

RCRA CONTINGENCY PLAN & EMERGENCY RESPONSE PROCEDURES for TX Solid Waste Registration No. 66137 EPA Generator ID No. TXD980812168

November 2005 Updated August 2007 Updated November 2009 Updated October 2012 Updated July 2018

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1.0 PURPOSE

The Resource Conservation & Recovery Act (RCRA) Contingency Plan and Emergency Response Procedures) has been prepared for Texas State University (hereinafter referred to as "University) to comply with federal regulations as required by 40 CFR 265 Subpart C (Preparedness and Prevention) and 40 CFR 265 Subpart D (Contingency Plan). The federal regulations are incorporated by reference in Title 30 of the Texas Administrative Code (TAC) 30 TAC §335.112(a). This plan describes the actions that University personnel will take in response to fires, explosions, or any planned or unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the Container Accumulation Areas (CAA).

2.0 Introduction

2.1 FACILITY DESCRIPTION

Texas State University is an Emerging Research University located at 601 University Drive in San Marcos, Texas. The University is the fifth largest public university in the state with a student population of more than 38,000. **Figure 2.1** provides an area map showing the University's location. Details concerning the location and general operations for the University are in **Table 2.1**.

Hazardous wastes generated at the University include: acids, bases, oxidizers, spent halogenated and non-halogenated solvents, lab packs, photographic wastes and aqueous solutions of heavy metals and other inorganics, primarily from research and education activities in campus laboratories and studios. Other wastes that are managed includeUniversal Waste lamps, batteries, mercury thermostats, paint waste and waste oil primary generated by campus facilities maintenance shops.

The University operates two RCRA-permit exempt Container Accumulation Areas (CAAs) for management of hazardous waste. The CAAs do not require a RCRA permit because they are used to store waste for less than 90 days. The CAAs on campus are located in the service yard of the Roy F. Mitte Building and Room 205 of the Chemistry Building (see **Figure 2.2**)

2.2 SOURCES OF HAZARDOUS WASTE GENERATION

Hazardous wastes are generated as a result of teaching, research and operational activities at the University. The University is responsible for proper handling and ultimate disposal of hazardous wastes from the CAA. This responsibility is executed by the Environmental Health Safety and Risk Management Office (EHSRM). Hazardous wastes are generated at the following departments:

Facilities (Physical Plant) Shops and	Engineering and Technology/Ingram
Garage	School of Engineering
Print Shop	Edwards Aquifer Research and Data
<u>'</u>	Center
Art Department and Photo Labs	Theater/Performing Arts
Chemistry and Biochemistry	Family and Consumer Science
	LBJ Student Center
Biology	Residence Life Shops
Physics	Health Professions
Agriculture	Utility Plants
	Campus Recreation

These departments accumulate waste in Satellite Accumulation Areas (SAA). The satellite accumulation areas can store up to 55 gallons of hazardous waste before being moved to 90-day Container Accumulation Area.

The satellite accumulation areas are listed on Table 2.2 and shown on Figure 2.3.

Table 2.1 Facility Description

GENERAL DATA

Facility Name:

Texas State University

Facility Address:

601 University Drive

San Marcos, Texas 78666

Owner Address:

Same

Telephone:

512/245-3616 (Environmental Health, Safety & Risk

Management)

Primary NAICS Code:

61131

EPA I.D. No.:

TXD980812168

Solid Waste Reg. No.:

66137

FACILITY LOCATION

County/State:

Hays County, Texas

Latitude:

29.8888216 N (Co

(Container Accumulation Area)

Longitude:

97.9469765 W (Container Accumulation Area)

Map:

Figures 1.1, 1.2

Landside directions:

From the intersection of IH-35 and Aquarena Springs Drive (Exit 206), travel west on Aquarena Springs to the intersection of Sessoms Drive. Turn right onto Sessoms Drive and follow it to Comanche St. Turn left on Comanche and turn right into the first parking lot (service yard) of the Roy F. Mitte building located on the right. The Container Accumulation Area 007 is located on the east side of the service yard near Comanche.

From the intersection of IH-35 and Aquarena Springs Drive (Exit 206), travel west on Aquarena Springs to the intersection of Sessoms Drive. Turn right onto Sessoms Drive and left on North LBJ through the campus main gate. Left on Pleasant and right on State St. Follow to breezeway on right.

Container Accumulation Area 008 is located in Chemistry 205.

Table 2.1 Facility Description (cont'd)

GENERAL OPERATION

Description Of Operation:

This is a State-supported public university offering undergraduate, graduate, and post-doctoralprograms.

Products Handled:

Diesel, Sulfuric Acid, Laboratory Chemicals

Note: Safety Data Sheets are maintained by each department using chemicals.

Hazardous Wastes Handled:

• Spent acids, bases, solvents, inorganic metals in aqueous solutions, photographic waste, and universal wastes such as batteries, bulbs, mercury thermostats, and paints. Also manages waste oil, antifreeze and automobile batteries.

PHYSICAL DESCRIPTION - Container Accumulation Area (NOR 007)

Operation: Less than 90-day Container Accumulation Area for

containerized waste.

Location: East side of the Roy F. Mitte building service yard, facing

Comanche St.

Size: $40 \text{ feet x } 12 \text{ feet x } 9 \text{ feet } (L \times W \times H).$

Discharge Prevention: The containment building provides secondary containment for

spills that might occur within the building. The floor consists of a rectangular grate covering a sump that is lined with HDPE

synthetic liner. The floor sump is designed to store the

maximum inventory within the building.

Table 2.1 Facility Description (cont'd)

PHYSICAL DESCRIPTION - Container Accumulation Area (NOR 008)

Operation: Less than 90-day Container Accumulation Area for

containerized waste.

Location: Room 205 of the Chemistry Building.

Size: 22 feet x 25 feet x 20 feet (L x W x H).

Discharge Prevention: This room is designed like a vault. There are no floor drains

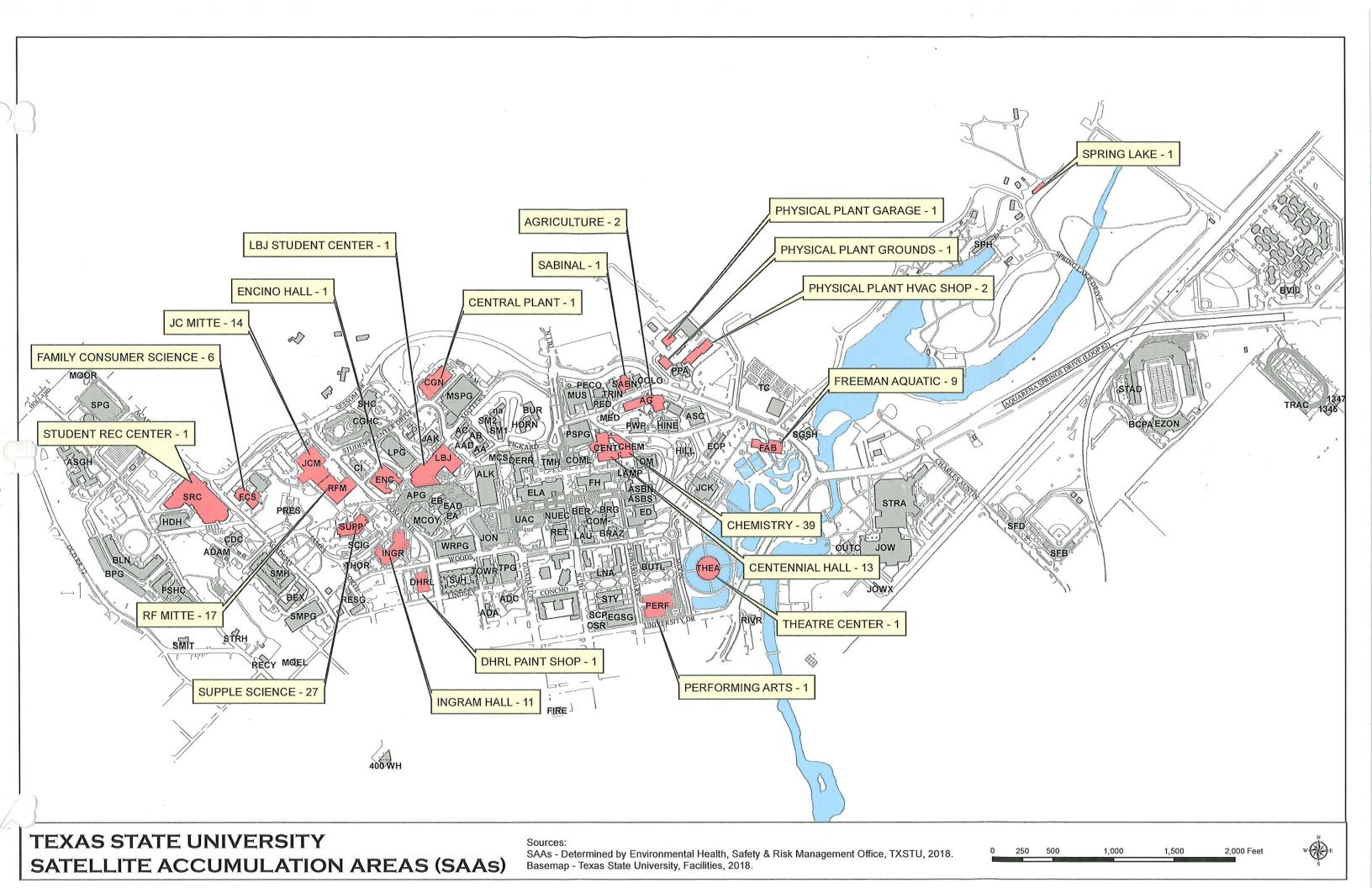
and it is has a fire suppression system.

Table 2.2 Satellite Hazardous Waste Accumulation Areas Texas State University

Generating department	Building and address
1. Facilities (Physical Plant) Shops and	Physical Plant Garage
Garage	151-5 Sessoms Drive
	San Marcos, Texas 78666
2. Print Shop	1727 Ranch Road 12
1	San Marcos, Texas 78666
3. Art Department	Joann Cole Mitte Art
	749 Comanche Street
	San Marcos, Texas 78666
	Sabinal Hall (photography) 205 Pleasant Street San Marcos, Texas 78666
4. Chemistry and Biochemistry	Chemistry/Centennial Hall
· ·	202 Old Main Dr. /120 Old Main Dr.
	San Marcos, Texas 78666
5. Aquatic Biology	Freeman Aquatic Biology
. 50	220 E. Sessom Drive
	San Marcos, Texas 78666
6. Biology	Jerome & Catherine Supple Science
	Building
	310 Vista Drive
	San Marcos, Texas 78666
7. Physics	Roy F. Mitte
·	749 Comanche Street
	San Marcos, Texas 78666
8. Agriculture	Agriculture
	206 Pleasant Street
	San Marcos, Texas 78666
9. Engineering Technology	Roy F. Mitte Room 2240E Office
	749 Comanche Street
	San Marcos, Texas 78666
10. Ingram School of Engineering	Roy F. Mitte Room 2240E Office
	749 Comanche Street
	San Marcos, Texas 78666

Table 2.2 Satellite Hazardous Waste Accumulation Areas Texas State University

Generating department	Building and address
11.Edwards Aquifer Research and Data	Freeman Aquatic Biology
Center	220 E. Sessom Drive
Center	
12. Theater	San Marcos, Texas 78666
12. Theater	Theater
	430 Moon Street
	San Marcos, Texas 78666
13. Performing Arts Center	Performing Arts Center
·	405 Moon Street
	San Marcos, Texas 78666
14. LBJ Student Center	LBJ Student Center
,	301 Student Center Drive
	San Marcos, Texas 78666
15. Family and Consumer Science	Family and Consumer Science
	245 W. Sessoms Dr.
	San Marcos, Texas 78666
16. Residence Life Shops	Dept. of Housing and Residential Life
. *	515 North Comanche
	San Marcos, Texas 78666
17. Health Professions Building	Health Professions Building
	712 N. Comanche
	San Marcos, Texas 78666
18. Central Utility Plant (formally	Central Utility Plant
referred to as CoGen)	150 Buckner St.
,	San Marcos, Texas 78666
	2 01140 7 0000
19. Ingram Hall Engineering and Science	Ingram Hall Engineering Building and
Building	Science Building
	310 West Woods
·	San Marcos, TX 78666
· .	





