

Keystone Lab-Houston

3911 Fondren
Houston, Texas 77063-5821
Phone (713) 266-6800
FAX (713) 974-5491

FAX COVER SHEET

To: DAVE CARPENTER
Company: NEESA
Fax No: 505-982-~~XXXX~~ 5388

From: ROB JAROS
Date: 8/29/90
Time: 13:30 C.D.T.
Pages: 3 (Following Cover Sheet)
Operator: RJ

Comments: DAVE, AS MORE INFORMATION
BECOMES AVAILABLE I'LL FORWARD IT TO
YOU. MOST OF ANALYSES ARE COMPLETE & THE
RESULTS ARE BEING PROCESSED.

Thanks,
Rob

MEMORANDUM

TRIANGLE LABORATORIES OF HOUSTON, INC.

DATE: AUGUST 20, 1990
TO: All Employees
FROM: S.R. Missler, President
SUBJECT: Wet Lab Accident, August 19, 1990

On the evening of August 19, 1990, a non-injury accident occurred in Wet Lab #1. The accident resulted in the compromise of five samples from a single client. A synopsis of events including the accident and subsequent cleanup activities are discussed below. Actual monetary losses resulting from the accident have yet to be determined, but may include resampling.

Description of the Accident.

On the afternoon of August 19, 1990, lab technicians loaded and assembled Soxhlet-Dean-Stark (SDS) extraction glassware for isolation of PCDD/PCDF extracts in samples. At 7:30 p.m., the glassware was in position and the heating mantles turned on, thus initiating the extraction. No abnormalities in glassware assembly or SDS operation were observed.

At approximately 8:15, while technical personnel were occupied in other lab areas, a loud crash was heard coming from Wet Lab #1. Technical staff observed that the SDS apparatus came loose from its supports, and collapsed to the lab floor. Broken glass, hot solvent, and running water were spread over the lab area in front of the bench.

Immediate Action.

Lab personnel quickly turned off running water and isolated electrical outlets to prevent the possibility of igniting solvent fumes. Fume hoods and air conditioning units were kept on to reduce solvent fume concentrations and maintain ventilation in the lab area. The lab manager was notified immediately and arrived by 8:30 p.m. to assess damage and supervise cleanup operations. The chairman of the board was notified by telephone and apprised of the situation.

The lab manager determined that sample integrity was compromised and that no samples could be salvaged. Wet Lab #1 was isolated and a crew designated to perform cleanup operations. Protective

gear was issued, and removal of solvent, dioxin impregnated samples, and waste water initiated.

All waste was treated as dioxin contaminated. Adsorbent material was spread over the lab floor to remove solvent and contaminated water. Broken glassware, samples, and contaminated adsorbent were transferred to lined containers and labeled as dioxin waste.

The lab floor was washed three times with detergent specifically designated for cleaning dioxin contaminated labware. The lab bench protective coverings were removed and disposed.

Once the lab had been thoroughly cleaned, wipe samples were collected from the floor and bench area. These wipes were then submitted to the Mass Spectrometry Lab for PCDD/PCDF determination. The lab area was then certified as being clean and reopened for operation on August 20.

Evaluation of the Accident.

Suspected Cause of the Accident. A debriefing of the accident was conducted between wet lab personnel and lab management in order to determine the cause of the accident. Because lab personnel did not observe the accident occur, verification of the actual cause was not possible. Investigation of the accident area suggested that two possible causes existed:

1. Failure of restraining clamps
2. Explosion of a soxhlet apparatus

The most likely suspected cause of the accident was failure of the restraining clamps to hold the SDS glassware in position. This was possibly compounded by force exerted on the glassware from high pressure hoses used to carry cooling water to the glassware, and by a slight forward tilt to the glassware upon placing the apparatus in heating mantles. Because each SDS was linked together by cooling water hoses, it is presumed that one SDS apparatus fell forward and had sufficient force to initiate a "domino effect" on the remaining glassware.

Because of the highly volatile and explosive nature of toluene solvent used in the extraction process, and the proximity of heating mantles, explosion was considered a possible cause of the accident. However, because no shattered glass was found behind the soxhlet setup, explosion was believed to be unlikely.

