an FID. Interpreted analytical data and prepared the report.

1995-1998; Construction and Demolition Services; Knoxville, Tennessee. Geologist responsible for site supervision during the development and construction of the Class IV Ridgeview Landfill. Surveyed site layout, supervised heavy equipment operators and laborers during construction and excavation activities, supervised construction and installation of the groundwater monitoring wells during drilling activities and excavation and construction of a leachate collection system.

1993-1996; Tennessee Valley Authority (TVA); New Johnsonville, Tennessee. Geologist responsible for the investigation of a construction/demolition disposal site. Provided supervision for field activities including drilling and sampling of waste and soil interfaces of the landfill and installation and sampling of groundwater monitoring wells. Provided QA/QC supervision on the sampling, decontamination, and installation procedures. Conducted field survey of the landfill for final closure. Provided QA/QC during closure activities and survey of the final cap.

1995; Geotek Drilling Co., Inc.; Paducah, Kentucky. Site safety and health officer/field geologist during the installation of 25+ shallow monitoring wells at the DOE Paducah Gaseous Diffusion Plant. Implemented project site-specific safety and health plan and conducted personnel exposure monitoring using flame-ionization detectors, multi-gas detectors, and routine radiological frisking inside exclusion and contamination-reduction zones. Ensured the proper utilization of PPE and adherence to standard operating procedures during well drilling, well construction, and installation activities. Recorded soil classification data, performed water sampling, and provided QA/QC during the installation of the monitoring wells. Provided QA/QC during waste sampling procedures.

1995; Allied Technology Group, Inc.; Paducah, Kentucky. PCB sampling technician during an asbestos/PCB removal project at the Paducah Gaseous Diffusion Plant. Conducted PCB clearance sampling of switchgear units and other components following decontamination efforts by the contractor. Performed grid sampling in accordance with EPA sampling protocols, prepared samples for laboratory shipment maintaining stringent chain of custody procedures, interpreted laboratory results, and prepared material disposal documentation.

1994; Geotek Drilling Co., Oak Ridge, Tennessee. Geologist responsible for soil sampling during the closure in place of ten USTs at Oak Ridge National Laboratory.

1993; DOE Construction Contractors, Oak Ridge, Tennessee. Safety and health officer responsible for daily site inspection for the recognition of OSHA non-compliance items and unsafe work conditions or practices. Presented weekly safety meeting topics to construction site workers. Conducted periodic confined space entry/work monitoring for potential immediate danger to life and health (IDLH) atmosphere hazards and served as excavation competent person. Supervised personnel in level B PPE.

1992-1993; U.S. Army Corps of Engineers; Jacksonville, Florida. For the Hurricane Andrew emergency response project, provided comprehensive environmental, safety, and health (ES&H) support services during debris removal and debris reduction activities. Provided comprehensive ES&H support services during debris removal and debris reduction activities. Identified and segregated hazardous and toxic waste (HTW) and monitored disposal site operations. Removed HTW from debris sites, identified sources of environmental insult, conducted air monitoring, and stockpiled HTW into spill-control areas. Monitored all processes associated with the implementation of a respiratory protection program, fire watch program, traffic safety control program, ambient air monitoring program, and burn management/ash handling plan. Supervised personnel in level B PPE.

Professional
Affiliations:

Registered Professional Geologist – Tennessee (TN2977)
Registered Geologist since 1992, PG since 1997

APPENDIX G

STEP S&H Manual (Program Attachments)

Confined Space Entry Policy
Electrical Safety Program and Lockout/Tagout
Hazard Communication
Personal Protective Equipment Program
Toolbox Safety Meetings



Solutions To Environmental Problems (STEP) Confined Space Entry Program

14.0 CONFINED SPACE ENTRY POLICY

14.1 Objective

The purpose of this procedure is to outline the minimum health and safety requirements for work performed in or around confined spaces. This procedure complies with measures specified in the OSHA Permit Required Confined Spaces Standard, 29 CFR 1910.146.

14.2 Scope

This procedure is applicable to all employees and contractors of Solutions To Environmental Problems, Inc. (STEP) who will be required to enter confined spaces to perform any job function.

14.3 Responsibilities

STEP will assess all confined spaces throughout the worksites, evaluate each as to whether they are permit-required confined spaces (PRCSs), and institute necessary controls and procedures to reduce or eliminate hazards prior to entry. STEP will provide confined space entry information and training, entry equipment, and personal protective equipment to the employees who work in designated permit-required confined spaces. The Confined Space Entry Program also applies to contractors working on the premises. Responsibilities are defined by individual below.

14.3.1 Corporate Safety & Health Manager:

- Coordinate and manage the overall written Confined Space Entry Program.
- Specify the types of entry-related equipment to be used.

14.3.2 Superintendent

- Evaluate entry procedures by performing a hazard evaluation for each PRCS (Attachment A).
- Ensure confined space rescue services are available for the project duration.
- Review all confined spaces on the site and the hazard evaluations for each space (Attachment A) with rescuers.
- Revise entry procedures prior to subsequent entries whenever there is reason to believe the program is deficient in protecting employees.
- Make the written program available to employees.
- Coordinate confined space entries with the SSHO.
- Ensure all applicable employees have received Confined Space training.
- Require that all Contractors who will be entering PRCSs provide confirmation that their



Solutions To Environmental Problems (STEP) Confined Space Entry Program

- employees have received PRCS entry training.
- Conduct investigations of Confined Space entry accidents/incidents.

14.3.3 Site Safety and Health Officer (SSHO)

The SSHO will act as the Confined Space Entry Supervisor, and their responsibilities include the following:

- Ensure proper implementation of the Confined Space Entry Program.
- Ensure direct reading instrumentation for monitoring of confined spaces is available and maintained in proper condition.
- Maintain all training records for authorized personnel.
- Provide assistance as requested by the Program Administrator or other individuals.
- Advise Corporate Safety and Health Manager of any program deficiencies noted requiring his/her action or involvement.
- Ensure all affected employees in their work area comply with all elements of the Confined Space Entry Program.
- Discuss and document Confined Space Entry concerns prior to entry.
- Ensure that all known or potential confined spaces are reviewed to determine the type and level of hazards associated with the space.
- Enforce the confined space procedures.
- Ensure all personnel have received proper training in confined space entry procedures and proper use of safety retrieval and emergency equipment.
- Complete and sign the confined space entry permit.
- Ensure confined space entry permits are posted and that a confined space attendant is present during all PRCS entry activities.
- Ensure all necessary safety retrieval equipment for confined spaces is on-site, operational and properly used.
- Ensure the site is properly posted and flagged.
- Conduct an on-site pre-entry briefing with all entrants and attendants prior to the start of the job.
- Cancel the permit whenever the activity is finished or a condition that is not allowed by the permit arises in or near the space.
- Verify the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that the procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

14.3.4 Authorized Attendant

The attendant is to be stationed outside the confined space and monitor all entrants located inside the confined space. Attendants shall have the following duties:



Solutions To Environmental Problems (STEP) Confined Space Entry Program

- Remains in constant two-way communication with entrants either by verbal or visual contact, or through verbal radio communication.
- Provides standby assistance to occupants when entering or exiting the confined space.
- Directs occupants to immediately evacuate the confined space when:
 1. Conditions arise that are outside the scope of the entry permit, or present unacceptable levels of hazard,
 2. Unauthorized personnel enter the area,
 3. Behavioral changes are detected in the entrant,
 4. Air monitoring equipment detects unacceptable oxygen, flammable or toxic levels,
 5. The attendant must leave the work area,
 6. The attendant detects or suspects a breakdown in communication with the entrants, or
 7. If an emergency signal or alarm is sounded.
- Initiates emergency response procedures in the event that an entrant must be rescued from the confined space, and provides emergency rescue personnel with pertinent information related to the emergency situation to facilitate rescue of the entrants.
- Monitors for internal and external conditions that could adversely effect the continued operations inside the confined space.
- Remains at the entry point unless relieved by another authorized attendant.

14.3.5 Authorized Entrants

- Maintains effective continuous contact with the attendant.
- Evacuates the confined space when prompted by the attendant or when additional hazards are noticed.
- Reviews the entry permit with the attendant and supervisor-in-charge to resolve any concern or questions.
- Communicates with the authorized attendant to enable the attendant to monitor entrant status and working conditions within the permitted space.

14.4 Confined Space Inventory

An inventory of all the confined spaces on the job site will be maintained and each space will be identified as to whether it is permit-required or not. The Hazard Assessment Form included as Attachment A to this program is intended to be the basis for development of an entry permit for that particular space.