Campus Satellite Accumulation Area Locations

PI/SAA Manager Name	Dept	Building Name	Building Code	Lab Room Number
Dr. Ken Mix	Agriculture	AG	718	102
Dr. Elizabeth Benavides	Agriculture	AG	718	211
Dr. Gary Beall	Chemistry & Biochemistry	CENT	505	339
Dr. Gary Beall	Chemistry & Biochemistry	CENT	505	341
Dr. Jennifer Irvin	Chemistry & Biochemistry	CENT	505	342
Dr. Betancourt	Chemistry & Biochemistry	CENT	505	343
Dr. Debra Feakes	Chemistry & Biochemistry	CENT	505	344
Dr. Todd Hudnall	Chemistry & Biochemistry	CENT	505	347
Dr. Karen Lewis/Wendi David	Chemistry & Biochemistry	CENT	505	401
Dr. Xiaoyu Xue	Chemistry & Biochemistry	CENT	505	406A
Dr. Sean Kerwin	Chemistry & Biochemistry	CENT	505	407
Dr. Steve Whitten	Chemistry & Biochemistry	CENT	505	408
Dr. Ron Walter	Chemistry & Biochemistry	CENT	505	417
Mikki Boswell	Chemistry & Biochemistry	CENT	505	418
Markita Savage	Chemistry & Biochemistry	CENT	505	421
Dr. William Hoffman	Chemistry & Biochemistry	CHEM	783	103
Rachel Bower	Chemistry & Biochemistry	CHEM	783	106
Rachel Bower	Chemistry & Biochemistry	CHEM	783	109
Rachel Bower	Chemistry & Biochemistry	CHEM	783	110
Rachel Bower	Chemistry & Biochemistry	CHEM	783	117
Dr. Kevin Lewis	Chemistry & Biochemistry	CHEM	783	219
Dr. Kevin Lewis	Chemistry & Biochemistry	CHEM	783	220
Rachel Bower	Chemistry & Biochemistry	CHEM	783	221
Dr. Liqin Du	Chemistry & Biochemistry	CHEM	783	222
Dr. Kevin Lewis	Chemistry & Biochemistry	CHEM	783	225
Rachel Bower	Chemistry & Biochemistry	CHEM	783 '	226
Rachel Bower	Chemistry & Biochemistry	CHEM	783	229
Rachel Bower	Chemistry & Biochemistry	CHEM	783	232
Dr. Bill Brittain	Chemistry & Biochemistry	CHEM	783	240
Dr. Bill Brittain	Chemistry & Biochemistry	CHEM	783	244
Dr. Chris Rhodes	Chemistry & Biochemistry	CHEM	783	320
Dr. Alexander Kornienko	Chemistry & Biochemistry	CHEM	783	323
Dr. Ji/ Rachel Bower	Chemistry & Biochemistry	CHEM	783	327



Dr. Chris Rhodes	Chemistry & Biochemistry	CHEM	783	330
Dr. Chang Ji	Chemistry & Biochemistry	CHEM	783	333
Dr. Benjamin Martin	Chemistry & Biochemistry	CHEM	783	344
Rachel Bower	Chemistry & Biochemistry	CHEM	783	107/108
Rachel Bower	Chemistry & Biochemistry	CHEM	783	111/112
Rachel Bower	Chemistry & Biochemistry	CHEM	783	115/116
Roy Eastwood	Utilities Operations	COGEN	817	
Jesse Diaz	Residence Life	DHRL	941	Paint Shop
Dr. David Huffman	Biology	FAB	768	136
Dr. Astrid Schwalb	Biology	FAB	768	208
Dr. Timothy Bonner	Biology	FAB	768	220
Dr. Nowlin/Dr. Schwartz	Biology	FAB	768	258
Dr. Mar Huertas Pau	Biology	FAB	768	110C
Dr. David Huffman	Biology	FAB	768	104
Joe Guerrero (EARDC)	Biology	FAB	768	248
Dr. Jessica Dutton	Biology	FAB	768	260
Joe Gurrero	Biology	FAB	768	268
Dr. Gwendolyn Hustvedt	Interior Design	FCS	756	154
Dr. Mira Ahn	Interior Design	FCS	756	205
Dr. Christopher Jenney	Nutrition & Foods	FCS	756	287M
Dr. Krystle Zuniga	Nutrition & Foods	FCS	756	296A
Dr. Michelle Lane	Nutrition & Foods	FCS	756	287E
Dr. Roman Salcedo Price	Nutrition & Foods	FCS	756	287L
Dustin Olivo	Campus Recreation	Meadows		Maint Barn
Dr. Rodney Rohde	Health Professions	НРВ	824	336
Dr. Shannon Weigum	Biology	INGRAM	990	5201
Dr. Hong-Gu Kang	Biology	INGRAM	990	5203
Dr. Nihal Dharmasiri	Biology	INGRAM	990	5205
Dr. Robert McLean	Biology	INGRAM	990	5104
Dr. Dittmar Hahn	Biology	INGRAM	990	5112
Dr. Dana Garcia	Biology	INGRAM	990	5002
Dr. Jitendra Tate	Engineering Tech	INGRAM	990	1308
Dr. Maggie Chen	Engineering Tech	INGRAM	990	2306D
Dr. Bahram Asiabanpour	Engineering Tech	INGRAM	990	1201C
Dr. Bahram Asiabanpour	Engineering Tech	INGRAM	990	1302
Dr. Qingkai Yu	Physics	INGRAM	990	2306A
Caprice Perucci	Art & Design	JC MITTE	846	1124
Beverly Penn	Art & Design	JC MITTE	846	1126
Sterling Allen	Art & Design	JC MITTE	846	1128



Jules Buck Jones	Art & Design	JC MITTE	846	1130
Jonathan Faber	Art & Design	JC MITTE	846	2115
Joey Fauerso	Art & Design	JC MITTE	846	2119
Holly Veselka	Art & Design	JC MITTE	846	2120
Randall Reid	Art & Design	JC MITTE	846	2131
Thomas Fitzpatrick	Art & Design	JC MITTE	846	4105
Jeffrey Dell	Art & Design	JC MITTE	846	4112
Elvia Perrin	Art & Design	JC MITTE	846	4113
Margo Handwerker	Art & Design	JC MITTE	846	1104-A
Jeffrey Dell	Art & Design	JC MITTE	846	4112-B
Dave Rader	Student Center	LBJ	840	Loading Dock
Anne McMeeking	Performing Arts	PAC	866	Loading Dock
Mike Burkepile	Facilities Shops	Phys Plant	777	AC Shop
Karl Randow	Facilities Shops	Phys Plant	777	Garage
Mike Machado	Facilities Shops	Phys Plant	777	Paint Shop
Nathan Lawrence	Facilities Shops	Phys Plant	777	Grounds
Collin Payne	Engineering Tech	RFM	845	1210
		RFM	845	1220
Dr. David Hanzel	Engineering Tech	RFM	845	1223
Vacant	Shared Research Operations	RFM	845	2210
Vacant		RFM	845	4237
Dr. Alexander Zakodav	Physics	RFM	845	2206
Dr. Edwin Piner	Physics	RFM	845	2226
Shared Lab - Physics	Physics	RFM	845	2234
Nate England	Shared Research	RFM	845	1236
Dr. In-Hyouk Song	Engineering Tech	RFM	845	4235
Vacant		RFM	845	1218
Dr. Federico Aguayo	Engineering Tech	RFM	845	1225B
Dr. Soon-Jae Lee	Engineering Tech	RFM	845	1225D
Dr. Bahram Asiabanpour	Ingram	RFM	845	1235
Dr. Casey Smith	Physics	RFM	845	1246 (clean room) 1246
Dr. Casey Smith	Physics	RFM	845	(gowning room)
Megan Roche	Art & Design	SABINAL	737	109
Jonathan Hernandez	Campus Recreation	SRC	825	Loading Dock
VACANT	Biology	SUPPLE	818	155
VACANT	Biology	SUPPLE	818	159
Dr. Clay Green	Biology	SUPPLE	818	176



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Dr. Hugo Pedrozo	Biology	SUPPLE	818	227
Dr. Carolyn Pesthy	Biology	SUPPLE	818	233
Dr. Shobhit Sharma	Biology	SUPPLE	818	239
Dr. Michael Forstner	Biology	SUPPLE	818	270
Dr. Michael Forstner	Biology	SUPPLE	818	283
Dr. Michael Forstner	Biology	SUPPLE	818	288
Dr. Garland Upchurch	Biology	SUPPLE	818	313
VACANT	Biology	SUPPLE	818	324
John Word	Biology	SUPPLE	818	331
VACANT	Biology	SUPPLE	818	352
Dr. Robert McLean	Biology	SUPPLE	818	357
Dr. Robert McLean	Biology	SUPPLE	818	363
Dr. David Rodriguez	Biology	SUPPLE	818	370
Dr. David Rodriguez	Biology	SUPPLE	818	374
VACANT	Biology	SUPPLE	818	377
VACANT	Biology	SUPPLE	818	385
Dr. Shobhit Sharma	Biology	SUPPLE	818	415
Dr. Shobhit Sharma	Biology	SUPPLE	818	429
Dr. Erica Nierth	Biology	SUPPLE	818	422
VACANT	Biology	SUPPLE	818	437
VACANT	Biology	SUPPLE	818	439
Dr. Francis Horne	Biology	SUPPLE	818	448
Alissa Savage	MSEC	SUPPLE	818	171
Erin Kehr	Performing Arts	Theater		Shop

3.0 AGREEMENTS WITH LOCAL SERVICE PROVIDERS

The University will distribute to the local service providers a copy of this plan and request a written agreement to provide service to the University. If agreements are secured from the local service providers, they will be maintained at the EHSRM and the University Police Department (UPD). A refusal to provide services will also be kept in the EHSRM and UPD along with copies of contracts with emergency response contractors and equipment suppliers.

The local hospital will be advised on the properties of the hazardous wastes managed at the university (Attachment B) and the potential injuries or illnesses that could result from fires, explosions or releases at the facility. In general, the waste streams consist of a combination of many chemicals; thus, SDS sheets do not exist for these mixtures. Each department maintains copies of individual SDSs for chemicals used in their area. The department contacts and Waste Analysis Plan (WAP) will be consulted to determine the specific constituents possible in a waste stream if a release occurs. Copies of the WAP are on file in the EHSRM.

Chemicals needing special attention (e.g., hydrofluoric acid, ethidium bromide) will have a section in **Attachment B** with specific first aid procedures.