Corrective Action. Lab personnel were instructed to change to a different clamp that fully captures the SDS device, and to clamp both the top and bottom of each assembly. A new cooling water

manifold will be constructed to uncouple the SDS glassware from each other, and to permit the use of more flexible tubing. The wet lab supervisor will be required to verify that glassware has been properly assembled and is secure before each extraction.

Safety Assessment. An assessment of existing safety procedures and equipment, as well as emergency response actions, was made to ensure that the labs provide a safe working environment for employees. The following actions will be taken based on employee suggestions:

1. Additional protective gear including thick soled, solvent and acid resistant boots will be purchased.
2. The placement of emergency equipment was reevaluated and a new, more accessible centralized area will be constructed to hold this equipment.
3. Emergency shutoffs for water and electricity will be provided and more clearly marked.
4. Safety classes on proper emergency response when dealing with solvent and acid/base spills will be conducted.

Final Comments.

The accident described in this memorandum was unforeseen, since the equipment had been used daily for over 6 months without incident. However, selection of a different style of clamp to fully capture the body of the SDS glassware will undoubtedly reduce the chance of such an accident occurring in the future. In addition, the use of separate, unassociated water tubing and a second clamp to provide extra security for glassware will minimize damage.

This incident clearly provides a lesson: all laboratory personnel must be vigilant and constantly reevaluate daily operations to ensure that accidents are prevented.

	unit cost	units	total
airfare	\$1,293	2	\$2,586
per diem @ Atsugi (days)	\$104	16	\$1,664
taxi/car/train in Japan	\$150	1	\$150
excess baggage	\$300	1	\$300
misc supplies	\$500	1	\$500
prep labor (pack, ship, travel set-up)	\$38	108	\$4,050
travel labor	\$38	40	\$1,500
on-site labor	\$38	240	\$9,000
post labor (unpack, clean, store, file claim,	\$38	72	\$2,700
PUF unit (each w/o timer)	\$1,783	n/c	use NEESA's
HI-VOL 4" filters (package of 100)	\$205	n/c	use NEESA's
PUF filters (each)	\$5	n/c	Keystone provide
Cartridges (each)	\$65	n/c	Keystone provide
calibration kit (each)	\$420	n/c	use NEESA's
Tubes			
XAD-2 (pkg of 10)	\$50	1	\$50
filters/cart/cal kit (each)		n/c	use NEESA's
telephone calls & facsimile machine use	\$250	1	\$250
PUF/XAD-2 sandwich prep (each)	\$60	n/c	Keystone provide
Lift - NAS Alameda, CA to NAF Atsugi Japan			
Equip Trans to Alameda (truck rental)	\$300	1	\$300
Labor (truck driver)	\$38	16	\$600
Per Diem (Oakland - wait for lift)	\$84	3.5	\$294
Per Diem (Lift layover in HNL)	\$136	2	\$272
Car (NAS Barber's Point - HNL & rtn)	\$60	1	\$60
Helicopter at Atsugi (hours)	\$1,300	4	\$5,200
Pickup truck rental - Atsugi	\$200	1	\$200
Sample Delivery to Houston			
Airfare	\$500	1	\$500
Per Diem	\$96	1.5	\$144
Rental Car (Oxnard to LAX & rtn)	\$45	2	\$90
Rental Car - Houston	\$40	1	\$40
Labor	\$38	16	\$600
			total
			\$31,050
			less helicopter & pickup truck @ Atsugi
			(\$5,400)
			net total
			\$25,650

This is our formal quotation to resample at NAF Atsugi. We will not charge you more than quoted. We will refund any excess moneys to:
Keystone Laboratories, Houston, Texas.



David Carpenter
Energy Officer/Acting
By direction of the Commanding Officer

TRIANGLE LABS

October 15, 1990

Commander
US Navy Energy
and Environmental Support Agency
Code 111C1
Port Hueneme, CA 93043

Attn: Air / Facilities Division

Re: NAF Atsugi Air Sampling

Sir:

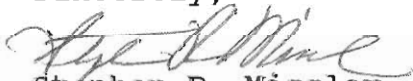
Triangle Laboratories of Houston, Inc. as a subcontractor to Keystone Environmental Resources, Inc. - Houston, has agreed to remunerate NEESA for resampling costs at NAF Atsugi, scheduled to begin on September 17, 1990. Resampling was necessitated due to an accident at Triangle Labs on August 19, 1990, that resulted in the compromise of samples designated for analysis of polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs/PCDFs). Resampling costs have been quoted by NEESA as not to exceed \$25,650 (see enclosed quotation).

