

APR 18 1985

LHC III

INDUSTRIAL HYGIENE

1984

JERRY E. STEWARD

DO 105123
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DOW CHEMICAL U.S.A.

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March 22, 1985

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RE: INDUSTRIAL HYGIENE - 1984

LHC III had four incidents in 1984 in which the employees were monitored for potential exposure to benzene, compared to eleven in 1983. Of the four incidents, none of the spills resulted in significant personnel exposure. The exchange of catalyst in R-521 by VIP was also monitored. Only the people on top of the reactor were exposed to benzene and the levels were well below 10 ppm. Normal shift operations were monitored and were seen to have very low exposure levels. Enclosed are copies of the monitoring data, the yearly noise survey, the accomplishments for 1984, and the plans for 1985.

Jerry E. Steward
Sr. Envir. Chemist
Light Hydrocarbon III

jys

THE ROLE OF INDUSTRIAL HYGIENE AT LHC #3

The most important function for industrial hygiene is the protection of the workers. The first step in that protection is recognition of potential problems. At LHC #3 several problems areas are defined. The hazards of benzene and toluene are well documented. There are questions concerning the safety of exposure to butadiene, fuel oil, and dicyclopentadiene. LHC #3 has areas of high noise and there is a potential for heat stress in the furnace areas.

LHC #3 is designed to operate under a guideline of one part per million benzene on a time weighted average. The plant design greatly aids in keeping the exposure limits, however engineering is not the only means of achieving low exposures. LHC #3 has a continuing educational program to train personnel in the hazards and methods of handling the chemicals found in the block.

A key part of the role of the industrial hygienist is to provide a data base of worker exposures. Baseline data is collected by monitoring normal day to day operations. Jobs that have a high probability of exposure are defined and monitored. At LHC #3, sampling, barge loading, and pump repair are jobs that need specific job monitoring. Monitoring during a spill cleanup is considered as the worst case monitoring.