Local Emergency Planning Committee (LEPC) Attn: Mr. Ken Bell, Fire Marshall 630 E. Hopkins San Marcos, Texas 78666

Risk Management and Safety

Office of

601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University - San Marcos

Contingency Plan and Emergency Response Procedures

Dear Mr. Bell:

As part of the teaching, research and maintenance activities at Texas State University, we are a large quantity generator of hazardous waste. We utilize a less than 90-day container accumulation area for hazardous wastes and are required by state and EPA regulations to prepare a Contingency Plan and Emergency Response Procedures (40CFR 264 Subpart C and D). We are also required to send a copy of the plan to the emergency responders in our area. Enclosed is one copy of the plan for your records. We will mail you updates of the plan as it is amended in the future.

There are approximately ten departments on campus that utilize chemicals and generate hazardous wastes. The wastes include photographic solutions, spent acids, spent caustics, organic solvents, inorganic aqueous solutions, waste oils and universal wastes (batteries, bulbs, paint waste). The Contingency Plan shows the waste generation and satellite accumulation areas and describes the nature of the waste streams. We would like to take some time to familiarize you with the layout of the University in terms of access roads to the Container Accumulation Area, and discuss potential emergency situations and responses. We believe this could be accomplished in a one-hour tour.

Federal regulations require us to document that we have attempted to obtain an agreement with the local emergency service providers in order to familiarize them with our facility, as described above. Please indicate your willingness to participate in a site visit (or meeting at your facility with our personnel), by circling the response to the statement on the second page and returning a copy of this letter to my attention.

Please contact me at (512) 245-3616 to answer any questions you might have on the enclosed plan.

Sincerely,

Russell Clark, CSP

Environmental Health and Safety Specialist

Risk Management & Safety Office Alternate Emergency Coordinator

San Marcos Local Emergency Planning Committee (LEPC)		
Signed:		
Name:	(print)	
Title:		
Date:		

November 8, 2005

Hays County Sheriff Department Sheriff 1307 Uhland Road San Marcos, Texas 78666 Office of
Risk Management and Safety

601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University - San Marcos

Contingency Plan and Emergency Response Procedures

Dear Sir or Madame:

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Sincerely,

Russell Clark, CSP

Environmental Health and Safety Specialist

Risk Management & Safety Office Alternate Emergency Coordinator

Hays County Sheriff Department

Signed:				· · · · · · · · · · · · · · · · · · ·	ww
Name:	***				
	(print)				
Title:		=-11100	· · · · · · · · · · · · · · · · · · ·	***************************************	····
Date:		TATIVO.			



November 8, 2005

Hays County EMS/Ambulance Service Attn: Mr. Tom Partin P.O. Box 641 San Marcos, Texas 78666 Office of
Risk Management and Safety

601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University - San Marcos

Contingency Plan and Emergency Response Procedures

Dear Mr. Partin:

As part of the teaching, research and maintenance activities at Texas State University, we are a large quantity generator of hazardous waste. We utilize a less than 90-day container accumulation area for hazardous wastes and are required by state and EPA regulations to prepare a Contingency Plan and Emergency Response Procedures (40CFR 264 Subpart C and D). We are also required to send a copy of the plan to the emergency responders in our area. Enclosed is one copy of the plan for your records. We will mail you updates of the plan as it is amended in the future.

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Sincerely,

Russell Clark, CSP

Environmental Health and Safety Specialist

Risk Management & Safety Office Alternate Emergency Coordinator

Hays County EMS/Ambulance Service

Signed:	-	
Name:		
	(print)	
Title:		Annual Control of the
Date:	*	



November 8, 2005

City of San Marcos Police Department Police Chief 2300 I.H. 35 South San Marcos, Texas 78666 Office of Risk Management and Safety

601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University - San Marcos

Contingency Plan and Emergency Response Procedures

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Sincerely,

Russell Clark, CSP

Environmental Health and Safety Specialist

Risk Management & Safety Office Alternate Emergency Coordinator

City of San Marcos Police Department		
Signed:		
Name:	(print)	
Title:		
Date:		

November 8, 2005

Central Texas Medical Hospital Attn: Mr. Bill Johnson 1301 Wonder World Drive San Marcos, Texas 78666 Office of Risk Management and Safety

601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University - San Marcos

Contingency Plan and Emergency Response Procedures

Dear Mr. Johnson:

As part of the teaching, research and maintenance activities at Texas State University, we are a large quantity generator of hazardous waste. We utilize a less than 90-day container accumulation area for hazardous wastes and are required by state and EPA regulations to prepare a Contingency Plan and Emergency Response Procedures (40CFR 264 Subpart C and D). We are also required to send a copy of the plan to the emergency responders in our area. Enclosed is one copy of the plan for your records. We will mail you updates of the plan as it is amended in the future.

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Sincerely,

Russell Clark, CSP

Environmental Health and Safety Specialist

Risk Management & Safety Office Alternate Emergency Coordinator

Central Texas Medical Hospital

Signed:		
Name:	()	
	(print)	
Title:		
Date:		



November 8, 2005

Office of
Risk Management and Safety

City of San Marcos Wastewater Treatment System Attn: Mr. Tom Taggart 630 E. Hopkins San Marcos, Texas 78666 601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University – San Marcos

Contingency Plan and Emergency Response Procedures

Dear Mr. Taggart:

As part of the teaching, research and maintenance activities at Texas State University, we are a large quantity generator of hazardous waste. We utilize a less than 90-day container accumulation area for hazardous wastes and are required by state and EPA regulations to prepare a Contingency Plan and Emergency Response Procedures (40CFR 264 Subpart C and D). We are also required to send a copy of the plan to the emergency responders in our area. We understand that your department will not be providing emergency response to Texas State, but have provided you this information as a courtesy.

There are approximately ten departments on campus that utilize chemicals and generate hazardous wastes. The wastes include photographic solutions, spent acids, spent caustics, organic solvents, inorganic aqueous solutions, waste oils and universal wastes (batteries, bulbs, paint waste). The Contingency Plan shows the waste generation and satellite accumulation areas and describes the nature of the waste streams.

Please contact me at (512) 245-3616 to answer any questions you might have on the enclosed plan.

Sincerely,

Russell Clark, CSP

Environmental Health and Safety Specialist

Risk Management & Safety Office

Alternate Emergency Coordinator



November 8, 2005

City of San Marcos Watershed Protection Manager Attn: Ms. Melani Howard 630 E. Hopkins San Marcos, Texas 78666 Office of Risk Management and Safety

601 University Drive San Marcos, Texas 78666-4615 office: 512.245.3616 fax: 512.245.8277

RE: Texas State University - San Marcos

Contingency Plan and Emergency Response Procedures

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Russell Clark, CSP

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Risk Management & Safety Office Alternate Emergency Coordinator

City of Sai	n Marcos Police Departn ^{ent}
Signed:	John J. J.
Name:	(print) J. JAir. es
Title:	Assistant Police Chief
Date:	11-9-05

Hays County Sheriff Department

Signed:	Sex de Or	
Name:	Regis DeAcza	
Title:	Chief Deputy	
Date:	11-10-2005	

Central Texas Medical Hospital

Signed:

Name:

Title:

Date:

int)

pport Seures

1/11/05

Hays County EMS/Ambulance Service

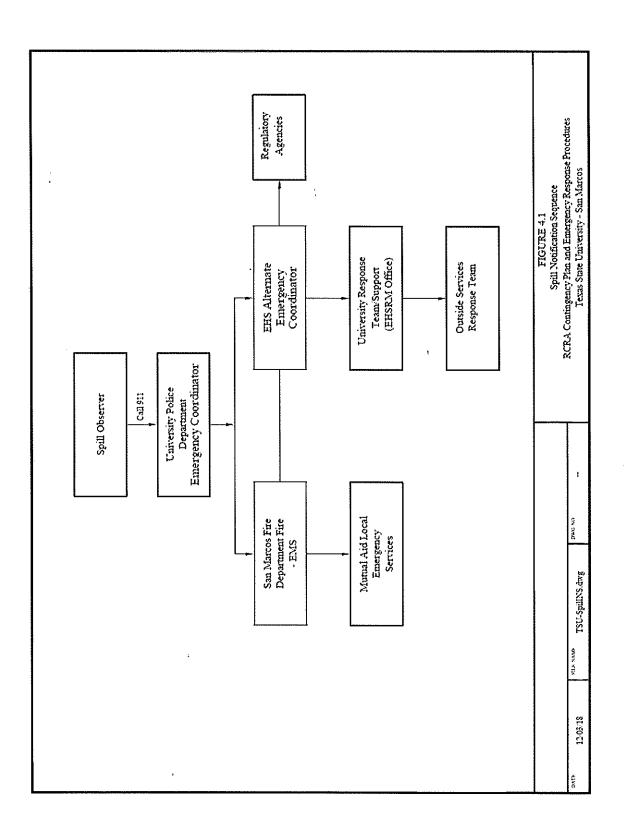
Signed:	Jon Partin Tom Partin
	(print)
Title:	Executive Director
Date:	11-09-05

4.0 EMERGENCY COORDINATOR/CALL SEQUENCE

Table 4.1 lists the names of the Emergency Coordinator and the designated alternate at the University along with contact information. The Emergency Coordinator is familiar with all aspects of the Contingency Plan, all operations and activities at the University, the location and characteristics of waste handled the location of records within the facility and the facility layout. In addition the Emergency Coordinator has the authority to commit the resources needed to carry out the Contingency Plan.

Figure 4.1 shows the sequence of spill notification and the coordination that will occur in the event that assistance from outside emergency responders (city or contract) is requested.

Table 4.1 also shows the internal University notification requirements and the regulatory and outside responder contacts. If the spill occurs within the Satellite Accumulation Areas (see **Figure 2.3**) and is larger than 5-gallons, the Dean and Chair for that department may be contacted as part of the local response team.