Because Triangle Labs is a small business and is unable to provide reimbursement of the full amount in a lump sum payment, NEESA has agreed to accept reimbursement in installments over a period of 12 months. A Schedule of Payment is enclosed.

Triangle Labs understands that the U.S. government and NEESA will waive all penalty and interest concerning remuneration as stipulated in the Schedule of Payment enclosed. It is also understood that any penalty or interest for early payment of the remaining balance given in the Schedule of Payment will also be waived.

We appreciate your patience and cooperation in this matter. Should you require further information, please contact my office at your convenience.

Sincerely,



Stephen R. Missler, Ph.D.
President
Triangle Laboratories of Houston, Inc.

Enclosures

Triangle Laboratories of Houston, Inc.
12823 Park One Drive
Sugar Land, Texas 77478
(713) 240-5330
Fax (713) 240-5341

SCHEDULE OF PAYMENTS

Triangle Laboratories of Houston, Inc.
Remuneration of Resampling Expenses
NAF Atsugi

DATE	PAYMENT	BALANCE DUE
17 SEP 90		\$25,650.00
15 OCT 90	\$2137.50	\$23,512.50
15 NOV 90	\$2137.50	\$21,375.00
15 DEC 90	\$2137.50	\$19,237.50
15 JAN 91	\$2137.50	\$17,100.00
15 FEB 91	\$2137.50	\$14,962.50
15 MAR 91	\$2137.50	\$12,825.00
15 APR 91	\$2137.50	\$10,687.50
15 MAY 91	\$2137.50	\$ 8,550.00
15 JUN 91	\$2137.50	\$ 6,412.50
15 JUL 91	\$2137.50	\$ 4,275.00
15 AUG 91	\$2137.50	\$ 2,137.50
15 SEP 91	\$2137.50	\$ 0.00

TRIANGLE LABORATORIES OF HOUSTON, INC.

P.O. BOX 899 713-240-5330
SUGAR LAND, TX 77478

ROSENBERG BANK & TRUST
FIRST COLONY
P.O. Box 890 • Sugar Land, TX 77487-0890
713-860-8100

No 1639

October 15, 1990

PAY Two thousand-one hundred-thirty-seven and 50/100 DOLLARS \$ 2,137.50

TO THE ORDER OF

Commander
US Navy Energy and Environmental
Support Agency
Code 111C1
Port Hueneme, CA 93043

Stephen M. ...

⑈001639⑈ ⑆13106587⑆ ⑈2401248⑈

TRIANGLE LABORATORIES OF HOUSTON, INC. DETACH AND RETAIN THIS STATEMENT
IF NOT CORRECT PLEASE NOTIFY US PROMPTLY NO RECEIPT DESIRED

DATE	DESCRIPTION	AMOUNT	DISTRIBUTIONS	
			ACCT. NO.	AMOUNT
10-15-90	October Installment: NAF Atsugi Air Sampling			2137.50

EMPLOYEE	PERIOD ENDING	TOTAL EARNINGS	DEDUCTIONS				TOTAL DEDUCTIONS	NET PAY
			F.I.C.A.	WITHHOLDING U.S. INC. TAX	STATE TAX			

AVS

TRIANGLE LABS

September 13, 1991

Barry Hickenbottom
US Navy Energy & Environ.
Support Agency
Code 111C1
Port Hueneme, CA 93043

Yee
COOK DC
CARP DR
HICK LAST

Dear Mr. Hickenbottom:

Enclosed is the check for NAF Atsugi resampling expenses. This check is the final installment on this resampling expense.

We appreciate the understanding you have shown in this matter. If you have any questions please call me at (713) 240-5330.

Sincerely,

Carol S. Berkeley
Carol S. Berkeley
Office Manager

Triangle Laboratories of Houston, Inc.
12823 Park One Drive
Sugar Land, Texas 77478
(713) 240-5330
Fax (713) 240-5341