14.5 Labeling and Posting

All confined spaces shall be posted and flagged so as to minimize the potential for unauthorized



Solutions To Environmental Problems (STEP) Confined Space Entry Program

personnel entering the area. All entry points to any confined space shall be posted. Barricades or caution flagging should be used in addition to posting of signs. Signs for permit required confined spaces shall include but not necessarily be limited to the following information:

DANGER

CONFINED SPACE

DO NOT ENTER

ENTRY PERMIT REQUIRED

The specific signage requirements for each space are included in the Hazard Assessment Form.

14.6 Entry Procedures

14.6.1 Permit-Required Confined Space

Anyone (either employee or contractor) who wishes to enter a confined space must notify the SSHO.

The SSHO will then perform or ensure the completion of the following actions:

- Review the Hazard Assessment Form for that space and develop a permit for the entry. A blank Confined Space Entry Permit is provided as Attachment B.
- Select qualified, trained individuals for Entrants and Attendants.
- Ensure all necessary safety equipment for confined spaces is immediately available at the location of the entry, and is operational (including field checking of monitoring instruments).
- Ensure ventilation requirements (if any) are satisfied. Attachment C contains a discussion on ventilation of confined spaces.
- Ensure the entry location is properly posted and flagged. Material Safety Data Sheets (MSDSs) for all hazardous materials in or brought into the space will be attached to the permit.
- Conduct an on-site pre-entry briefing with all entrants and attendants prior to the start of the job.
- Verify the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that the procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.
- Sign the confined space entry permit prior to entry.
- Notify the designated rescue team by phone of the entry operations prior to entry.
- Ensure confined space entry permits are posted. The confined space entry permit shall be posted as close to the point of entry as possible, and shall remain in that location for the duration of the job. Specific work hazards may also be posted by warning signs to inform workers of specific control measures, such as, but not limited to: respirator required; or high noise area.
- Ensure that a confined space Attendant is present during all PRCS entry activities and maintains continuous communication with all entrants. The Attendant will not leave the



Solutions To Environmental Problems (STEP) Confined Space Entry Program

space unless relieved by another Attendant.

- Cancel the permit whenever the activity is finished or a condition that is not allowed by the permit arises in or near the space.

An Entry Permit is valid for only one shift. The permit must be reissued at the beginning of the next shift or if work in the space is stopped for more than 30 minutes. If the space must be evacuated, the permit is no longer valid and must be reissued prior to re-entry.

At the conclusion of the entry, the following will be completed:

- The Attendant will verify that all Entrants have left the PRCS and that all applicable equipment has been removed.
- The Attendant will remove isolation mechanisms, as well as warning signs and barriers.
- Entrants will fill in the exit time on the permit.
- The Entry Supervisor will note any problems encountered on the permit, and forward to the Program Administrator, who will archive it for one year from the date of the permit.

14.7 Entry Permits

As stated earlier, the permit is included in Attachment B, and is available from the SSHO.

14.8 Monitoring Equipment

All portable confined space monitoring equipment will be sent off for factory calibration and maintenance on an annual basis (or more frequently if recommended by the manufacturer). Hand aspiration (i.e., rubber squeeze bulb) is not allowed, and only motorized aspiration is allowed for remote sampling. All portable gas monitors will be field checked with suitable calibration gas prior to use every shift.

The appropriate calibration gas that gives an equivalent readout for the anticipated contaminants will be used whenever possible. Correction factor that corrects the reading will be used when an appropriate gas is not available.

14.9 Compressed Gas/Flame Producing Equipment/Hot Work

Cylinders of compressed gas of any type will not be taken into confined spaces. Self-contained breathing apparatus (SCBA) equipment is the only exception.

- If any hot work (including welding, cutting, grinding, or related activities) will be conducted in a permit space, a Hot Work Permit may be required as well. The SSHO will make the determination of the need for a Hot Work permit.
- If gas hoses (e.g., for torch cutting) are to be used in the space, the hoses will be removed and the gas supply cut off at the cylinder when entrants leave the space.
- Confined space entrants are not to carry matches or cigarette lighters into spaces containing or potentially containing flammable atmospheres.



Solutions To Environmental Problems (STEP) Confined Space Entry Program

- Hot work in a non-permit space will render it a PRCS.

14.10 Hazardous Chemical Use

Any use of hazardous chemicals in a confined space will render it a PRCS unless authorized by the Program Administrator.

14.11 Emergency Rescue

STEP will rely on the local Fire Department (or designee) for all PRCS rescues involving entry into the applicable spaces. The Superintendent will acquaint the rescue service with all PRCSs at the site.

The authorized attendant will immediately initiate the following steps when rescue of one or more entrants becomes necessary:

- The Attendant will summon help (including the local Fire Department) if doing so does not require leaving the space. If leaving the space is necessary to summon help, the Attendant will use the radio (or similar equipment) and instruct others in the facility to call the Fire Department.
- For nonentry rescue situations, the Attendant will then initiate rescue operations from outside the confined space utilizing the winch and the retrieval lines attached to the authorized entrants.
- If entry rescue is necessary, the Attendant will remain near the entrance to prevent unauthorized individuals from attempting rescue entry. **UNAUTHORIZED INDIVIDUALS WILL NOT ATTEMPT ENTRY RESCUE.**
- Upon arrival at the emergency site, the Fire Department will receive a situation report from the authorized attendant. They will then be in control of all entry operations until the space is vacated. The Fire Department should assume immediately dangerous to life or health conditions exist in the space.
- The MSDS attached to the permit will be sent with the emergency rescue service to the health care facility providing treatment.
- A brief discussion of the facility Emergency Action Plan is included as Attachment D.

14.12 Training and Information

The Confined Space Entry Training Program is required for all employees who may serve as Entry Supervisors, Attendants, or Entrants for confined space work. Training must be completed prior to any work in confined spaces. This training shall be repeated annually with updated information to be consistent with any possible changes in procedures, protective equipment and/or work processes. All Entrants and Attendants will receive the same training. The training shall cover the following topics:

- What are confined spaces and permit-required confined spaces.



Solutions To Environmental Problems (STEP) Confined Space Entry Program

- An explanation of the general hazards associated with confined spaces.
- The reason for, proper use, and limitations of personal protective equipment, retrieval devices, radios, ventilation equipment and air flow principles, and other safety equipment required for entry into confined spaces.
- An explanation of the permit system and other procedural requirements for conducting a confined space entry.
- How to respond to emergencies and procedures for summoning rescue.
- Duties and responsibilities of the confined space entry team.
- Cardiopulmonary resuscitation techniques (minimum 2 persons).
- A description of how to recognize probable air contaminant overexposure symptoms to themselves and co-workers, and methods for alerting attendants.

The supervisor authorizing or in charge of entry shall receive the aforementioned training, as well as additional training on:

- Recognizing the effects of exposure to chemical hazards known to be in the confined space.
- Use of air monitoring equipment and interpretation of results.
- Use and selection of PPE.
- The types of work in non-permit spaces that may render them PRCSSs.
- Information regarding STEP's written Confined Space Entry Program and any information and materials pertinent to the OSHA Confined Space Standard.

All trainees must pass a written test for successful completion of the course.

14.13 Program Review and Revision

This program will be reviewed at least annually and will be revised to reflect any changes in operational procedures, equipment, or best management practices. Corporate Safety and Health Manager will be responsible for ensuring the conduct of the review and incorporation of any revisions.

14.14 Disciplinary Policy

All employees are expected to adhere to the procedures given in this written program. Failure to comply will result in disciplinary action as described in the facility's disciplinary policies.

14.15 Record Keeping

STEP will maintain the following information:

- The confined space entry permit will be maintained for at least one year to facilitate the review of the Permit - Required Confined Space Program.
- The latest report of the annual review will be maintained by the Corporate Safety and Health Manager.