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Table 4.1 Hazardous Waste Spill Notification References Texas State University

	GENERAL FACILITY		
FACILITY AREA	ADDRESS	OFFICE	FAX NUMBER
	601 University Drive	(512) 245-3616	(512) 245-8277
l exas State University	San Marcos, Texas 78666		

	· · · · · · · · · · · · · · · · · · ·	T0C	LOCAL RESPONSE TEAM			
POSITION/TITLE	NAME	RESPONSE TIME	TRAINING LEVEL	OFFICE	HOME	CELL
Emergency Coordinator University Police (receives all 911 calls made from campus)	Pat Cochran	15 minutes	 Contingency Plan reviewed University safe operating procedures 	On campus dial 911 (512) 245-2821 (512) 245-8336	512-750-4978	512-750-4978
Emergency Coordinator Alternate	Wendy McCoy Environmental Health and Safety Specialist	60 minutes	 Contingency Plan reviewed University safe operating procedures 	(512) 245-3616	(512) 738-6650 (On Call)	(512) 738-6650 (On Call)
Additional Resources/Support (maintains list of University Contacts and home numbers)	James Vollrath Central Utilities Plant	15 minutes	 Contingency Plan reviewed University safe operating procedures 	(512) 245-2108	217-493-3468	217-493-3468

Table 4.1 (cont.)
Hazardous Waste Spill Notification References
Texas State University

REQUIRED EXT	REQUIRED EXTERNAL NOTIFICATIONS		
AGENCY	LOCATION	OFFICE	ALTERNATE
National Response Center (NRC)	Washington, D.C.	(800) 424-8802	(202) 267-2675
TCEQ 24-hour Environmental Release Hotline (Chem-Tel, Inc.)	Tampa, FL	(800) 832-8224	
San Marcos Fire Department Emergency Management Coordinator (LEPC)	San Marcos, TX	911	(512) 393-8460 (512) 393-7301
Texas Commission on Environmental Quality Region 11	Austin, TX	(512) 339-2929	
Texas Commission on Environmental Quality - Central Office	Austin, TX	(512) 463-7727 (512) 239-2507	(800) 832-8224 (24 Hrs. Chem-Tel, see
			above)

REGULATORY NOTIFICATIONS -	NOTIFICATIONS - ASSISTANCE/ADVISORY (outside resources)	itside resources)	Transfer of the Control of the Contr
AGENCY	LOCATION	OFFICE	ALTERNATE
U.S. Fish and Wildlife Service (USFWS)	Austin, TX	(512) 490-0057	THE STATE OF THE S
U.S. Environmental Protection Agency (EPA) – Region VI	Dallas, TX	(800) 887-6063	(214) 665-2200
Texas Parks and Wildlife Department (TPWD)	Austin, TX	(800) 792-1112	(512) 389-4800
Texas Department of Health	Austin, TX	(512) 458-7111	
Texas Highway Patrol (Department of Public Safety)	San Marcos, TX	911	(512) 353-7000

Revised July 2018

Table 4.1 (cont.)
Hazardous Waste Spill Notification References
Texas State University – San Marcos

OUTSIDE EMERGE	OUTSIDE EMERGENCY RESPONSE ORGANIZATIONS	SNO	
COMPANY	LOCATION	OFFICE	ALTERNATE
Gruene Environmental (Disposal Only)	New Braunfels, TX	830-626-7575	
	Cibolo, TX		
SWS Environmental Services		210-566-8366	
TAS Environmental	San Marcos, TX		
		512-990-9903	
LCRA Environmental Lab Services	Austin, TX	877-362-5272	
San Antonio Testing Laboratory	San Antonio, TX	(210) 229-9920	(210) 836-8936

EOGAL BI	LOCAL EMERGENCY SERVICES		
	DIAL 911		
for All Police, Fir	for All Police, Fire, and Ambulance Emergencies		
SERVICE	LOCATION	PRIMARY	ALTERNATE
Hays County Sheriff' Hays County Dispatch	1307 Uhland Road, San	911	(512) 393-7896
	Marcos, TX 78666		
City of San Marcos Police Department	2300 I-35, San Marcos, TX	911	(512) 753-2108
	/ 0000		
City of San Marcos Fire Department	100 Carlson Circle, San	911	(512) 393-8460
	Marcos, TX 78666		

			0,000
City of San Marcos Industrial Pretreatment / Water	720 River Road, San Marcos,	(512) 393-8038	(512) 959-8010
Quality Program	TX 78666		
	630 East Hopkins St, San	(512) 393-8440	(512) 393-5482
Environmental Health- Code Compliance	Marcos, TX 78666		
City of San Marcos Wastewater Treatment Plant	720 River Road, San Marcos,	(512) 393-8344	
	TX 78666		
San Marcos Hays County EMS/Ambulance Service	2061 Clovis Barker 10B, San	911	(512) 618-1019
	Marcos, TX 78666		
Central Texas Medical Center	1301 Wonderworld Dr, San	911	(512) 353-8979
	Marcos, TX 78666		
St. David's South Austin Medical Center	901 W Ben White Blvd,	512-447-2211	-
	Austin, TX 78701		

5.0 REPORTING REQUIREMENTS

Release reporting is the responsibility of the Environmental Health Safety and Risk Management Office. The EHSRM staff will report on all releases of hazardous waste, chemicals or utility related releases (primarily aqueous streams involving sumps or chill water lines). Outside regulatory contacts must be notified if:

- the quantity of chemical spilled to the environment exceeds the reportable quantity in 40CFR §302.4 (numerous chemicals with chemical-specific limits);
- the release reaches Sessoms Creek or the San Marcos River (waters of the State) in excess of 100 pounds (per 30TAC §327.4(a)(2)) or
- the release is an oil and reaches Sessoms Creek or the San Marcos River and has a visible sheen, or it is spilled onto land in excess of 25 gallons.

Notification will be made within 24-hours of the release. The release will be reported to the following departments by phone call or fax:

- TCEQ 24-Hour Emergency Spill Reporting (1-800-832-8224)
- TCEQ 24-Hour Alternate Reporting numbers (1-512-239-2507 or 512-463-7727)
- Region 11 TCEQ office at (512 339-2929) if the spill occurs during normal business hours
- National Response Center (1-800-424-8802).

The initial report will provide, to the extent known, the information listed in 30TAC §327.3(d) and shown below:

- 1. the name, address and telephone number of the person making the telephone report;
- 2. the date, time, and location of the spill or discharge;
- 3. a specific description or identification of the oil, petroleum product, hazardous substances or other substances discharged or spilled;
- 4. an estimate of the quantity discharged or spilled;
- 5. the duration of the incident;
- 6. the name of the surface water or a description of the waters in the state affected or threatened by the discharge or spill;
- 7. the source of the discharge or spill;
- 8. a description of the extent of actual or potential water pollution or harmful impacts to the environment and an identification of any environmentally sensitive areas or natural resources at risk;
- 9. if different from paragraph (1) of this subsection, the names, addresses, and telephone numbers of the responsible person and the contact person at the location of the discharge or spill;
- 10. a description of any actions that have been taken, are being taken, and will be

- 11. taken to contain and respond to the discharge or spill;
- 12. any known or anticipated health risks;
- 13. the identity of any governmental representatives, including local authorities or third parties, responding to the discharge or spill; and
- 14. any other information that may be significant to the response action.

In accordance with 30TAC §327.5, EHSRM will submit a written report within 30 days to the Regional TCEQ office. The written report will contain all the elements 1-13 shown above and one of the following items, as applicable:

- 1. A statement that the discharge or spill response action has been completed and a description of how the response action was conducted.
- 2. A request for an extension of time to complete the response action, along with the reasons for the request. The request will also include a projected work schedule outlining the time required to complete the response action. The TCEQ may grant an extension of up to 6 months from the date of the spill or discharge was reported. Unless otherwise notified, by the appropriate regional manager, the University will proceed according to the terms of the projected work schedule.
- 3. A statement that the discharge or spill response action has not been completed nor is it expected to be completed within the maximum allowable six month extension. The statement shall explain why completion of the response action is not feasible and include a projected work schedule outlining the remaining tasks to complete the response action. This information will also serve as notification that the response actions will be conducted under the Texas Risk Reduction Program rules in 30TAC Chapter 350.

In addition, any time that the Contingency Plan is activated (regardless of the size of the release) the University will document in their files the following information:

- (1) Name, address, and telephone number of the department with the release;
- (2) Date, time, and type of incident (e.g. fire, explosion);
- (3) Name and quantity of material(s) involved;
- (4) The extent of injuries, if any;
- (5) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (6) Estimated quantity and disposition of recovered material that resulted from the incident.

6.0 EMERGENCY EQUIPMENT

The University maintains safety equipment to respond to small releases of hazardous waste (5-gallons or less). The University will rely on the San Marcos Fire Department or outside contractors to respond to releases larger than 5-gallons. The equipment on-site includes those items required by 40CFR 265.32 and 40CFR 265.52(e) with the exception of the internal alarm system. The University personnel stay in contact with one another and outside emergency services through the use of land-based phones, radios and cell phones.

Table 6.1 lists the emergency response equipment maintained at the University. The location and capability of the equipment is also included in **Table 6.1**. The University waste pickup vehicle is equipped to respond to small releases at the Satellite Accumulation Areas (see **Figure 2.3**) while most of the same supplies are also kept at the less than 90-day Container Accumulation Area (NOR 007).

The equipment is tested and maintained by EHSRM as applicable, to assure its proper operation in time of an emergency. Aisle space is maintained in the Container Accumulation Area to allow sufficient unobstructed movement of personnel and equipment in the event of an emergency. A fire hydrant is located directly across from the Container Accumulation Area on Comanche Street.

Table 6.1 List of Emergency Response Equipment For Spills of 5-Gallons or Less Texas State University San Marcos, Texas

	•		
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	•	•	

Table 6.1
List of Emergency Response Equipment/Locations
Texas State University

	Locations								
Name of Equipment	Smith House	Thornton House	Central Plant	East Plant	West Plant	South Plant	South East Plant	CAA Waste Bldg	Emergency Response Truck
1. Pads Universal (minimum 3 boxes)	Х	Х	Х	Х	Х	Х	Х	Х	*1
2. Pads Oil Only (minimum 3 boxes)	Х	Х	Х	Х	Х	Х	Х	Х	*1
3. Boom Oil Only (3 foot) (minimum 3 boxes)	Х	Х	Х	Х	X	х	Х	Х	*1
4. Boom Universal (3 foot) (minimum 3 boxes)	Х	Х	Х	Х	X	X	Х	X	*1
5. Boom Oil Only (6 foot)	Х	Х				:			*1
6. Soda Ash (minimum 5 25-pound buckets)	*1	*1	Х	A constitution of the cons				*1	*1
7. Dry absorbent (minimum 100 pounds)	Х		***************************************			111111111111111111111111111111111111111	The state of the s	Х	
8. Open top 30-gal or 55-gal drums (minimum 2)	X	Х	AND THE PROPERTY OF THE PROPER					Х	
9. Miscellaneous supplies (shovels, gloves, googles, bags, buckets)	X	X		A Average A A Street	WAR AND			X	X

Notes:

*1 Small quantities

X Required

The Central Plant also has a supply of lime.

The Physical Plant Garage has dry absorbent.

7.0 EMERGENCY PROCEDURES

For spills or releases of hazardous waste from the Container Accumulation Areas, the procedures in **Table 7.1** will be followed.

Table 7.1 Specific Hazardous Waste and Spill Incident Response Checklist

The person functioning as **Emergency Coordinator** during the initial response period has the authority to take whatever steps are necessary to control the emergency situation. This plan provides general guidelines but is not intended to be all-inclusive for every emergency. The Emergency Coordinator is authorized to use their judgment in responding.

INITIAL RESPONSE ACTIONS - SUMMARY

- Personnel and Public Safety are first priorities Evacuate area?
- Eliminate sources of ignition or potential source of ignition
- Close the isolation plate in the storm water drain at the Roy F. Mitte Loading Dock (if the release is at this CAA)
- Isolate the source of the discharge, minimize further flow
- Make internal notifications (i.e., University Police Department, [UPD], first)
- Emergency Coordinator (UPD) will make external notifications (if deemed necessary)
- Emergency Coordinator or Alternate Emergency Coordinator (EHSRM) will evacuate the affected building(s) as necessary.
- Emergency Coordinator or Alternate Emergency Coordinator will activate the Local Response Team (EHSRM Office) as necessary.
- Emergency Coordinator or Alternate Emergency Coordinator will activate response contractors and other external resources as necessary
- Emergency Coordinator or Alternate Emergency Coordinator will monitor and control the containment and clean-up effort.

Table 7.1 Specific Hazardous Waste Release Checklist

Remember, Without Exception, Personnel Safety is First Priority. Excessive Exposure to the Vapor and Liquid Stages of the Spilled Product Should Be Avoided.