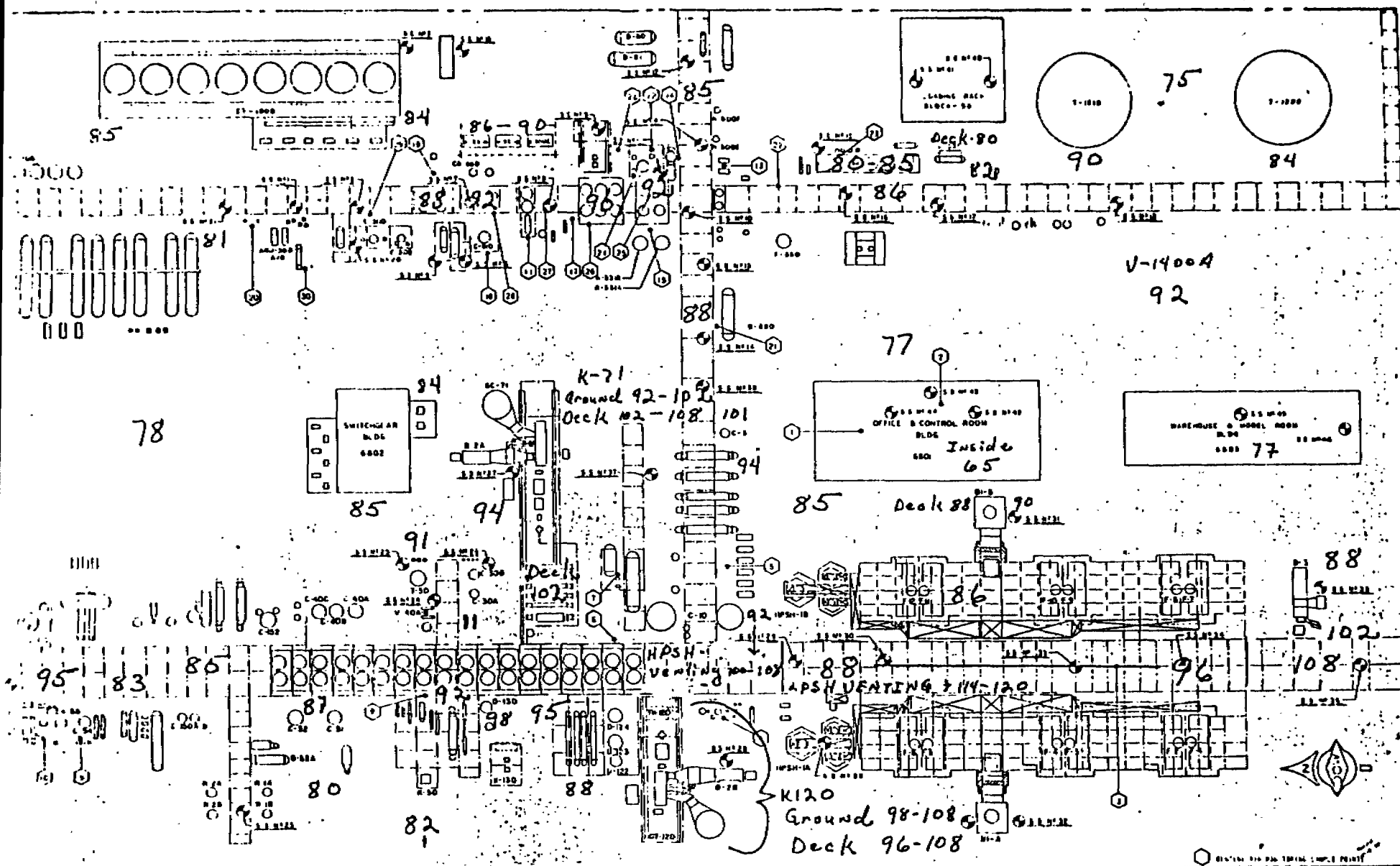
ACCOMPLISHMENTS LHC #3 1984

1. Tank farm, LHC #3 operations and maintenance personnel were trained on the consequences of overexposure to the block's hazardous chemicals. Hearing protection requirements and the monitoring program were also reviewed. Eighty five per cent of the employees received the training program.
2. Personnel were monitored for exposure to benzene and toluene during the clean-up of spills. Base line monitoring data was obtained by monitoring two operating shifts and a maintenance shift.
3. A noise level survey of LHC #3 was taken. The noise levels were checked during the venting of the superheaters. The low pressure superheater exceeded the recommended levels. Capital has been requested to install larger mufflers on the unit.
4. Development work on the methods of analysis for butadiene and dicyclopentadiene was continued.

LHC #3 NOISE SURVEY

DATE	9-16-83	12-20-84
Inside Control Room	65	65
East of Control Room	83	77
N.E. of Control Room	83	85
Warehouse	80	80
West V-1400A	91	92
West T-1200	85	84
West T-1210	81	90
Between T-1200 and T-1210	74	75
D-531 Deck	78	80
West E-531	82	82
Bz Reactor Deck	79	80-85
Bz Reactors-ground level	85	86
North R-500F	--	85
North D-580	87	88
Fin Fan Deck	88-96	88-96
Cooper Deck	90	86-90
S.W. Cooling Tower	86	84
N.W. Cooling Tower	83	85
South Propylene Storage	82	81
Spare Parts Yard	76	78
S.E. Motor Control Center	86	84
East C-55	82	95
S.E. C-54	97	83
S.E. C-150	80	85
S.E. C-52	--	87
South R-1A	77	80
S.W. D-130	92	98
K-71 Ground Level	96-112	92-102
K-71 Deck	99-103	96-108
K-120 Ground Level	96-108	96-108
K-120 Deck	98-104	96-108
South E-9's	96	94
East C-3	102	101
Deck with superheater vents	91	92
HPSH venting	--	100-108
LPSH venting	--	114-120
Furance walkway	90-96	88-96
West B-3	104	102
S.E. B-3	84	88
S.E. B1-B	88	90

All noise levels are given in decibels.