Solutions To Environmental Problems (STEP)
Confined Space Entry Program

Attachment 14-1 Confined Space Hazard Assessment Forms

Date of Assessment:

Location of Space -		Permit Required ☐ Non-Permit ☐												
Type of Space <table border="0"><tr><td>☐ Pit</td><td>☐ Above Ground Tank</td><td>☐ UST</td></tr><tr><td>☐ HVAC Unit</td><td>☐ Silo</td><td>☐ Manhole</td></tr><tr><td>☐ Trench</td><td>☐ Baghouse</td><td>☐ Duct work</td></tr><tr><td>☐ Tunnel</td><td>☐ Machine Enclosure</td><td>☐ Water Tower</td></tr></table> Other:			☐ Pit	☐ Above Ground Tank	☐ UST	☐ HVAC Unit	☐ Silo	☐ Manhole	☐ Trench	☐ Baghouse	☐ Duct work	☐ Tunnel	☐ Machine Enclosure	☐ Water Tower
☐ Pit	☐ Above Ground Tank	☐ UST												
☐ HVAC Unit	☐ Silo	☐ Manhole												
☐ Trench	☐ Baghouse	☐ Duct work												
☐ Tunnel	☐ Machine Enclosure	☐ Water Tower												
No. Access Points	Required Sign													
Means of Access <table border="0"><tr><td>☐ Fixed Interior Ladder</td><td>☐ Fixed Exterior Ladder</td><td>☐ Portable Ladder</td></tr><tr><td>☐ Stairway</td><td>☐ Horizontal Entry</td><td>☐ Vertical Entry</td></tr></table> Other:			☐ Fixed Interior Ladder	☐ Fixed Exterior Ladder	☐ Portable Ladder	☐ Stairway	☐ Horizontal Entry	☐ Vertical Entry						
☐ Fixed Interior Ladder	☐ Fixed Exterior Ladder	☐ Portable Ladder												
☐ Stairway	☐ Horizontal Entry	☐ Vertical Entry												
Hazard Assessment: Check all that are known to exist or potentially present <table border="0"><tr><td><u>Atmospheric Hazards</u> ☐ Oxygen Deficiency (<19.5%) ☐ Oxygen Enrichment (>23.5%) ☐ Flammable Atmosphere ☐ Toxic; Type: ☐ Inerting Agents (Argon, Nitrogen)</td><td><u>Configuration Hazards</u> ☐ Fall Hazards ☐ Entrapment ☐ Structural Integrity ☐ Compartmentalized</td></tr><tr><td><u>Energy Source Hazards</u> ☐ Electrical ☐ Hydraulic ☐ Pneumatic ☐ Thermal (i.e. steam) ☐ Ionizing/ Non-ionizing Radiation</td><td><u>Environmental Hazards</u> ☐ Heat Stress ☐ Slippery/Unstable Surfaces ☐ Poor Illumination ☐ Hot Surfaces ☐ Contact with Hazardous Substances</td></tr></table>			<u>Atmospheric Hazards</u> ☐ Oxygen Deficiency (<19.5%) ☐ Oxygen Enrichment (>23.5%) ☐ Flammable Atmosphere ☐ Toxic; Type: ☐ Inerting Agents (Argon, Nitrogen)	<u>Configuration Hazards</u> ☐ Fall Hazards ☐ Entrapment ☐ Structural Integrity ☐ Compartmentalized	<u>Energy Source Hazards</u> ☐ Electrical ☐ Hydraulic ☐ Pneumatic ☐ Thermal (i.e. steam) ☐ Ionizing/ Non-ionizing Radiation	<u>Environmental Hazards</u> ☐ Heat Stress ☐ Slippery/Unstable Surfaces ☐ Poor Illumination ☐ Hot Surfaces ☐ Contact with Hazardous Substances								
<u>Atmospheric Hazards</u> ☐ Oxygen Deficiency (<19.5%) ☐ Oxygen Enrichment (>23.5%) ☐ Flammable Atmosphere ☐ Toxic; Type: ☐ Inerting Agents (Argon, Nitrogen)	<u>Configuration Hazards</u> ☐ Fall Hazards ☐ Entrapment ☐ Structural Integrity ☐ Compartmentalized													
<u>Energy Source Hazards</u> ☐ Electrical ☐ Hydraulic ☐ Pneumatic ☐ Thermal (i.e. steam) ☐ Ionizing/ Non-ionizing Radiation	<u>Environmental Hazards</u> ☐ Heat Stress ☐ Slippery/Unstable Surfaces ☐ Poor Illumination ☐ Hot Surfaces ☐ Contact with Hazardous Substances													
Can energy sources be eliminated from outside the space? List.														



Solutions To Environmental Problems (STEP)
Confined Space Entry Program

Hazard Control Measures

VENTILATION REQUIREMENTS			
Equipment	Check ()	Equipment	Check ()
Exhaust Ventilation		Natural Ventilation	
Dilution Ventilation		Intrinsically Safe Blower	
Initial Ventilation Purge			
Additional ventilation comments: Evacuation of space must be ordered is ventilation stops for any reason.			
ELECTRICAL EQUIPMENT REQUIREMENTS			
Equipment	Check ()	Equipment	Check ()
Intrinsically Safe		Battery Operated	
Portable Generator		Low Voltage	
GFCI		Double Insulated Tools	
Additional electrical comments:			
ILLUMINATION			
Equipment	Check ()	Equipment	Check ()
Permanent lighting provided		Supplemental after dark	
Portable drop lights		Flashlight	
Explosion-proof		Waterproof fixtures	
Additional lighting comments:			
ATMOSPHERIC MONITORING			
Oxygen	☐ Continuous	☐ Continuous	☐ Periodic Frequency:
Combustible Gas	☐ Continuous	☐ Continuous	☐ Periodic Frequency:
Toxic	☐ Continuous ☐ CO	☐ Continuous ☐ H2S	☐ Periodic ☐ Other Frequency:
Personal monitor required:	☐ es	☐ No	Type:
COMMUNICATION			
Attendant Required:	☐ Yes	☐ No	
Type of Communication:	☐ Radio	☐ Verbal	☐ Visual



Solutions To Environmental Problems (STEP)
Confined Space Entry Program

Personal Protective Equipment

RETRIEVAL & FALL PROTECTION			
Equipment	Check ()	Equipment	Check ()
Fall Arrest/Retrieval System		Wristlets/Anklets	
Lifeline		Boatswain's Chair	
Tripod Mechanical Lift		Material Handling Winch	
Comments:			
RESPIRATORY PROTECTION			
Equipment	Check ()	Equipment	Check ()
SCBA		Airline ☐ Cascade ☐ Compressor	
Half Face Air Purifying Cartridge Type:		Full Face Air Purifying Cartridge Type:	
Powered Air Purifying		Escape SCBA	
Comments:			
EQUIPMENT & APPAREL			
Equipment	Check ()	Equipment	Check ()
Safety Glasses w/ Side shields		Hard Hat	
Chemical Goggles		Hearing Protection	
Full Face Shield		Safety Shoes/Boots	
Gloves – Type		Protective Clothing - Type	
Comments:			



**Solutions To Environmental Problems (STEP)
Confined Space Entry Program**

Attachment 14-2 Confined Space Entry Permit

Location		Attendant(s)	
Starting	am pm	Date	Ending am pm Date
Confined Space To Be Entered			
Reason For Entry			
Name(s) Of Entrant(s)			

THE FOLLOWING PRECAUTIONS WILL BE OBSERVED

(Circle or check as appropriate)

STOP WORK IF WARNED OF A HAZARD BY ANY EMPLOYEE, OR IN EVENT OF SPILLS OR LEAKS ADJACENT TO YOUR WORK AREA

HAZARD(S)	PREPARATION		PROTECTIVE EQUIPMENT
Corrosive Materials	Lockout Energy Sources	Low Voltage Lights/GFCI	Safety Glasses
Flammable Materials	Isolate / Blank Lines	Pneumatic Tools	Goggles
Toxic Materials	Double Block and Bleed	Ladder Access	Face Shield
Hot Equipment	Inert / Purge Space	Radio/Air Horn/Phone	Steel Toe Shoes
Spilled Liquids	Water / Steam Clean	Emergency #	Hard Hat
Pressurized System	Hot Work Permit Needed	Hoist or Winch	Gloves
Spark Producing	Ventilate Space Prior to Entry:	Other:	Protective clothing (type)
Engulfment	Hours _____	COMMUNICATION	Harness and Lifeline
Mechanical	Minutes _____		Wristlets
Electrical	Ventilate space continuously during entry	Voice	SCBA or Airline Respirator
Radioactive Materials		Radio	Negative pressure respirator
Other:		Intercom	Hearing protection
		Other:	Other:

PROCEDURE IN CASE OF EMERGENCY



Solutions To Environmental Problems (STEP)
Confined Space Entry Program

MONITORING				
Monitoring Equipment (Specify by Analyte):			Continuous/Frequency	
Acceptable Conditions		Time/Result	Time/Result	Time/Result
Oxygen	19.5% - 23.5%			
Flammability	<10% LEL			
Toxics (list)	<50%TLV/PEL (lowest)			

Additional monitoring data is to be attached to or retained with this permit.