INITIAL RESPONSE

•	Restrict access to the spill site and adjacent area as the situation demands. Take any other steps necessary to minimize any threat to health and safety.
•	Eliminate possible sources of ignition in the near vicinity of the spill.
•	Take appropriate personal protective measures.
•	Use testing and sampling equipment to determine potential safety hazards, as the situation demands.
•	Identify/Isolate the source and minimize the loss of product.
•	Verify the type of product and quantity released (Waste Analysis Plan and SDS sheets if available).
•	Advise personnel in the area of any potential threat and/or initiate evacuation procedures.
•	Take necessary fire response actions.
•	Call for medical assistance if an injury has occurred.

Table 7.1 Specific Hazardous Waste Release Checklist

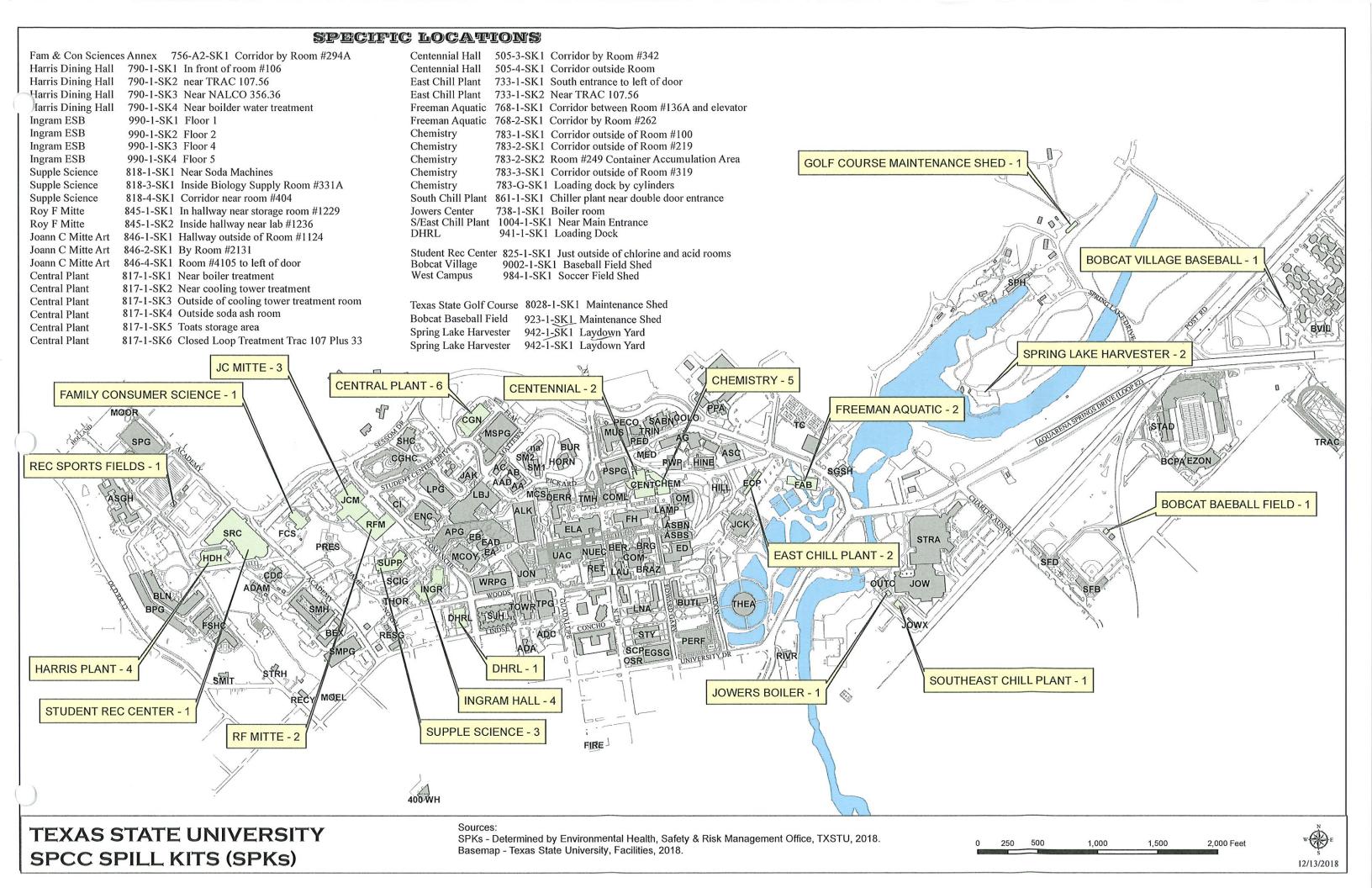
SPILL/RELEASE REMEDIATION MEASURES

•	Emergency Coordinator, or his designee, notifies appropriate University personnel via hand-held radios or cell phones, as applicable.
•	Direct cleanup operations using appropriate spill response equipment and supplies (<u>i.e.</u> , absorbents, booms, pumps, shovels, etc.)
•	Prevent the spill from entering the water &/or drainage system to the greatest extent possible.
•	Contain spilled material in a new drum as well as any spill response material.
•	EHSRM will characterize the drummed material and coordinate disposal.

Table 7.1 Specific Hazardous Waste Release Checklist

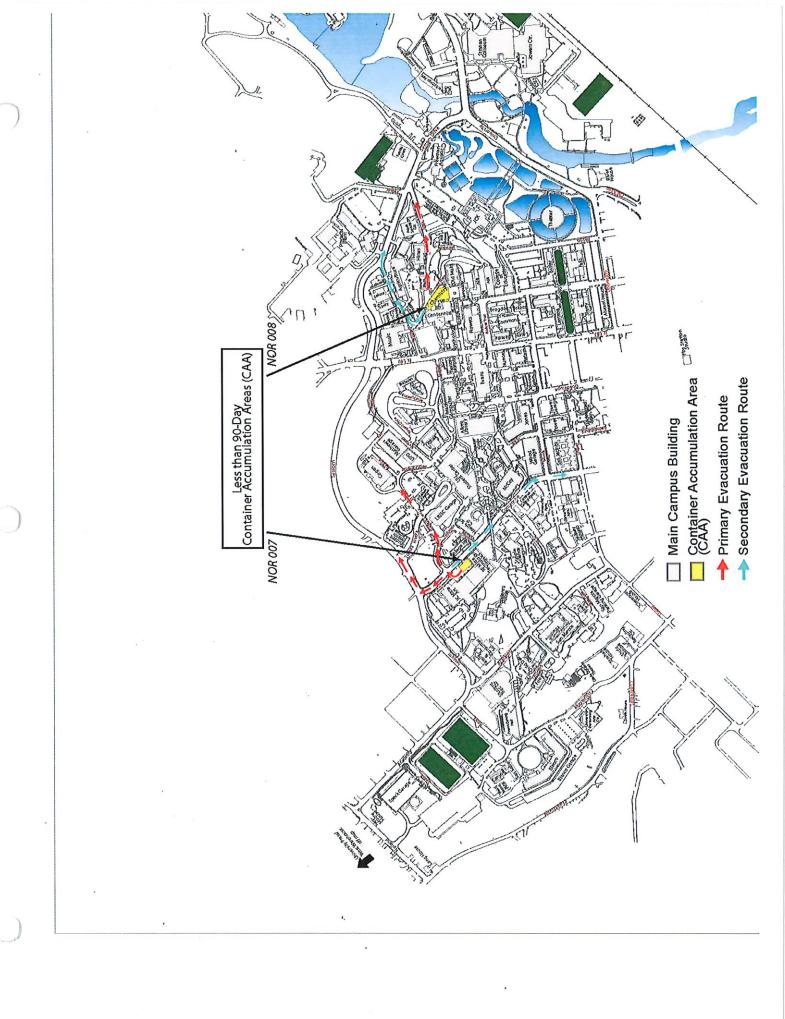
FOLLOWUP ACTIONS

Sample and classify the wastes generated from spill cleanup in accordance with the University's Waste Analysis Plan. Dispose of the waste appropriately as hazardous or non-hazardous, based on the characterization and classification (within 30 days). Keep copies of the laboratory data with the Waste Analysis Plan.
 Notify the State and local authorities if the spill exceeds reporting thresholds (within 24-hours). EHSRM will notify and maintain copies of the reports (see Section 5.0).
 Clean and restock the spill response equipment and decontamination equipment (within 7 days).
 Note in the Operating Record (Hazardous Waste Files) the time, date and details of the spill. If necessary, submit a written report to the TCEQ in compliance with 40CFR 265.56(j) (within 15 days). EHSRM will notify and maintain copies of the reports (see Section 5.0).



8.0 EVACUATION PLAN

The evacuation routes for the Container Accumulation Areas are shown in **Figure 8.1**. If one route is blocked by the spill or for other reasons, the alternate route will be used. All responders will enter the University by either Comanche Street or Sessom Drive. **Figure 2.2** shows the typically-used access routes to the Container Accumulation Areas.



9.0 AMENDMENTS OF THE CONTINGENCY PLAN

The Contingency Plan will be reviewed and immediately amended, if necessary, whenever:

- the applicable regulations are revised;
- the plan fails in an emergency;
- the emergency coordinator changes or
- the list of emergency equipment changes.

Amendments to the plan will be noted on the Revision Record and will be sent to those listed on the distribution list (Attachment C)

Revisions to this document are the responsibility of the EHSRM of Texas State University and are to be prepared in accordance with the applicable state and federal regulations (as presented in **Attachment A**).

10.0 DISTRIBUTION OF THE CONTINGENCY PLAN

The Contingency Plan will be distributed by EHSRM to the list of local emergency response providers and local service providers shown in **Attachment C.** The distribution list also shows internal university recipients of the plan as well as City offices that may respond in a support role.



EMERGENCY

Police * Fire * Medical

DIAL 911

NON - EMERGENCY

University Police 512-245-2805

http://www.police.txstate.edu/

Student Health Center 512-245-2161

http://www.healthcenter.txstate.edu/

Parking Services 512-245-2887

Texas Poison Control 1-800-222-1222

http://www.poisoncontrol.org/

Environmental Health, Safety & Risk Management

http://www.fss.txstate.edu/ehsrm/

8 - 5 pm: 512-245-3616

After Hours: 512-738-6650

CHEMICALS NEEDING SPECIAL ATTENTION

- 1. ACRYLONITRILE -SDS ATTACHED
- 2. ETHIDIUM BROMIDE -SDS ATTACHED
- 3. FORMALDEHYDE SDS ATTACHED
- 4. HYDROFLUORIC ACID -SDS ATTACHED
- 5. PHENOL -SDS ATTACHED

(THIS LIST WILL BE AMENDED AS NECESSARY)





Material Safety Data Sheet Acrylonitrile MSDS

Section 1; Chemical Product and Company Identification

Product Name: Acrylonitrile

Catalog Codes: SLA2566

CAS#: 107-13-1

RTECS: Not available.

TSCA: TSCA 8(b) inventory: Acrylonitrile

CI#: Not available.