NOISE SURVEY
December 30, 1984
HC III

All NOISE levels
Are Given IN
DECIBELS

NOISE	
DATE	
TIME	
LOCATION	
BY	
FOR	

DOW CHEMICAL U.S.A.	
LABORATORY DIVISION	
AIR MONITORING SYSTEM	
NOISE	86-017-N50-001

LHC #3 INDUSTRIAL HYGIENE
SUMMARY OF MONITORING DATA

1. 02-09-84 Working around slab water pit after dumping an emulsion from C-20.
2. 04-03-84 Block 58 cleanup after P-1601C blew a seal.
3. 05-15-84 Baseline monitoring data - "B" shift days
4. 05-17-84 Baseline monitoring data - "D" shift dogs
5. 05-22-84 Baseline monitoring data - Day Maintenance
6. 07-17-84 R-521 catalyst exchange
7. 10-08-84 Block 58 sump cleanup
8. 10-09-84 Block 58 sump cleanup

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PARTS PER MILLION
TIME WEIGHTED AVERAGE

Y. I. CLASS	PT EQ	TWA (HR)	SEC	TOL	ET SEC	NYL	STY	URINE P	A	DATE
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AND SLAB WATER PIT AFTER DUMPING EMULSION FROM C-20.

433892	3	7	<.01	<.01	<.01	-	<.01	1.0	2.0	2/9/84
SOT										
433828	3	7	<.01	<.01	<.01	-	<.01	2.0	4.0	2/9/84
SOT										

CLEANUP AFTER P-1601C BLEW A SEAL.

206866	0	3.5	.41	.52	.08	.20	.56	15	26	4/3/84
OT										
W. 280799	0	3.5	.72	.62	.05	.18	.54	1.0	6.0	4/3/84
3 OT										
E. 434294	0	1.3	.42	.48	.08	.12	<.01	6.0	7.0	4/3/84
LO OT										
L.G. 433826	0	6.5	.68	.55	.15	<.01	.16	6.0	6.0	4/3/84
20 OT										
J. 278012	0	3.5	.79	.99	.06	.13	.81	20	51	4/3/84
555 OT										
EAUX 433821	0	4.0	.31	.32	<.01	.03	.34	<5.0	6.0	4/3/84
029 OT										
L.M. 434264	0	3.3	.25	.27	<.01	.10	.19	--	-	4/3/84
5318 OT										

PARTS PER MILLION
TIME WEIGHTED AVERAGE

NAME/S.S.	MASTER CLASS	PT EQ	TWA (HR)	BEN	TOL	ET BEN	XYL	STY
"B" SHIFT MONITORING; DAYS; MAY 15, 1984								
M. JENKINS 43666927	432042 S.S.	0	10.0	0.05	0.04	<0.01	<0.01	0.02
R. GERMILLION 439749814	432049 LEAD OS	0	10.0	0.06	0.03	<0.01	<0.01	<0.01
C. RICHARDSON 365620063	070952 FUR OS	0	10.5	0.01	0.05	<0.01	<0.01	<0.01
C.L. HBOLEN 436565812	431043 OS	0	10.7	<0.01	<0.01	<0.01	<0.01	<0.01
M. BROWNING 437067067	433343 BOARD OS	0	11.0	<0.01	<0.01	<0.01	<0.01	<0.01
H. ALFORD, JR. 434882220	432677 BOARD OS	0	11.0	0.01	0.01	<0.01	<0.01	<0.01
A.D. AEBOTT 39909820	433752 BEN SOT	0	10.5	0.05	0.04	<0.01	<0.01	0.02
J.L. DAVIS 436687843	433820 FUR SOT	0	10.5	0.01	0.02	<0.01	<0.01	0.05
C. RAYMOND 546889988	434177 ETH SOT	0	11.0	0.01	0.01	<0.01	<0.01	<0.01
K. DIXON 433942815	433842 SOT	0	11.0	0.02	<0.01	<0.01	<0.01	<0.01
S. DOTSON 435139205	434287 OT	0	12.0	0.03	0.08	<0.01	0.02	<0.01
C.K. EAGLES 437022267	433893 BEN OT	0	10.5	0.03	0.05	<0.01	<0.01	<0.01
R.T. LOONEY 429156805	276854 FUR OT	0	12.0	0.02	<0.01	<0.01	<0.01	<0.01
R. STUFFLEBEAM 448726049	277485 OT	0	10.5	0.05	0.21	<0.01	<0.01	<0.01