Signed _____
Entry Supervisor Person in Charge of Work

**THIS PERMIT IS VOID AFTER EXPIRATION TIME INDICATED OR IF
EMERGENCY IS NOTED.**

Permit must be posted at/near entrance to space, and applicable MSDS(s) attached, at all times during the entry.

Permit cancelled:

DATE: _____ TIME: _____

Entry Supervisor



Attachment 14-3 Permit Required Confined Space Ventilation Requirements

1.0 Strategy: The Entry Supervisor will determine the most effective strategy for PRCS ventilation. In choosing between mechanical fresh air supply ventilation and mechanical exhaust ventilation consider the following points:

- Supplying air normally provides best airflow and mixing throughout the PRCS.
- Supplying air brings fresh air into workers' breathing zones.
- Supplying air can provide a source of cooling or heating.
- Exhausting air does not normally provide good mixing unless there are several openings.
- Exhausting air provides more controlled air movement and does not disperse contaminants (i.e., settled dusts).
- Exhausting air allows for controlled discharge of contaminants.
- Exhausting air can be effective for localized source control.
- Simultaneous supplying and exhausting air may be applicable in some cases.

2.0 Air Flow Guidelines: Air flow guidelines are expressed here in units of Air Changes Per Hour (ACH). One ACH means that in one hour, an air mover has delivered or exhausted a volume of air equal to the volume of the PRCS. While it is often not possible to measure the volume of the space, these guidelines are provided as a rule of thumb. It does not mean that all the air within the space has been exchanged. How much air has been exchanged depends on the configuration of the PRCS and where the air is supplied to or exhausted from. The following points will be considered in ventilating confined spaces:

- For supply ventilation, the range to strive for is a minimum of 10 ACH (air changes per hour) and up to 60 ACH with 20 ACH as a goal. Flow rates in excess of 60 ACH usually do not provide significant additional benefit.
- When supplying fresh air to a PRCS to remove heavier-than-air contaminants, the end of the supply duct should be kept within three feet of the bottom of the PRCS.
- For exhaust ventilation, the minimum should be 10 ACH with a goal of 20 ACH. Increasing flow as much as feasible does provide additional benefit.
- The space should be ventilated for a minimum of 10 minutes before any entry.

3.0 Air Movers: Observe the following precautions when using mechanical air movers:

- Do not block an entry/exit opening of a PRCS with air movers and ductwork unless a second open and immediately accessible portal is available for rescue.
- Ensure that air movers are rated intrinsically safe or are grounded and bonded when used with potentially combustible atmospheres.
- Protect intakes on air movers used for supplying fresh air from the introduction of chemicals, vehicle emissions, etc.



Solutions To Environmental Problems (STEP) Confined Space Entry Program

- Locate outlets on air movers used for exhausting downwind and away from exterior personnel and equipment.
- When possible, provide movable ductwork which extends into the PRCS. Position ductwork to reduce contaminants near entrants' breathing zones.
- Use compressed air supplied by oil-lubricated compressors for ventilation purposes only if:
 - A venturi-type eductor is placed on the discharge of the compressed air line or hose, and
 - Monitoring for carbon monoxide (CO) is conducted immediately prior to and during work in the PRCS.

4.0 Natural Ventilation: As a general rule, do not rely upon natural ventilation; however, it may be used only if the following conditions are met:

- There are no potential atmospheric hazards.
- Pre-entry atmospheric testing indicates acceptable air quality prior to any mechanical ventilation.

Work operations within the PRCS do not have the potential to cause a change in quality conditions.



**Solutions To Environmental Problems (STEP)
Confined Space Entry Program**

Attachment 14-4 Program Performance Verification

Reviewer Names: _____

Date: _____

Confined Space Program		YES	NO
1.	Have projects developed a site-specific written Confined Space Program to prevent unauthorized entry, identify and evaluate confined space hazards, and establish procedures for safe entry, including testing and monitoring?		
2.	Is there a written Confined Space Permit Program for entry into confined spaces?		
3.	Have all confined spaces been identified and posted?		
4.	Is personal protective equipment (PPE) and other entry-related equipment available for employees involved in confined space entry?		
5.	Is all entry-related equipment being properly maintained?		
6.	Has training on confined space entry procedures been completed for all applicable employees?		
7.	Are subcontractors briefed as to project confined space locations and procedures for entry?		
8.	If off-site rescue procedures apply, has coordination and familiarization training been completed?		
9.	If on-site rescue procedures apply, have all rescue personnel been trained in rescue procedures?		
10.	Are Attendant, Authorized Entrants, and Entry Supervisory Personnel identified and trained in their responsibilities?		



5.0 ELECTRICAL SAFETY PROGRAM AND LOCKOUT/TAGOUT

5.1 Scope and Application

This program is applicable to all employees and contractors of STEP while working on any STEP work site during construction or maintenance.

5.2 References

Title 29 Code of Federal Regulations (CFR) Part 1926.404-.408, .416 - .417

Title 29 Code of Federal Regulations (CFR) Part 1910.303-335

5.3 Definitions

- Qualified Person - an individual who is capable of working safely on energized circuits, and understands proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools. (i.e., licensed electrician or similarly trained).
- Nonqualified Person - an individual not meeting the definition of a qualified person.
- Authorized Employee – A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment.

5.4 Responsibilities

Program responsibilities are defined below for the individuals designated to ensure the proper implementation of this program.

5.4.1 Corporate Safety & Health Manager

- Provide the resources and authority to ensure the program elements are instituted as required.
- Hold all assigned responsible parties accountable as outlined in the written program.
- Periodically inspect project sites for electrical safety hazards and compliance with this program.
- Perform and document a Program Performance Verification (PPV) of the Electrical Safety Program at least annually to ensure program elements are being effectively implemented.

5.4.2 Superintendent or Foreman

- Ensure all affected employees under your supervision have received the level of electrical safety training necessary to safely perform their job.
- Maintain a file for each qualified person containing documents that are used for confirming their qualifications.
- Require employees to follow the Electrical Safe Work Practices outlined in this program.



Solutions To Environmental Problems (STEP) Electrical Safety Program and Lockout/Tagout

- Be knowledgeable of Electrical Safety Program requirements.
- Make routine surveys of the work company to ensure utilization of PPE and safe work practices by employees.
- Ensure that inspection and testing of cord sets, electric tools, all electrical equipment and receptacles is conducted as required.
- Conduct investigations of electrical accidents.

5.4.3 Employees

- Actively participate in the assigned electrical safety, lockout/ tagout, and temporary wiring training sessions and adhere to the safe operating guidelines contained within this program.
- Obey all established requirements outlined in the Electrical Safety Program.
- Use PPE supplied by the company for all work around exposed electrical circuits.
- Utilize all existing engineering controls, work practice controls and administrative controls provided.
- Inform supervision if PPE is lost, damaged or if additional PPE is needed.
- Qualified employees must participate in the annual mandatory training sessions as scheduled.
- Non-qualified employees do not work on exposed electrical circuits unless they have been de-energized in accordance with the Control of Hazardous Energy (Lockout/Tagout) Procedures.

5.5 Work Practices

- All live parts must be de-energized before the employee works on or near them, unless de-energizing introduces additional or increased hazards. If live parts are not de-energized, other safety related work practices shall be used to protect employees who may be exposed to the electrical hazards involved.
- Conductors and parts of electric equipment that have been de-energized but have not been locked out or tagged shall be treated as energized parts.
- All employees must follow the STEP control of hazardous energy (lockout/tagout) procedures when performing work on fixed electrical equipment or circuits. Test equipment will be used to test the circuit elements and electrical parts of equipment to verify that the circuit elements and equipment parts are de-energized.
- Only qualified persons can perform testing work on electric circuits or equipment.
- If a circuit is de-energized by a circuit protective device, manual re-energization of the circuit will not be done until the determination is made that the equipment and circuit can be safely energized.

5.6 Location/Environment

- Employees may not enter any area containing exposed energized parts unless adequate lighting is provided.
- Safety signs or symbols must be used where determined necessary to warn employees



about the electrical hazards that may endanger them.

- Nonconductive barricades must be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or circuit parts.

5.7 Work Space

The minimum work spaces around electrical equipment for "qualified" persons to do work are listed in Tables 5-1 and 5-2 below.