Synonym: Vinyl Cyanide; Propenitrile

Chemical Name: Acrylonitrile

Chemical Formula: C3-H3-N

Contact Information:

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247 International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients						
composition:						
Name	CAS#	% by Weight				
	1017-13-1	>99				

Toxicological Data on Ingredients: Acrylonitrile: ORAL (LD50): Acute: 78 mg/kg [Rat]. 27 mg/kg [Mouse]. DERMAL (LD50): Acute: 63 mg/kg [Rabbit]. VAPOR (LC50): Acute: 333 ppm 4 hours [Rat]. &qt:90 ppm 4 hours [Monkey].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (permeator), of eye contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [POSSIBLE]. The substance may be toxic to blood, kidneys, liver, cardiovascular system, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 481.11°C (898°F)

Flash Points: CLOSED CUP: -1.1111°C (30°F), OPEN CUP: 0°C (32°F),

Flammable Limits: LOWER: 3.1% UPPER: 17%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids, of alkalis.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:

In the presences of catalysts, or when the substance is confined, the polymerization rate may be accelerated leading to explosion. Acrylonitrile forms explosive mixtures with air based on its low flash point. It easily forms violently explosive polymerides when exposed to heat, light, strong bases, strong acids, strong oxidizers, azoisobuytronitrile, dibenzoyl peroxide, di-tert-butylperoxide, bromine or silver nitrate. Acrylonitrile may explosive reactions with benzyltrimethylammonium hydroxide + pyrrole. It may also have explosive reactions with tetrahydrocarbazole + benzyltrimethylammonium hydroxide.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:

Flammable liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

Storage:

Light Sensitive. Store in light-resistant containers. Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent, Gloves,

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 2 (ppm) from ACGIH (TLV) [United States] TWA: 4.3 (mg/m3) TWA: 1 CEIL: 10 from NIOSH TWA: 2 STEL: 10 (ppm) from OSHA (PEL) [United States] TWA: 2 (ppm) [United Kingdom (UK)] TWA: 4.3 (mg/m3) [United Kingdom (UK)] TWA: 2 STEL: 4 (ppm) [Canada] TWA: 4.3 STEL: 8.6 (mg/m3) [Canada] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: mild Peach kernels. (Slight.)

Taste: Not available.

Molecular Weight: 53.06 g/mole

Color: Clear Colorless.

pH (1% soln/water): Not available.

Bolling Point: 77.3°C (171.1°F)

Melting Point: -82°C (-115.6°F)

Critical Temperature: 262.78°C (505°F)

Specific Gravity: 0.806(Water = 1)
Vapor Pressure: 11.1 kPa (@ 20°C)

Vapor Density: 1.8 (Air = 1) Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 0.3

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:

Soluble in diethyl ether, acetone. Very slightly soluble in cold water, hot water. Soluble in all common organic substances and Isopropyl alcohol. Soluble in benzene and alcohol

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of instability:

Heat, ignition sources, light, loss of inhibitor. Polymerization may occur, especially when exposed to visible light or in the absence of oxygen

Incompatibility with various substances:

Highly reactive with oxidizing agents, acids, alkalis. Reactive with metals.

Corrosivity: Highly corrosive in presence of aluminum, of copper.

Special Remarks on Reactivity:

Light Sensitive. Incompatible with strong oxidizers, strong acids (nitric acid, sulfuric acid, chlorosulfonic acid), strong bases (potassium hydroxide, sodium hydroxide), amines, 2-aminoethanol, bromine, ethylene diamine, oleum. Unless inhibited (usually with methylhydroquinone), this material may spontaneously polymerize, or it may spontaneously polymerization under certain conditions. Polymerization reactions are usually highly exothermic. Small amounts of acids (nitric or sulfuric) may neutralize the ammonia used to inhibit acrylonitrile and create unhibited, unstable acrylonitrile. Strong bases will cause acrylonitrile to violently polymerize. It may spontaneously polymerize when heated, or exposed to light.

Special Remarks on Corrosivity: It attacks copper, copper alloys, and aluminum in high concentrations.

Polymerization: Yes.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 27 mg/kg [Mouse]. Acute dermal toxicity (LD50): 63 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): >90 4 hours [Monkey].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Classified POSSIBLE for human. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [POSSIBLE]. May cause damage to the following organs: blood, kidneys, liver, cardiovascular system, central nervous system (CNS).

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May cause adverse reproductive effects (fetotoxicity, maternal effects on fertility, paternal effects on fertility). May affect genetic material (mutagenic). May cause cancer (tumorigenic) based on animal data. It is a suspect human carcinogen. May cause birth defects (musculoskeletal, central nervous system, cardiovascular)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes severe skin irritation. Prolonged skin contact may cause formation of large vesicles after a latent period of several hours. The burns resemble second degree thermal burns, but with little pain or inflammation. May be absorbed through skin. May be harmful if absorbed through skin. May affect behavior/central nervous system, respiration and gastrointestinal tract is absorbed through skin. Eyes: Causes moderate eye irritation. Lachrymator. Inhalation: May be harmful if inhaled. Inhalation of high concentrations may affect behavior/central nervous system with symptoms including central nervous system depression, seizures, weakness in the limbs, dizziness, impaired judgement, Irritability, apprehension, weakness, lightheadedness, headache, anxiety, agitation, stupor, seizures, ataxia, confusion, coma. May also affect cardiovascular system (palpitations, arrhythmias, cardiac conduction defects, rapid heartbeat), respiration (hyperventillation, dyspnea), gastrointestinal system (nausea, vomiting). Inhalation may cause cyanosis (a bluish discoloration of the skin due to deficient oxygenation of the blood). Ingestion: Harmful if swallowed. Causes digestive tract irritation with nausea, and vomiting. May affect behavior/central nervous system, and respiration with symptoms similar to inhalation. Chronic Potential Health Effects: Repeated contact by inhalation or ingestion may affect the liver (jaundice), urinary system (kidneys), metabolism. Repeated contact by ingestion may also affect the blood (anemia).

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification:

CLASS 3: Flammable liquid. CLASS 6.1: Poisonous material.

Identification: : Acrylonitrile, inhibited UNNA: 1093 PG: I

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Acrylonitrile California prop. 65:

This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Acrylonitrile Connecticut hazardous material survey.: Acrylonitrile Illinois toxic substances disclosure to employee act: Acrylonitrile Illinois chemical safety act: Acrylonitrile

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):

R11- Highly flammable. R16- Explosive when mixed with oxidizing substances. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R36/38- Irritating to eyes and skin. R40- Possible risks of irreversible effects. R62- Possible risk of impaired fertility. R63- Possible risk of harm to the unborn child. S1/2- Keep locked up and out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 3

Reactivity: 1

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 4

Flammability: 3

Reactivity: 2

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Material Safety Data Sheet Ethidium bromide MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethidium bromide

Catalog Codes: SLE1144

CAS#: 1239-45-8

RTECS: SF7950000

TSCA: TSCA 8(b) inventory: No products were found.

CI#: Not available.

Synonym: Homidium bromide

Chemical Formula: C21H20BrN3

Contact Information:

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS#	% by Weight
Ethidium bromide	1239-45-8	100

Toxicological Data on Ingredients: Not applicable.

Section 3: Hazards Identification

Potential Acute Health Effects:

Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation.

Potential Chronic Health Effects:

Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. CARCINOGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available.

Section 4: First Aid Measures

Eye Contact: Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used.

Skin Contact:

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cold water may be used. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

Ingestion:

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO2), nitrogen oxides (NO, NO2...), halogenated

compounds.

Fire Hazards in Presence of Various Substances:

Flammable in presence of open flames and sparks. Slightly flammable to flammable in presence of heat.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust.

Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 394.33 g/mole

Color: Not available.

pH (1% soln/water): Not available.

Boiling Point: Decomposes. (261°C or 501.8°F)

Melting Point: 239°C (462.2°F)

Critical Temperature: Not available.

Specific Gravity: Not available.

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water. **Solubility:** Partially soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

Section 11: Toxicological Information

Routes of Entry: Ingestion.

Toxicity to Animals:

LD50: Not available. LC50: Not available.

Chronic Effects on Humans: Not available.

Other Toxic Effects on Humans:

Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant), of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are more toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: No products were found.

Other Regulations: Not available..

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC):

This product is not classified according to the EU regulations.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Material Safety Data Sheet Formaldehyde 37% solution MSDS

Section 1: Chemical Product and Company Identification

Product Name: Formaldehyde 37% solution

Catalog Codes: SLF1426

CAS#: Mixture.

RTECS: LP8925000

TSCA: TSCA 8(b) inventory: Formaldehyde; Methyl

alcohol; Water

CI#: Not applicable.

Synonym: Formalin

Chemical Name: Formaldehyde

Chemical Formula: HCHO

Contact Information:

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS#	% by Weight
Formaldehyde	50-00-0	36.5-38
Methyl alcohol	67-56-1	10-15
Water	7732-18-5	47-53.5

Toxicological Data on Ingredients: Formaldehyde: ORAL (LD50): Acute: 100 mg/kg [Rat]. 42 mg/kg [Mouse]. 260 mg/kg [Guinea pig]. MIST (LC50): Acute: 454000 mg/m 4 hours [Mouse]. Methyl alcohol: ORAL (LD50): Acute: 5628 mg/kg [Rat]. DERMAL (LD50): Acute: 15800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 64000 ppm 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of eye contact (irritant), of ingestion, . Hazardous in case of skin contact (irritant, sensitizer, permeator), of eye contact (corrosive). Slightly hazardous in case of skin contact (corrosive). Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:

Hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2A (Probable for human.) by IARC [Formaldehyde]. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Formaldehyde]. Mutagenic for bacteria and/or yeast. [Formaldehyde]. Mutagenic for mammalian somatic cells. [Methyl

alcohol]. Mutagenic for bacteria and/or yeast. [Methyl alcohol]. TERATOGENIC EFFECTS: Classified POSSIBLE for human [Methyl alcohol]. DEVELOPMENTAL TOXICITY: Not available The substance may be toxic to kidneys, liver, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eve Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 430°C (806°F)

Flash Points: CLOSED CUP: 50°C (122°F). OPEN CUP: 60°C (140°F).

Flammable Limits: The greatest known range is LOWER: 6% UPPER: 36.5% (Methyl alcohol)

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:

Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks, of oxidizing materials, of reducing materials, of combustible materials, of organic materials, of metals, of acids, of alkalis.

Explosion Hazards in Presence of Various Substances: Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards:

Explosive in the form of vapor when exposed to heat or flame. Vapor may travel considerable distance to source of ignition and flash back. When heated to decomposition, it emits acrid smoke and irritating fumes. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME (Methyl alcohol)

Special Remarks on Explosion Hazards:

Reaction with peroxide, nitrogen dioxide, and permformic acid can cause an explosion. (Formaldehyde gas)

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:

Flammable liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkalis, moisture.

Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious).

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

Formaldehyde gas STEL: 0.3 (ppm) from ACGIH (TLV) [United States] STEL: 0.37 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.75 STEL: 2 (ppm) from OSHA (PEL) [United States] TWA: 2 STEL: 2 (ppm) [United Kingdom (UK)] TWA: 2.5 STEL: 2.5 (mg/m3) [United Kingdom (UK)] Methyl alcohol TWA: 200 from OSHA (PEL) [United States] TWA: 200 STEL: 250 (ppm) from ACGIH (TLV) [United States] [1999] STEL: 250 from NIOSH [United States] TWA: 200 STEL: 250 (ppm) from NIOSH SKIN TWA: 200 STEL: 250 (ppm) [Canada] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pungent. Suffocating. (Strong.)

Taste: Not available.

Molecular Weight: 30.02 Color: Clear Colorless.

pH (1% soln/water): 3 [Acidic.] pH of the solution as is.

Boiling Point: 98°C (208.4°F) Melting Point: -15°C (5°F)

Critical Temperature: The lowest known value is 240°C (464°F) (Methyl alcohol).

Specific Gravity: 1.08 (Water = 1) Vapor Pressure: 2.4 kPa (@ 20°C)

Vapor Density: 1.03 (Air = 1)

Volatility: 100% (w/w).