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-Feb-85 9:37 AM

Worksheet: (1) IM Monitoring of VIP

Region: 1:1..7:37

MONITORING OF THE CATALYST EXCHANGE IN R-521

ESSEL SETUP CREW

Name	Time	Benzene	Toluene	FPM (TWA)		Styrene
				Ethyl	Ben Xylene	
Ray Pourian	180 min	0.46	0.14	<0.01	0.11	0.06
E. J. Landry	180 min	0.48	0.17	<0.01	<0.01	0.11
Jim Marino	180 min	0.04	<0.01	<0.01	<0.01	<0.01
D. R. Kelly	180 min	0.18	0.30	<0.01	<0.01	<0.01
Joe Landry	180 min	0.40	0.13	<0.01	<0.01	0.03
Randry Pitre	180 min	0.54	0.24	<0.01	<0.01	<0.01

DRUM LOADING CREW

Randry Pitre	480 min	0.17	0.08	<0.01	0.01	0.18
E. J. Landry	480 min	0.13	0.06	<0.01	<0.01	0.02
Joe Landry	480 min	0.12	0.02	<0.01	0.01	0.06
B. R. Kelly	480 min	0.17	0.03	<0.01	<0.01	0.02
Ray Pourian	480 min	0.10	0.02	<0.01	<0.01	0.02
Pat Decote	480 min	<0.01	0.02	<0.01	<0.01	0.08

DOW PERSONNEL

D. Wallace	420 min	0.44	0.07	<0.01	<0.01	0.02
R. D. Sproles	630 min	0.07	0.03	<0.01	<0.01	<0.01
R. W. Lacombe	645 min	0.95	0.11	<0.01	<0.01	0.01
J. R. Bordenlon	180 min	1.72	0.15	<0.01	<0.01	<0.01

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Worksheet: (4) IH-BLOCK 58 SUMPS

Region: 1;1..7:41

IH MONITORING

CLEAN-UP OF BLOCK 58 SUMPS

Monitored 10/8/84

Block contract personnel

Name	Time	Benzene	Toluene	PPM (TWA) Ethyl BZ	Xylene	Styrene
Bull Buhler	510 min	0.23	0.03	<0.01	<0.01	<0.01
John Morris	510 min	0.08	1.90	0.29	0.53	0.23
Oliver Talyor	510 min	0.05	0.16	0.05	0.01	0.05
James Lewis	510 min	0.10	2.85	0.40	0.70	0.30
Pat Decote	510 min	0.11	0.36	0.06	0.03	0.05
A. Shultz	510 min	0.08	0.07	<0.01	0.01	0.02

Dow Personnel (fire watch)

Mike Miller	510 min	0.14	0.06	0.02	<0.01	<0.01
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Monitored 10/9/84

Block contract personnel

Pat Decote	420 min	0.05	0.10	<0.01	<0.01	<0.01
A. Shultz	420 min	0.06	0.14	<0.01	0.01	<0.01
James Lewis	420 min	0.73	7.85	0.43	0.26	0.08
Bull Buhler	420 min	0.06	0.59	0.03	<0.01	0.03
Oliver Talyor	420 min	0.77	8.13	0.40	0.31	0.09

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INDUSTRIAL HYGIENE PLANS FOR LHC #3

1. Continue to inform plant personnel on the consequence of exposure to chemicals in the block. Emphasis will be placed on benzene and butadiene.
2. Continue to monitor personnel for potential exposure to benzene and toluene when cleaning up spills. Obtain job specific monitoring data for sampling and pump repair.
3. Reduce employee exposure during sampling handling through the installation of new benzene sampling systems and through the purchase of a specific gravity meter.
4. Set up a monitoring program for butadiene and dicyclopentadiene.
5. Check the level of radioactivity at the propane and propylene pumps to test if Radon-222 is an exposure problem in the block.
6. Run personal noise dosimeter tests and yearly noise survey.

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