Table 5-1 Work Spaces Around Electrical Equipment

Location	600V Nominal or Less	600V to 4160V Nominal
Width in Front	30" wide	30" wide
Front Clearance	36" to 48" (see Table 5-2)	36" to 60"
Headroom	6'3" high	6'6" high
Lighting	Adequate	Adequate
Entrances to Area	One	One – 24" wide, 6'6" high; if control panel >48" wide, must be one entrance each side

Table 5-2 Working Clearances

Nominal voltage to ground	Minimum clear distance for condition (ft)		
	Condition A	Condition B	Condition C
0 - 150	3	3	3
151 - 600	3	3 ½	4
600 - 4160	3	4	5

Conditions (a), (b), and (c), are as follows:

- A. Exposed live parts on one side and no live or grounded parts on the other side of the working space, or exposed live parts on both sides effectively guarded by suitable wood or other insulating material. Insulated wire or insulated by
- B. STEP operating at not over 300 volts are not considered live parts.
- C. Exposed live parts on one side and grounded parts on the other side. Concrete, brick, or tile walls will be considered as grounded surfaces.
- D. Exposed live parts on both sides of the workspace [not guarded as provided in Condition (a)] with the operator between

If access is needed through the rear of the electrical equipment, at least 36 inches horizontally of work room is to be provided.



5.8 Temporary Power at Work site Construction Sites

- All temporary power installations for work site construction sites shall be installed only by qualified electricians.
- Temporary electrical power and lighting installations of 600 volts, nominal, or less may be used only during remodeling, maintenance, repair or demolition of buildings or equipment.
- Temporary electrical power and lighting installations over 600 volts, nominal may only be used during periods of tests, experiments, or emergencies.

5.9 Electrical Boxes and Cabinets

A rubber grommet or clamp must be used around the conductor to protect against damage where they enter cabinets or boxes.

- Knockouts, breaker openings, and other fittings in cabinets and boxes should only be removed if they will be used immediately. All openings not in use will be closed with a plug or cover.
- Covers will be provided for all pull boxes, junction boxes and fittings. If metal covers are used, they will be grounded and kept closed.
- Each out box will have a cover, faceplate, or fixture canopy.
- Covers for boxes carrying over 600 volts, nominal will be marked "HIGH VOLTAGE."

5.10 Disconnect Means

- All disconnects shall have a minimum of 36" clearance in front of the disconnect to allow for easy access.
- Circuit breakers must clearly indicate whether they are in the open (off) or closed (on) position. The up position of the handle for vertical switchboards will be the closed (on) position.
- The disconnect means will plainly indicate whether it is in the open or closed position. The disconnect means is to be installed at a readily accessible location nearest the point of access to the service entrance conductors.
- Single throw knife switches must be installed so that if the switch falls downward, it will fall into its de-energized position (open - "off" position).
- Every electrical apparatus shall have a disconnecting means and be marked with its rating in volts and amperes or volts and watts.
- Every disconnect means shall be clearly labeled to indicate what electrical apparatus it controls.
- Disconnecting mechanisms (circuit breakers, etc.) must be used for the opening, reversing, or closing of circuits under load conditions.

5.11 Flexible Cords

- All flexible cords shall be marked SJ, SJO, SJT, SJTO, S, SO, ST, STO as required by OSHA 29 CFR 1926.



- All flexible cords will be used in conjunction with a GFCI "pigtail" in addition to the GFCI receptacles on the site.
- Flexible cords (extension cords) used with grounding-type equipment must contain an equipment grounding conductor.
- Any flexible cord that may be used in wet areas or exposed to damp, moist or wet conditions must be designed and approved for use in those locations.
- Flexible cords and cables shall not be used as a substitute for the fixed wiring of the structure, run through holes in walls, ceilings, or floors, run through doorways, windows, or similar opening, attached to building surfaces, or concealed behind building walls, ceilings or floors.
- At no time should flexible cords be spliced or taped together.
- Portable cord equipment, plug-connected equipment and flexible cord sets must be visually inspected before use on each shift for external defects and evidence of possible internal damage. These defects shall be reported to the applicable Supervisor or Crew Leader.

5.12 Grounding

- The grounded conductor of a branch circuit must be identified by a continuous white or natural gray color wire.
- The equipment grounding conductor of a branch circuit shall be identified by a continuous green color or a continuous green color with one or more yellow stripes unless the wire is bare.
- The path to ground from circuits, equipment, and enclosures shall:
 - be permanent and continuous,
 - have the capacity to conduct safely any fault current likely to be imposed on it and,
 - have sufficiently low impedance to limit the voltage to ground and to facilitate the operation of the circuit protection devices in the circuit.

5.13 Ground Fault Circuit Interrupter (GFCI)

- Ground Fault Circuit Interrupters (GFCI) shall be installed on all circuit breakers for construction power.
- A GFCI "pigtail" shall be used in conjunction with all flexible cords and cord and plug equipment, in addition to the GFCI receptacles on the site.
- Receptacle type GFCIs may be used on common neutral systems and where receptacles are more than 250 feet from the breaker.
- A GFCI polarity tester shall be used to ensure trip current values and to test the satellite receptacles downstream from the receptacle containing the GFCI.
- GFCIs shall be installed and maintained in accordance with the requirements of the National Electric Code (NEC) current edition. The system shall be tested prior to being put into service. The test results shall be documented and maintained on file in the project office.



5.14 Work Near Overhead Power Lines

- Any nonqualified person, vehicle, or mechanical equipment working in an elevated position near overhead power lines must maintain at least a 10 foot clearance (in reference to the closest conductive object near the power line) for voltages to ground of 50 kV or below and an additional 4 inches for every 10 kV over 50 kV
- Any qualified person working in the vicinity of overhead lines must maintain a distance as identified in the Work Space section of this document. Any use of conductive objects within this distance must have an approved insulated handle.
- If work is to be performed on overhead lines closer than the clearance requirements as identified under Work Space, the lines must be de-energized and grounded.

5.15 Lockout/Tagout Procedures

Whenever work on electrical equipment or services is required the electrical power source shall be de-energized, locked and tagged following these steps:

- Affix a Lockout device and tag. Each applicable authorized person and/ or subcontractor will apply his or her own lock and tag.
- Test the equipment using a voltmeter to verify the energy is isolated.
- Perform required work.
- Ensure tools and people are removed and any guards have been replaced.
- Inform Affected Employees of the removal of locks and tags.
- Remove the Lockout/Tagout device(s) and energize the equipment.

5.16 Crew or Personnel Change

Specific instruction shall be utilized during crew or personnel changes to ensure the continuity of lockout/ tagout protection, including provision for the orderly transfer of locks or tags between off-going and on-coming employees, to minimize exposure to hazards from the unexpected energization. At no point during the lockout event shall the equipment or machine be in an unlocked condition.

In situations where a lockout event will be of an extended duration, the Supervisor or Crew Leader may apply a crew lock. This crew lock will be attached to a multi-lock hasp and will remain attached for the entire duration of the lockout event. Another group lockout device that can be used is a group lock box; the crew lock will be secured at the lockout point, and its key will be placed inside a group lock box. Authorized employees will attach their personal locks to the hasp/group box when working on the machine and remove their locks at the conclusion of their shift.

5.17 Tags vs. Locks

- A tag that identifies the person responsible for de-energizing the system will be applied every time a piece of equipment is locked out.
- Tagging without locking for energy control purposes is forbidden without the written



permission of the Corporate Health & Safety Manager.

5.18 Materials and Hardware for Lockout/Tagout

- STEP shall furnish all locks, tags, hasps, or other devices for isolating and securing equipment or machines from energy sources. These devices shall be identified and used solely for the purpose of lockout/tagout.
- Each authorized employee is issued his/her own lock and key set. The individual personally issued lock is marked with the employee's name for identification purposes.

5.19 Lockout Devices Requirements

All lockout/tagout devices utilized for protection against unexpected energization or start up of the equipment or machines, or release of stored energy shall meet the following requirements:

- Lockout devices are of durable construction capable of withstanding the environment for the maximum period of time these devices are exposed.
- Lockout devices are standardized within the facility by type and color and may not be used for any other purpose.

5.20 Program Review and Revision

The Corporate Health and Safety Manager shall perform an annual assessment of this program. The assessment will address the degree and consistency of program element implementation in the workplace. The attached Program Performance Verification criteria will be utilized to conduct and document this assessment.

5.21 Disciplinary Policy

All employees are expected to adhere to the procedures given in this written program. Failure to comply will result in disciplinary action as described in the companies disciplinary action policies.

5.22 Recordkeeping

STEP shall maintain the following information:

- All employee training records will be maintained by STEP for at least two years from the last training date.