Odor Threshold: The highest known value is 100 ppm (Methyl alcohol)

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Non-ionic.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:

Easily soluble in cold water, hot water. Soluble in diethyl ether, acetone, alcohol

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks), incompatible materials

Incompatibility with various substances:

Reactive with oxidizing agents, reducing agents, acids, alkalis. Slightly reactive to reactive with metals.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Also incompatible with urea, phenol, isocyanates, anhydrides, amines, AZO compounds, carbonyl compounds, oxides(e.g. nitrogen dioxide), performic acid, dithiocarbmates, or peroxides. Polymerization can be inhibited by the addition of methanol or stabilizers such as hydorxypropyl methyl cellulose, methyl celluloses, or isophthalobisguanamine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:

Acute oral toxicity (LD50): 42 mg/kg [Mouse]. (Formaldehyde) Acute dermal toxicity (LD50): 15800 mg/kg [Rabbit]. (Methyl alcohol). Acute toxicity of the mist(LC50): 454000 mg/m 4 hours [Mouse]. (Formaldehyde) 3

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2A (Probable for human.) by IARC [Formaldehyde]. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Formaldehyde]. Mutagenic for bacteria and/or yeast. [Formaldehyde]. Mutagenic for mammalian somatic cells. [Methyl alcohol]. Mutagenic for bacteria and/or yeast. [Methyl alcohol]. TERATOGENIC EFFECTS: Classified POSSIBLE for human [Methyl alcohol]. DEVELOPMENTAL TOXICITY: Not available May cause damage to the following organs: kidneys, liver, central nervous system (CNS).

Other Toxic Effects on Humans:

Very hazardous in case of ingestion, . Hazardous in case of skin contact (irritant, sensitizer, permeator), of eye contact (corrosive), of inhalation (lung corrosive). Slightly hazardous in case of skin contact (corrosive).

Special Remarks on Toxicity to Animals:

Formaldehyde: LD50 [Rabbit] - Route: Skin; Dose: 270 ul/kg

Special Remarks on Chronic Effects on Humans:

Exposure to Formaldehyde and Methanol may affect genetic material (mutagenic). Exposure to Formaldehyde and Methanol may cause adverse reproductive effects and birth defects(teratogenic). Adverse reproductive effects of Formaldehyde as well as Methanol are primarily based on animal studies. Very few human studies have been done on the adverse reproductive effects from exposure to Formaldehyde. Studies produced a weak association (limited evidence) between advese human female reproductive effects and occupational exposure. Furthermore, no human data could be found on adverse reproductive effects from occupational exposure to Methanol. Exposure to Formaldehyde may cause cancer.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Corrosive. Causes skin irritation which may range from mild to severe with possible burns depending on the extent of exposure and concentration of solution. Other symptoms may include brownish discoloration of the skin, urticaria, and pustulovesicffular eruptions. May be absorbed through skin with symptoms paralleling those of ingestion. Eyes: Corrosive. Contact with liquid causes severe eye irritation and burns. It may cause irreversible eye damage (severe corneal Solutions containing low formaldehyde concentrations may produce transient discomfort and irritation. Inhalation: Causes irrititation of the respiratory tract (nose, throat, airways). Symptoms may include dry and sore mouth and throat. thirst, and sleep disturbances, difficulty breathing, shortness of breath, coughing, sneezing, wheezing rhinitis, chest tightness, pulmonary edema, bronchitis, tracheitis, laryngospasm, pneumonia, palpitations. It may also affect metabolism weight loss, metabolic acidosis), behavior/central nervous system (excitement, central nervous system depression, somnolence, convulsions, stupor, aggression, headache, weakness, dizziness, drowsiness, coma), peripheral nervous system, and blood. Ingestion: Harmful if swallowed. May be fatal. Causes gastrointestinal irritation with nausea, vomiting (possibly with blood), diarrhea, severe pain in mouth, throat and stomach, and possible corrosive injury to the gastrointestinal mucosa/ulceration or bleeding from stomach. May also affect the liver(jaundice), urinary system/kidneys (difficulty urinating, albuminuria, hematuria, anuria), blood, endocrine system, respiration (respiratory obstruction, pulmonary edema, bronchiolar obstruction), cardiovascular system (hypotension), metabolism (metabolic acidosis), eyes (retinal changes, visual field changes), and behavior/central nervous system (symptoms similar to those for inhalation). Contains Methanol which may cause blindness if swallowed. Chronic Potential Health Effects: Skin: Prolonged or repeated exposure may cause contact dermatits both irritant and allergic. It may also cause skin discoloration. Inhalation: Although there is no clear evidence, prolonged or repeated exposure may induce allergic asthma. Other effects are similar to that of acute exposure. Ingestion: Prolonged or repeated ingestion may cause gastrointestinal tract irritation and ulceration or bleeding from the stomach. Other effects may be similar to that of acute ingestion.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Blodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation:

Methanol in water is rapidly biodegraded and volatilized. Aquatic hydrolysis, oxidation, photolysis, adsorption to sediment, and bioconcentration are not significant fate processes. The half-life of methanol in surfact water ranges from 24 hrs. to 168 hrs. Based on its vapor pressure, methanol exists almost entirely in the vapor phase in the ambient atmosphere. It is degraded by reaction with photochemically produced hydroxyl radicals and has an estimated half-life of 17.8 days. Methanol is physically removed from air by rain due to its solubility. Methanol can react with NO2 in pollulted to form methyl nitrate. The half-life of methanol in air ranges from 71 hrs. (3 days) to 713 hrs. (29.7 days) based on photooxidation half-life in air. (Methyl alcohol)

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification:

CLASS 3: Flammable liquid. Class 8: Corrosive material

Identification: : Formaldehyde Solution, flammable (Methyl alcohol) UNNA: 1198 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Formaldehyde California prop. 65 (no significant risk level): Formaldehyde: 0.04 mg/day (inhalation) California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Formaldehyde Solution Connecticut hazardous material survey.: Formaldehyde; Methyl alcohol Illinois toxic substances disclosure to employee act: Formaldehyde; Methyl alcohol Illinois chemical safety act: Formaldehyde; Methyl alcohol New York release reporting list: Formaldehyde; Methyl alcohol Rhode Island RTK hazardous substances: Formaldehyde; Methyl alcohol Pennsylvania RTK: Formaldehyde; Methyl alcohol Minnesota: Formaldehyde gas; Methyl alcohol Massachusetts RTK: Formaldehyde; Methyl alcohol Massachusetts spill list: Formaldehyde; Methyl alcohol New Jersey: Formaldehyde; Methyl alcohol New Jersey spill list: Formaldehyde; Methyl alcohol Louisiana RTK reporting list: Formaldehyde Louisiana spill reporting: Formaldehyde; Methyl alcohol California Director's List of Hazardous Substances: Formaldehyde; Methyl alcohol TSCA 8(b) inventory: Formaldehyde gas; Methyl alcohol; Water TSCA 4(f) priority risk review: Formaldehyde, Reagnt, ACS SARA 302/304/311/312 extremely hazardous substances: Formaldehyde SARA 313 toxic chemical notification and release reporting: Formaldehyde; Methyl alcohol CERCLA: Hazardous substances.: Formaldehyde: 100 lbs. (45.36 kg); Methyl alcohol: 5000 lbs. (2268 kg);

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 2

Reactivity: 0

Personal Protection: G

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 2

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves (impervious). Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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He alth	3
Fire	0
Reactivity	0
Personal Protection	

Material Safety Data Sheet Hydrofluoric Acid, 48% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Hydrofluoric Acid, 48%

Catalog Codes: SLH2227

CAS#: 7664-39-3

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Water; Hydrofluoric acid

CI#: Not available.

Synonym: Hydrogen Fluoride; Hydrofluoride

Chemical Name: Hydrofluoric acid

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS#	% by Weight
Water	7732-18-5	52
Hydrogen fluoride	7664-39-3	48

Toxicological Data on Ingredients: Hydrofluoric acid: VAPOR (LC50): Acute: 1276 ppm 1 hours [Rat]. 342 ppm 1 hours [Mouse]. 1774 ppm 1 hours [Monkey]. 4327 ppm 0.5 hours [Guinea pig].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

Non-corrosive for skin. Non-irritant for skin. Non-sensitizer for skin. Non-permeator by skin. Non-irritating to the eyes. Non-hazardous in case of ingestion. Non-hazardous in case of inhalation. Non-irritant for lungs. Non-sensitizer for lungs. CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to lungs, mucous membranes, skin, eyes, bones,

teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15-30 minutes. Cold water may be used. Keep the eyelids apart and away from the eyeballs during irrigation. Do not use oily drops or ointment or HF skin burn treatments on the eyes. Get medical attention immediately, preferrably an eye specialist. If a physician is not immediately available, apply one or two drops of ophthalmic anesthetic (e.g. 0.5% Pontocaine Hydrochloride solution). Place ice pack on eyes until reaching emergency room.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately. While waiting for medical attention, it has been shown that flushing the affected area with water for one minute and then massaging HF Antidote Gel into the wound until there is a cessation of pain is a most effective first aid treatment. HF Antidote Gel contains Calcium Gluconate which combines with HF for insoluble Calcium Fluoride, thus preventing the extraction of calcium from the body tissue and bones. Another alternative first aid treatment, after thorough washing of the burned area, is to immerse the burned area in a solution of 0.2% iced aqueous Hyamine 1622 or 0.13% iced aqueous Zephiran Chloride. If immersion is inpractical, towels should be soaked with one of the above solutions and used as compresses for the burn area. Hyamine 1622 is a trade name for Tetracaine Benzethonium Chloride. Zephiran is a trade name for Benzalkonium Chloride. Again, seek medical attention as soon as possible for all burns regardless of how minor they may appear initially.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:

Explosive in presence of metals. Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards: Hazardous decompostion: May form acid vapors, hydrogen fluoride.

Special Remarks on Explosion Hazards:

It's corrosive action on metals can result in formation of hydrogen gas in containers and piping to create explosion hazard. Reacts explosively with Cyanogen fluoride (polymerizes explosively), glycerol plus nitric acid (evolves gas from oxidation), methanesulfonic acid (evolves oxygen difluoride). Hydrofluoric acid reacts with most metals to release hydrogen gas which can form explosive mixtures with air.

Section 6: Accidental Release Measures

Small Splil:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:

Corrosive liquid. Polsonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as organic materials, metals, alkalis, moisture. May corrode metallic surfaces and glass. Store in a polyethylene container.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Synthetic (impervious) apron or full suit. A full impervious suit is recommended if exposure is possible to a large portion of the body. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves (impervious - neoprene, nitrile). Impervious Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit (impervious). Vapor respirator. Impervious Boots. Gloves (impervious).. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

Hydrogen fluoride STEL: 2.3 (mg/m3) from ACGIH (TLV) [United States] STEL: 3 (ppm) from ACGIH (TLV) [United States] CEIL: 6 from NIOSH CEIL: 5 (mg/m3) from NIOSH TWA: 3 STEL: 6 (ppm) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Acrid (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless. Clear

pH (1% soln/water): <2 [Acidic.]

Boiling Point: 108°C (226.4°F)

Melting Point: <-36.111°C (-33°F)

Critical Temperature: Not available.

Specific Gravity: 1.15 - 1.18 (Water = 1)

Vapor Pressure: 3.3 kPa (@ 20°C)

Vapor Density: 1.97 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.5-3 ppm

Water/Oil Dist. Coeff.: Not available. Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:

Easily soluble in cold water, hot water. Partially soluble in diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances:

Highly reactive with metals. Reactive with organic materials, alkalis.

Corrosivity:

Extremely corrosive in presence of glass, of aluminum, of stainless steel(304), of stainless steel(316). Slightly corrosive in presence of copper.

Special Remarks on Reactivity:

Incompatible with glass, ceramics, concrete, alkali materials, and will generate hydrogen gas on contact with metals, leather, rubber, common metals, carbonates, sulfides, cyanides, oxides of silicon, fluorine. Reacts violently with: Acetic anhydride, 2-amino ethanol, Ammonium hydroxide, Arsenic trioxide, Bismuthic acid (produces oxygen), Calcium oxide, Chlorosulfonic acid, Dialuminum octavanadium tridecasilicide, Ethylene diamine, Ethyleneimine, Fluorine, Mercuric oxide, Mercury (II) oxide plus organic materials(above zero degree C), Nitric acid plus lactic acid (mixtures are unstable), Nitric acid plus propylene glycol, Olen-Phenylazopiperidine, Phosphoric anhydride (Phosphorus pentoxide unites with hydrogen fluoride vigorously, even at 19.5 degrees C, HSDB 1990), Potassium permanganate, Potassium tetrafluorosilicate(2-) (evolves silicon tetrafluoride gas), Propriolactone (beta-), Propylene glycol and silver nitrate (gas evolution and formation of silver fulminate), Propylene oxide, Sodium, Sodium hydroxide, Sodium tetrafluorosilicate, Sulfuric acid, Vinyl acetate.

Special Remarks on Corrosivity:

It corrodes most substances except lead, wax, polyethylene, and platinum. It will attack some forms of plastics, rubber and coatings. It attacks glass or stoneware, dissolving the silica. Minor corrosive effect on bronze.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute toxicity of the vapor (LC50): 342 1 hours [Mouse].

Chronic Effects on Humans: May cause damage to the following organs: lungs, mucous membranes, skin, eyes, bones,

teeth.

Other Toxic Effects on Humans:

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May cause adverse reproductive effects (Fetotoxicity) based on animal data. May affect genetic material based on animal data. (Hydrogen fluoride)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes severe irritation and burns/irreversible destruction of skin. Readily penetrates skin and mucous membranes. Eyes: Causes severe irritation and burns/irreversible destruction of eyes. Inhalation: Causes severe irritation and burns/irreversible destruction of respiratory tract/lungs. May also affect behavior (change in motor activity, coma), blood, metabolism, sense organs, cardiovascular system (lowering of blood pressure, arrythmia), urinary system, gastrointestinal tract, respiration, and urinary system. Symptoms may incluide severe throat irritation, cough, dyspnea, cyanosis, lung injury, and noncardiogenic pulmonary edema. Acute inhalation also depletes calcium levels in the body when can lead to hypocalcemia. Inhalation exposure of 50 ppm for 5 min. may be fatal. Ingestion: Causes severe irritation and burns/irreversible destruction of digestive tract/stomach. Serious gastrointestinal effects may include hematemesis. nausea, and severe abdominal pain, painful necrotic leisons, hemorrhagic gastris, pancreatitis, local caustic effects to mouth and gastrointestinal tract. Severe systemic toxicity including hypocalcemia, hypomagnesemia, hyperkalemia, ventricular dysrhythmia and death may also occur. Chronic Potential Health Effects: Repeated exposure to airborne concentrations of 3 ppm or less could be tolerated with no apparent ill effects for 6 hours/day for up to 50 days; redness of the skin and Irritation and burning of the eyes and nose were noted at airborne concentrations between 3 ppm and 4.7 ppm (ACGIH, 1992). No significant changes in pulmonary function occurred with occupational exposure to airborne levels averaging 1.03 ppm (ACGIH). Effects of chronic exposure by inhalation and ingestion include systemic fluoride toxicity (FLUOROSIS), skeletal/ bone structure abnormalties (osteosclerosis, and mottling of the teeth (Clayton & Clayton, 1994; White, 1980; Waldbott & Lee, 1978), Hypocalcemia), metabolic acidosis, chronic bronchitis, pulmonary edema, and death can occur from high-level chronic exposure.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification:

CLASS 6.1: Poisonous material. Class 8: Corrosive material

Identification: : Hydrofluoric Acid solution (Hydrogen fluoride) UNNA: 1790 PG: II

Special Provisions for Transport: Not available

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: Listed as Hydrofluoric acid or Hydrogen fluoride Illinois toxic substances disclosure to employee act: Listed as Hydrofluoric acid or Hydrogen fluoride Illinois chemical safety act: Listed as Hydrofluroic or Hydrogen fluoride New York release reporting list: Listed as Hydrofluoric acid Rhode Island RTK hazardous substances: Listed as Hydrofluoric acid or Hydrogen fluoride Pennsylvania RTK: Listed as Hydrofluoric acid Minnesota: Hydrogen fluoride Massachusetts RTK: Listed as Hydrofluoric acid or Hydrogen fluoride New Jersey: Listed as Hydrofluoric acid or Hydrogen fluoride New Jersey spill list: Listed as Hydrofluoric acid or Hydrogen fluoride Louisiana RTK reporting list: Listed as Hydrogen fluoride Louisiana spill reporting: Listed as Hydrogen fluoride Califoria Director's List of Hazardous substances: Listed as Hydrofluoric acid or Hydrogen Fluoride TSCA 8(b) inventory: Water; Hydrofluoric acid TSCA 4(a) proposed test rules: Listed as Hydrogen fluoride SARA 302/304/311/312 extremely hazardous substances: Listed as Hydrofluoric acid or Hydrogen fluoride CERCLA: Hazardous substances.: Listed as Hydrofluoric acid or Hydrogen fluoride: 100 lbs. (45.36 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances. INTERNATIONAL LISTS: China (National Inventory): Listed as Hydrofluoric acid; Japan (ENCS - National Inventory): Listed as Hydrofluoric acid; Philippines (PICCS - National Inventory): Listed as Hydrofluoric acid

Other Classifications:

WHMIS (Canada):

CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC)

R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed. R35- Causes severe burns. S7/9- Keep container tightly closed and in a well-ventilated place. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37- Wear suitable protective clothing and gloves. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 4

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:

Gloves. Synthetic apron. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Health	3
Fire	2
Reactivity	0
Personal Protection	J

Material Safety Data Sheet Phenol MSDS

Section 1: Chemical Product and Company Identification

Product Name: Phenol

Catalog Codes: SLP4453, SLP5251

CAS#: 108-95-2

RTECS: SJ3325000

TSCA: TSCA 8(b) inventory: Phenol

CI#: Not available.

Synonym: Monohydroxybenzene; Benzenol; Phenyl

hyroxide; Phenylic acid

Chemical Name: Carbolic Acid

Chemical Formula: C6H5OH

Contact Information:

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients			
Composition:			
Name	CAS#	% by Weight	
Phenol	108-95-2	100	

Toxicological Data on Ingredients: Phenol: ORAL (LD50): Acute: 317 mg/kg [Rat]. 270 mg/kg [Mouse]. DERMAL (LD50): Acute: 630 mg/kg [Rabbit]. 669 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (sensitizer, permeator). The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated

exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: 715°C (1319°F)

Flash Points: CLOSED CUP: 79°C (174.2°F). OPEN CUP: 85°C (185°F).

Flammable Limits: LOWER: 1.7% UPPER: 8.6%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:

Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks,

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge; Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:

Phenol + nitrides results in heat and flammable gas generation. Phenol + mineral oxdizing acids results in fire. Phenol + calcium hypochlorite is an exothermic reaction producing toxic fumes which may ignite.

TABLE 1

Hazardous and Class 1 Non-hazardous Wastes Generated
Texas State University
San Marcos, Texas

TCEQ Waste	Waste Description	EPA Waste	Most Common
Waste Code		Code	Method of
Hazardous			Disposal
<u>0001204H</u>	Mixed halogenated/non-halogenated solvents from labs throughout campus and solvents consolidated at the storage facility. The waste stream may contain water.	D001, F001, F002, F003, F005	Incineration
<u>0002103H</u>	Acids with metals from campus labs	D002,D005, D006, D007, D008, D009, D011	Wastewater treatment
<u>0003003H</u>	Mixed lab packs containing hazardous chemicals from campus labs.	D001, D002, F001, F002, F003, F005, U057, U196, U239	Incineration
<u>0004198H</u>	Photographic waste may contain silver, may be reactive	D002, D003, D011	Silver recovery and wastewater treatment
<u>0007119H</u>	Laboratory waste – inorganic, may contain oxidizers.	D001, D002, D005, D006, D007, D008, D009, D011	Wastewater treatment
<u>0010117H</u>	Mercury waste or aqueous mercuric salt solutions	D009, D002	Mercury recovery and wastewater treatment
<u>0016219H</u>	Caustic liquids from consolidating lab wastes, flammable caustics	D001, D002, F002, F003	Incineration

i.			
TCEQ Waste Code	Waste Description	EPA Waste Code	Most Common Method of Disposal
<u>0041110H</u>	Old chemical in drums, caustic/aqueous	D002	Hazardous waste landfill
<u>0044202H</u>	Old Freon no longer in use	U121	Incineration
<u>0049103H</u>	Aqueous Waste with Metals	D005, D006, D007, D008, D011	Wastewater Treatment
Class 1		2011	
00080091	Lab waste from campus.	NA ·	Class 1 landfill
00193081	Empty metal drums or containers	NA	Recycle or Class 1 landfill
00231191	Aqueous solutions with organics and inorganics.	N/A	Wastewater treatment
00245011	Limestone sludge from cleanout of neutralization/filtration sumps (waiting on laboratory analyses).	N/A	Class 1 landfill
<u>00264961</u>	Electrical ballasts with PCBs >50 ppm	N/A	Class 1 landfill or recycle
00273101	Waste rags with total petroleum hydrocarbon concentration greater than 1500 ppm.	NA	Class 1 Landfill
00282091	Waste latex and acrylic paint and paint related substances (nonhazardous) including paint rinsewater	NA	Wastewater treatment or Class 1 landfill.
00313091	Alkaline Batteries	NA	Recycle
00323111	Asbestos Materials	NA	Class 1 Landfill
00423191	Old soda ash used for spill response	NA	Class 1 landfill
00432092	Paint Rinse Water Acrylic or Latex	NA	Class 2 landfill
00455012	Limestone and water slurry sludge	NA	Class 2 landfill

TABLE 2

Method of Analysis for Hazardous Waste Characterization
Texas State University

.San Marcos, Texas

Analysis **EPA Method EPA Method** For Liquids (a) For Solids (a)(b) Hazardous Waste Characteristics: pН 9045 Not applicable Reactivity 9010 (cyanide) 9030 1311/9010, 9030 (sulfide) Ignitability 1010 or 1020 1010 or 1020 TCLP Mercury 7140 1311/7140 All other metals 6010 1311/6010 Volatiles 8260B 1311/8260B Semivolatiles 8270C 1311/8270C Pesticides 8081 1311/8081 Herbicides 8151 1311/8151

Notes:

Class 1 Characteristics

- (a) Reference: EPA SW846, Test Methods for Evaluating Solid Waste Physical and Chemical Methods
- (b) Toxicity Characteristic Leaching Procedure (Method 1311) is performed on solid wastes, and the analysis is run on the leachate.

TCEQ method 1005

TCEQ method 1005