Attachment 5-1 Electrical Safety and Lockout/Tagout, Program Performance Verification

No.	Program Element	Completed √	Target Date
1.	Company has a current, fully developed company specific written Lockout/Tagout Program Approved by the Corporate Safety and Health Manager that incorporates all OSHA mandated elements.		
2.	Company's written lockout/tagout program clearly outlines the roles and responsibilities of all affected functions and individuals.		
3.	Company maintains a current documented listing of all identified "authorized personnel" at this facility who are permitted to perform lockout/tagout related work.		
4.	Company has developed a General Lockout/Tagout Procedure.		
5.	Company maintains an adequate and readily accessible inventory/supply of lockout/tagout hardware (e.g., lockout locks, tags, valve locking mechanisms, chain, cable, blocking material, group lock boxes, multiple locking hasps) to insure safe lockout at all times.		
6.	Company maintains a current inventory of lockout locks denoting who has been assigned such devices.		
7.	Lockout locks (different and distinguishable from other locks used at the company) have been identified to denote ownership.		
8.	Lockout locks are only used for lockout purposes (i.e., not for personal lockers, toolboxes, etc.).		
9.	Company does not permit the use of master keys or locks keyed alike.		
10.	Company has outlined a lock/key control, lost lock, and lock removal policy within its written program.		
11.	Company has established a policy dealing with shift change and group lockout within its written program.		
12.	Company has identified all authorized and affected individuals or groups who require lockout/tagout training.		
13.	Company has developed a documented lockout/tagout training program for all authorized and affected employees.		
14.	Company uses only trained and competent trainers for conducting lockout/tagout training.		
15.	Company conducts documented lockout/tagout training for all authorized and affected personnel on an annual basis.		
16.	New hires and temporary employees receive lockout/tagout awareness level training at the time they start work for the company.		
17.	Company conducts annually, a documented audit of its entire lockout/tagout program (i.e., review written program elements, observing authorized personnel locking out equipment, training conducted, assessing lockout inventory and hardware, etc.).		
18.	Company's written program requires each authorized person to apply their own lock and tag to each energy-isolating source (or authorized group lockbox) and maintain exclusive control of the key(s).		
19.	Company's written lockout/tagout program requires the sharing of lockout/tagout information and requirements		



**Solutions To Environmental Problems (STEP)
Electrical Safety Program and Lockout/Tagout**

No.	Program Element	Completed √	Target Date
	with outside contractors working on company.		
20.	Findings (incidents, near misses reported, deficiencies, lessons learned, worker feedback, positive observations, etc.) from documented lockout audits at company are incorporated into annual refresher lock-out/tagout training for authorized and affected persons.		
21.	Company has developed and communicated to all company employees the disciplinary policy for failure to follow established lockout/tagout procedures.		
22.	Company insures that all managers, supervisors, and/or crew leaders who oversee employees who perform authorized lockout/tagout related work attend documented lockout/tagout training.		
23.	Corporate Safety & Health Manager insures that all documentation (written program, training pro-gram/records, audits, ECPs, etc.) is maintained and readily accessible for review.		
24.	Company requires lockout be used for energy isolation, versus tagging alone. Exceptions to this rule must be reviewed and approved by the Corporate Health & Safety Manager and a procedure must be established that makes deviations to this policy as safe as locking/tagging out equipment, per OSHA standards. Employees must be trained (documented) on such procedures when established (e.g., troubleshooting energized circuit with a multi-meter by qualified persons, clearing jam-ups).		
25.	The company has trained all applicable qualified employees, and is the documentation maintained adequately?		
26.	Has electrical safety PPE and other equipment (e.g., nonconductive ladders) been purchased?		
27.	Has electrical PPE been tested (frequency and type of inspection) by an outside service and according to requirements?		
28.	Is electrical equipment over 600V in restricted access locations?		
29.	Is adequate clearance provided for electrical equipment?		
30.	Is temporary wiring being used for long-term use?		
31.	Are the general rules for electrical safe work practices followed during electrical maintenance and repair activities?		
32.	Is temporary wiring in good condition?		

Comments:

Reviewer Names:



13.0 HAZARD COMMUNICATION

13.1 Scope and Application

This program applies to all STEP employees who are, or may be exposed to hazardous materials used in the workplace. It also applies to contractors who may be exposed to STEP hazardous materials or bring hazardous materials to STEP sites or facilities.

13.2 Responsibilities

Program responsibilities are defined below for the individuals designated to ensure the proper implementation of this program.

13.2.1 Corporate H&S Manager

- Ensure all management and affected employees are aware of the Hazard Communication Program.
- Coordinate and manage the overall written Hazard Communication Program.
- Advise Management of any program deficiencies noted requiring his/her action or involvement.
- Prepare internal MSDSs as needed.
- Ensure each office's MSDS/Hazardous Material Inventory binders are kept up-to-date and made available to all employees and contractors.
- Prepare example labels and update internal MSDSs as needed.
- Archive MSDSs.
- Ensure a Program Performance Verification of the Hazard Communication Program is performed and documented at least annually.

13.2.2 Human Resources

- Maintain all training documentation.

13.2.3 Superintendent and Foreman

- Ensure all elements of the HazCom Program are effectively communicated and affected employees in their work area comply with the program elements.
- Ensure workers comply with HazCom guidelines and PPE requirements on a daily basis.
- Conduct employee HazCom training or ensure all employees attend scheduled training.
- Ensure all containers of materials in their work area are labeled.
- Provide or schedule affected employees' training.

13.2.4 Employees

- Use engineering controls, work practices, and PPE as required by company procedures



Solutions To Environmental Problems (STEP) Hazard Communication Program

and policies.

- Inform Management of any symptoms of over exposure that may possibly be related to hazardous chemicals.
- Inform Management of any missing labels on containers.
- Actively participate in all hazard communication training.

13.2.5 Contractors

- If requested, provide a copy of MSDSs to the STEP Primary Contact for all hazardous materials brought on to the property prior to them being brought on site.
- Inform their employees of the availability of STEP MSDSs.
- Ensure all subcontractors adhere to the requirements of this program.

13.3 Contractors

STEP's Contractor Safety Program is the primary vehicle for interacting with contractors at the facility, including those involving Hazard Communication. The program as applicable to Hazard Communication is summarized below:

- Prior to the initiation of work, the STEP Primary Contact for a given Contractor (or designee) will conduct and document a facility Pre-Job Safety Briefing that is unique to the work to be accomplished.
- If requested, Contractors are required to provide copies of all MSDSs to the STEP Primary Contact for all hazardous materials brought on to STEP property prior to them being brought on site.
- Contractors are required to relay information on facility hazards to their employees.
- Contractors are required to ensure all subcontractors adhere to the requirements of this program.

13.4 Hazard Determination

Raw Materials and Supplies

STEP does not intend to determine the hazards of materials purchased from suppliers and/or manufacturers, but has chosen to rely upon the evaluation of the materials performed by suppliers and/or manufacturers to satisfy the requirements for hazard determination.

Facility-Produced Materials

In the event STEP must determine the hazards of materials generated at the STEP, the hazard determination will be performed or overseen by the Corporate H&S Manager.

13.5 Hazardous Materials Inventory

A master Hazardous Materials Inventory will be developed and maintained by the Corporate H&S Manager. This list will be updated annually; the most current inventory is included as an attachment.



13.6 Labeling

All containers of hazardous materials must be either being used by the individual that recently (i.e., that shift) transferred the material, or it must be labeled. It is the responsibility of the employee using a material that the label is present.

Materials in Original Containers

If labels on original containers are found to be inadequate, defaced, or otherwise unacceptable, the material will be held until the Corporate H&S Manager has determined whether the material will be accepted, and if it will, what label is to be applied.

Secondary Containers/Replacement Labels

All containers that meet the following criteria are considered to be secondary containers:

- not the original container, or the label for the original container is deficient, defaced, or otherwise inadequate; and
- to be used by more than one person on a single shift or by one or more employees over multiple shifts.

All secondary container labels must be completed and the label applied prior to transfer of the material into the container. The Corporate H&S Manager will develop example laminated labels for the most common secondary containers in the facility, and will place these examples in the local MSDS books.

If a container has been used previously, the original label must be removed or defaced so that only one hazard label is on the container at one time.

13.7 Material Safety Data Sheets

MSDSs for all hazardous material to which employees are or may potentially be exposed will be obtained and made readily available to all employees. Original MSDSs will be maintained in an office-specific MSDS Binder. MSDSs will be kept current to a maximum date from receipt of five years. The Corporate H&S Manager will be responsible for ordering new MSDSs for existing materials.

Archiving MSDSs

If a material is no longer used or present at the facility, the MSDS will be archived in a location or file designated for that purpose. Typically, these materials are identified during the annual Hazardous Materials Inventory update. The archive date of the MSDS will be marked in ink on the first page of the MSDS, and the archived MSDS will be retained for 30 years.

STEP-Generated MSDSs

If a project must generate an MSDS, the Corporate Safety & Health Manager will generate the MSDS. All internally-produced MSDSs must be updated by the Corporate Safety & Health Manager at least every three years.



Solutions To Environmental Problems (STEP) Hazard Communication Program

13.8 Employee Information and Training

The Superintendent or Foreman will arrange for employee information and training of existing hazardous materials at the time of initial assignment and whenever a new hazardous material is introduced into the work area. Employees will be trained in accordance with the outline in Attachment 13-3.

13.9 Hazards from Non-Routine Tasks

Periodically, employees are required to perform non-routine tasks with hazardous materials. Prior to starting work on such projects, each affected employee will be given information by their superintendent about hazards to which they may be exposed during such an activity. The Corporate Safety & Health Manager may be consulted for a determination of potential hazards if not immediately apparent.

13.10 Program Review and Revision

This program will be reviewed at least annually by the Corporate Safety & Health Manager and will be revised to reflect any changes in procedures or best management practices. The assessment will address the degree and consistency of program element implementation in the workplace. The attached Program Performance Verification (PPV) criteria will be utilized to conduct and document this assessment. The Corporate Safety & Health Manager will be responsible for ensuring the conduct of the review and incorporation of any revisions. The latest PPV will be retained by the Corporate Safety & Health Manager.

13.11 Disciplinary Policy

All employees are expected to adhere to the procedures given in this written program. Failure to comply will result in disciplinary action as described in STEP's disciplinary policies.

13.12 Record Keeping

The individuals or departments listed below shall maintain the following information:

- All employee training records will be maintained by Human Resources at least two years from the last training date.
- All contractor safety information will be retained by the responsible person as stipulated in the Contractor Safety Program.
- The latest Program Performance Review and latest Hazardous Material Inventory will be retained by the Corporate H&S Manager.
- Original and archived MSDSs will be maintained by the Corporate H&S Manager.



**Solutions To Environmental Problems (STEP)
Hazard Communication Program**

Attachment 13-1 Hazard Communication, Program Performance Verification

Reviewer Names: _____

Date: _____

Hazard Communication Program	YES	NO
1. Is a written Hazard Communication Program complete and representative of the current organizational structure?		
2. Is the Hazardous Material Inventory maintained and updated at least annually to reflect products currently in use (updated in last 12 months)?		
3. Is there an MSDS for each chemical listed in the Hazardous Material Inventory?		
4. Are employees working with chemicals trained on how to protect themselves, recognize, and react to overexposure or spill?		
5. Is training documented?		
6. Are all secondary use containers labeled in accordance with the written Hazard Communication Program?		
7. Are contractors required to provide information on chemicals they plan to bring to the facility / site prior to doing so?		

Comments:



**Solutions To Environmental Problems (STEP)
Hazard Communication Program**

Attachment 13-2 Hazardous Materials Inventory

Material	How Used	Comments

Page ____ of ____



Solutions To Environmental Problems (STEP) Hazard Communication Program

Attachment 13-3 Employee Information and Training

This training outline specifies the STEP procedure for Superintendents and Foremen to use to provide hazard communication training to the employees assigned to their work teams. To meet the training required by 29 CFR 1910.1200(h), all employees will receive the following information.

1.0 A review of the basic elements and requirements of hazard communication

A review of the company's Hazard Communication Program, including identifying the Corporate H&S Manager. This includes a discussion of the key elements of the OSHA Hazard Communication Standard 29 CFR 1910.1200, including:

- identification of hazardous chemicals used in the facility (or on site) and processes that may produce health or physical hazard exposures to personnel;
- availability of MSDSs for chemicals purchased and used in the facility / site and all processes where exposure to personnel may occur;
- provision of labels, signs, MSDSs, and process instructions to adequately warn of potential or known hazards;
- the training program for all affected employees;
- records retention; and
- periodic program periodic reviews and update procedures.

2.0 Operations or processes where exposures can occur and the hazardous chemicals that are used in the operation/process.

A discussion of each applicable each operation/process, along with a review of the applicable hazards, each hazardous chemicals in use. The Hazardous Material Inventory and appropriate MSDSs for each chemical will be reviewed or referenced. The following information is to be provided to the employees:

- name of hazardous chemicals used in applicable processes;
- controls in effect to limit exposures (e.g., engineering controls, workplace practices, personal protective equipment); and
- means by which the presence or release of hazardous materials can be detected (e.g., spills, industrial hygiene monitoring, direct-treading instruments, smells).

3.0 Location of documents related to hazard communication, including the following:

- Company Hazard Communication Program - Location of the program and the employee's right to review the written program at any time.
- Hazardous Material Inventory – Including the location of the inventory.
- Material Safety Data Sheets (MSDSs) – Including the location and availability for each hazardous material in use. An example MSDS will be reviewed, section by section, and instructions on interpreting the MSDS is to be given. All workers must know where the MSDSs are located and that all MSDSs are available for review as needed.



15.0 PERSONAL PROTECTIVE EQUIPMENT PROGRAM

15.1 Scope and Application

The PPE Program applies to all workers who will wear PPE as part of the overall injury and illness prevention process. Although engineering controls are generally preferred to PPE, these may not be reasonable, feasible, or practical. PPE use then becomes a necessary and effective control method. The goal is to eliminate exposures through inhalation, ingestion and absorption and to minimize PPE use. PPE is good only if properly selected and used. Improper selection or use can lead to diminished protection and injury. Proper PPE selection and use requires a high degree of personal responsibility. Competent people and training will be provided to assist with proper PPE selection and use. It is everyone's responsibility to properly wear the correct PPE. The STEP PPE Program will be reviewed annually and updated as needed.

15.2 Responsibilities

Responsibilities are defined by individual below.

15.2.1 Corporate H&S Manager

- Provide all materials and equipment required for effective implementation of this program.
- Provide guidance in the selection of appropriate PPE.
- Perform a documented Program Performance Verification of the program at least annually.

15.2.2 Superintendent and Forman

- Evaluate compliance with this program during weekly safety inspections.
- Discuss and document personal protection concerns during safety meetings.
- Ensure that only approved PPE is purchased and used.
- Ensure implementation of the Personal Protective Equipment program.

15.2.3 Employees

- Adhere to all requirements of the PPE Program.
- Inspect all PPE prior to use and obtain new PPE when damaged or defective.

15.2.4 Subcontractors

- Adhere to all requirements of the PPE Program.
- Inspect all PPE prior to use and obtain new PPE when damaged or defective.



Solutions To Environmental Problems (STEP) Personal Protective Equipment Program

15.3 Hazard Assessment

A survey of each work area will be conducted by the site Superintendent and Foreman. The purpose of the survey is to identify all potential hazards associated with the operations/tasks that are present on the jobsite. Once the hazards have been identified, the superintendent will make recommendations regarding PPE needs for the operation. The PPE Hazard Assessment Worksheet is included as an attachment and will be used for assessing each task.

15.4 General PPE Requirements

- Hard hats - shall be worn at all times on site. Hard hats are to be worn with the bill in front, except for welders who are actively welding. All hard hats must meet ANSI Z89.1 and contain labeling satisfying this requirement.
- Safety Glasses - shall be worn at all times when there is a potential exposure to flying projectiles. All safety glasses must meet ANSI Z87.1 and contain labeling satisfying this requirement. Goggles or a face shield over safety glasses are compulsory when drilling, burning, chipping, grinding, gas welding, grouting and where otherwise required by your foreman.
- Foot wear- no sandals, opened toed shoes, tennis shoes or look a likes will be allowed. Only good repairable type work boots or shoes.
- Harness and Lanyards - shall be used when fall potential is six feet or more above the ground. More specific requirements for fall protection PPE is contained within the STEP Fall Protection Program.
- Shirts - with at least 4 inch sleeves are to be worn at all times by all personnel while on a company site. Shorts, tank tops, loose or torn clothing will not be permitted.
- Finger rings and wristwatches - are a constant hazard and all employees are encouraged to remove them while working. No jewelry permitted when performing electrical work.
- Welding hoods - are mandatory for all arc welders and safety spectacles must be worn under the hood.
- Gloves – shall be worn when handling material with sharp or rough edges or as directed by your Supervisor.
- Respiratory Protection – Respirator use is covered under the Respiratory Protection Program.

15.5 Purchasing Of New PPE

When new job tasks or processes require new PPE, only approved equipment may be purchased. Most PPE purchased from safety suppliers is approved for intended use. Refer to specific OSHA and consensus standards (NIOSH, ANSI).

15.6 Employee Information and Training

Employees must receive training initially. Retraining must be conducted when work processes change; types of PPE are changed; or when there is reasonable belief that employees have not retained the requisite understanding of the above requirements. The training should contain the



following content:

- When PPE is necessary;
- What PPE is required;
- How to properly don, doff, adjust and wear PPE;
- Limitations of the PPE; and
- The proper care, maintenance, useful life and disposal of PPE.

15.7 Medical Evaluations

Medical evaluations may be necessary for specific types of PPE (e.g., respirators). The Corporate Safety & Health Manager shall establish which employees are to be included in medical surveillance, as well as the nature of the medical surveillance.

15.8 Program Review and Revision

The Corporate Safety & Health Manager shall perform an annual assessment of this program. The assessment will address the degree and consistency of program element implementation in the workplace. The attached Program Performance Verification criteria will be utilized to conduct and document this assessment.

15.9 Disciplinary Policy

All employees are expected to adhere to the procedures given in this written program. Failure to comply will result in disciplinary action as described in STEP's disciplinary policies.

15.10 Record Keeping

Human Resources shall maintain an accurate record of the following information:

- All employee medical records shall be retained for the duration of the affected employee's employment plus thirty years.
- The most current employee training records.
- Incident Forms will be maintained for five years.



Solutions To Environmental Problems (STEP)
Personal Protective Equipment Program

Attachment 15-1 Personal Protective Equipment, Program Performance Verification

Location: _____

Review Date: _____

No.	Program Element	Status	
		Complete (√)	Target Date
1.	The Corporate S&H Manager has been appointed and trained to oversee the administration of this program.		
2.	Is only approved PPE purchased for use?		
3.	Have employees been trained in the use and care of PPE?		
4.	Have hazard assessments been conducted for all job tasks?		
5.	Are visitors supplied with required PPE?		
6.	Is defective PPE removed from service promptly and replaced?		
7.	Are all employees and subcontractors wearing the required minimum PPE?		

Comments:	Reviewer Names:



Solutions To Environmental Problems (STEP)
Personal Protective Equipment Program

Attachment 15-2 PPE Hazard Assessment Worksheet

Location: _____	Date: _____
Job Task: _____	Assessor: _____
Check All That Apply	
Comments / PPE Required	
Hand Protection	PPE TO BE USED:
Cuts ☐	Abrasions ☐
Hot ☐	Cold ☐
Wet Work ☐	Dry Work ☐
Chemical ☐	Vibration ☐
Foot Protection	PPE TO BE USED:
Object weight _____ lbs.	
Sharp Objects in area ☐	
Eye Protection/ Face Protection	PPE TO BE USED:
Impact Only ☐	Safety glasses with side shields
Chemical Splash ☐	Goggles/Face Shield
Welding, Sparks, Grinding ☐	Safety glasses & face shields
Head Protection	PPE TO BE USED:
Possible injury/falling object ☐	
Contact w/ electrical hazards ☐	
Body	PPE TO BE USED:
Protective Clothing ☐	
Apron ☐	
Hearing Protection	PPE TO BE USED:
Plugs ☐	
Apron ☐	
Respiratory Protection	PPE TO BE USED:
Disposable (Dust Mask) ☐	
Cartridge Type and Changeout Frequency: _____	
Other: _____	



7.0 TOOL BOX SAFETY MEETINGS

7.1 Scope and Application

The scope of the Tool Box Safety Meetings is to ensure proper instruction is provided for employees in the recognition and avoidance of unsafe work practices or conditions. Tool Box Safety Meetings will also provide information on the safety regulations and STEP safety program requirements that apply to their work environment. This program is applicable to all STEP employees and subcontractors.

7.2 References

STEP Tool Box Safety Meeting Manual, and OSHA 29 CFR 1926.21.

7.3 Responsibilities

Program responsibilities are defined below for the individuals designated to ensure that Tool Box Safety Meetings are properly conducted and documented.

7.3.1 Corporate Safety & Health Manager

- Ensure all management and affected employees are aware of the requirement to conduct Tool Box Safety Meetings on a weekly basis.
- Provide all materials and hardware for effective presentation and documentation of the Tool Box Safety Meetings and ensure they are properly utilized and maintained.
- Periodically review worksites to ensure meetings are being properly conducted and documented.

7.3.2 Superintendent, Foreman, Project Manager

- Be knowledgeable of Tool Box Safety Meeting requirements.
- Acquire a Tool Box Safety Meeting manual from the Corporate Safety Manager
- Prepare for and present the weekly safety meetings to STEP field crews and subcontractors.
- Ensure safety meetings are properly documented.
- Ensure all affected employees and subcontractors attend weekly safety meetings.

7.3.3 Employees

Employees actively participate in the weekly Tool Box Safety Meetings and adhere to the safety instruction provided.



7.4 Safety Meeting Preparation, Presentation and Documentation

7.4.1 Safety Meeting Preparation

- The Corporate Safety & Health Manager will furnish the STEP Supervisors with a copy of the STEP Tool Box Safety Meeting manual.
- The Tool Box Safety Meeting manual provides fifty-two (52) suggested construction safety topics, which are organized into twelve tabs, corresponding to each month of the year. You are not required to use the suggested topics, but you are required to hold a toolbox meeting each week.
- Preparing for a toolbox safety meeting can be as elaborate or as brief as needed, based on the topic you are presenting. In general, a toolbox safety meeting is defined as a short safety-training meeting with employees, usually on Mondays at the start of the shift.
- After selecting the meeting topic, you should determine if you need any visual aids or other reference material to present the meeting. You may also need to review relevant OSHA standards or STEP Corporate Safety Program documents to supplement the standardized Toolbox Safety meeting material.

7.4.2 Safety Meeting Presentation

- When you conduct the safety meeting, it is best to include only those employees who need the information. For example, for a talk on operating heavy machinery, you would probably only include operators, not everyone on the jobsite. But for a talk about working in areas where heavy equipment is operating, you may include many more workers from the site, perhaps even all of them.
- Introduce each toolbox talk by explaining why you selected the topic, as well as how it applies to them. You need to project your commitment, concern, and interest in the safety program.
- Toolbox safety meetings are also an excellent time to discuss specific jobsite hazards, past accident, and employee safety concerns. After reviewing the topic selected for the week, you will then address the following four topics:
 1. Accident Investigations – Review of any recent accident investigations from any accidents with injuries/illnesses or near misses, which may have happened on this project or similar project environment.
 2. Job Hazards – Review of any site-specific safety hazards identified as part of the site Hazard Assessment or through conduct of site safety inspections.
 3. Old Business – Review of any safety issue or concerns that may have been raised by employees at a previous safety meeting or during the course of the project.
 4. New Business – Open the floor for questions or comments on the main topic, site-specific hazards, or any other safety issues that employees would like to share.

7.4.3 Safety Meeting Documentation

The STEP form for documentation of the Toolbox Safety meeting is included as an attachment to



Solutions To Environmental Problems (STEP)

Tool Box Safety Meetings

this program. This form documents the names of the employees who attended, the companies represented, date, location, topic, and provides space to document the site-specific hazard information discussed. The Toolbox Safety meeting form should be completed for each meeting and maintained with other documentation for that project.

7.5 Program Review and Revision

The Corporate Safety & Health Manager shall perform an annual assessment of this program. The assessment will address the adherence to program requirements and the overall effectiveness of the Toolbox Safety meetings. The attached Program Performance Verification criteria will be utilized to conduct and document this assessment.

7.6 Disciplinary Policy

All employees are expected to adhere to the procedures given in this written program. Failure to comply will result in disciplinary action as described in STEP's disciplinary action policies.

7.7 Recordkeeping

All Toolbox Safety meeting records will be maintained in project files for at least two years from the project completion date.

[illegible]



Solutions To Environmental Problems (STEP)
Tool Box Safety Meetings

Attachment 7-2 Tool Box Safety Meetings, Program Performance Verification

Reviewer
Names:

Date:

Toolbox Safety Meeting Program	YES	NO
1. Does the Superintendent have a Tool Box Safety Meeting Manual?		
2. Is the Superintendent aware of Tool Box meeting requirements?		
3. Does documentation exist for Tool Box Safety meetings?		
4. Are Tool Box meeting forms being completed properly?		
5. Do interviewed employees reveal that meetings occur?		
6. Do interviewed employees feel that the meetings are effective?		
7. Is site-specific information (Job Hazards, Old Business, etc.) also reviewed?		

Comments: