PLAINTIFF'S EXHIBIT

KRC-427

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 3-16-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Karen Tidge

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-17

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: millipore 0.8μ

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BenDix #4

CALIBRATION DATE: 3/16/86

TIME ON: 7:47 am

FLOWRATE: 1.9

TIME OFF: 12:15 pm

FLOWRATE:

Minutes 268 X 1.9 Flowrate = Sample Volume 509.2 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES

Handled wet, Disposable coveralls, gloves, respirators shower after job is complete

JOB DESCRIPTION

Remove asbestos insulation from piping in generator/compressor room

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Invalid - cassette broke away from fitting - filter destroyed

1B 000508

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 3-16-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Karen Tidge

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-17

SAMPLE TYPE: ☒ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: millipore 0.8μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: Bendix #4

CALIBRATION DATE: 3/6/86

TIME ON: 7:47 am

FLOWRATE: 1.9

TIME OFF: 12:15 pm

FLOWRATE:

Minutes 268 X 1.9 Flowrate = Sample Volume 509.2 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES

Handled wet. Disposable coveralls gloves, respirators shower after job is complete

JOB DESCRIPTION

Remove asbestos insulation from piping in generator/compressor room

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Invalid - cassette broke away from fitting - filter destroyed

Sample invalid — not entered in computer

9860161

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 3-16-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: Stuttle

SAMPLE NUMBER: 86-16

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: millipore 0.8 u

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: Bendix # 3

CALIBRATION DATE: 3/6/86

TIME ON: 7:47 Am

FLOWRATE: 1.9 lpm

TIME OFF: 12:15 Pm

FLOWRATE:

Minutes 268 X 1.9 Flowrate = Sample Volume 509.2 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES: Handled wet. Disposable coveralls + gloves, respirators, shower after job is complete

JOB DESCRIPTION: Remove asbestos insulation from piping in generator / compressor room.

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION

Lab Results = .30 f/cc

$$TWA = \frac{.3 \times 268}{480} = .17 \text{ f/cc}$$

986019.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 3-19-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Louis Miranda

EMPLOYEE NUMBER:

SURVEYOR: M. Zimmer

SAMPLE NUMBER: 86-19

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: millipore 0.8μ

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: Bendix #4

CALIBRATION DATE: 3/6/86

TIME ON: 8:34 am

FLOWRATE: 1.9 Lpm

TIME OFF: 9:59 am

FLOWRATE:

Minutes 85 × 1.9 Flowrate = Sample Volume 161.5 L

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
63°	38%	NE 22-30 mph	30.0-

CONTROL MEASURES

Handed wax, disposable gloves + coveralls, respirators, showers after job is complete

JOB DESCRIPTION

Remove asbestos from ~4' piping in the Cat I poly reactors

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Lab Results .38 f/cc

TWA .07 f/cc

9860181

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 3-19-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Karen Telge

EMPLOYEE NUMBER:

SURVEYOR: M. Zimmer

SAMPLE NUMBER: 86-18

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: millipore 0.8μ

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BenDix #3

CALIBRATION DATE: 3/6/86

TIME ON: 8:34 am

FLOWRATE: 1.9 Lpm

TIME OFF: 9:55 am

FLOWRATE:

Minutes 81 m X 1.9 Flowrate = Sample Volume 153.9 L

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
63°	38%	NE 22-30 mph	30.0 —

CONTROL MEASURES:

Handled wet, disposable gloves + coveralls, respirators, shower after job is complete

JOB DESCRIPTION:

Remove asbestos from ~4' piping in the Cat I poly reactors

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION:

Lab Results : .23 f/cc

TWA — .04 f/cc

986020.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-10-86

FACILITY: Southwestern

DEPARTMENT: Maintenance

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: C. Tuttle

SAMPLE NUMBER: 86-20

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: 0.8 μ

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BOX #4

CALIBRATION DATE: 4-10-86

TIME ON: 10:47

FLOWRATE: 2.0 lpm

TIME OFF: 11:15

FLOWRATE:

Minutes 28 X 2 Flowrate = Sample Volume 56 ~~lpm~~

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
69°	84%	E 18 mph	30.00

CONTROL MEASURES: Disposable gloves, coveralls, half face respirator, handled wet

JOB DESCRIPTION: Removing insulation from piping removed from unit

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION

Lab Results: <.01 f/cc

TWA = .001 f/cc

9860 21.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-11-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint.

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: C. Tuttle

SAMPLE NUMBER: 86-21

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: 0.8 u

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #3

CALIBRATION DATE: 4-10-86

TIME ON: 7:37

FLOWRATE: 1.9 Lpm

TIME OFF: 11:40

FLOWRATE:

Minutes 243 x 1.9 Flowrate = Sample Volume 461.7 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
68°	97%	SE 16 mph	29.86

CONTROL MEASURES: Disposable gloves + coveralls, half face respirator, handled wet Hard Hat, safety glasses

JOB DESCRIPTION: Removing insulation around 15 valves on tower in Cracker I unit

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION:

Lab Results = .04 f/cc

TWA = .02 f/cc

9860221

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-11-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Karen Telge

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-22

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: 0.8 u

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX # 4

CALIBRATION DATE: 4-10-86

TIME ON: 1:22 pm

FLOWRATE: 2.0 lpm

TIME OFF: 2:40 pm

FLOWRATE:

Minutes 78 x 2.0 Flowrate = Sample Volume 156 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES: Disposable gloves, coveralls, half face respirator, handled wet

JOB DESCRIPTION: Removing asbestos from overhead pipe in Alky unit

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION:

Lab results < .01 f/cc

TWA = .00 f/cc

986823.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-16-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint.

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 80-23

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: 0.8 u

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX # 4

CALIBRATION DATE: 4-10-86

TIME ON: 8:10

FLOWRATE: 2.0 lpm

TIME OFF: 8:40

FLOWRATE:

Minutes 30 X 2 lpm Flowrate = Sample Volume 60 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
69°	61%	NE 8 mph	30.14

CONTROL MEASURES: Disposable gloves, coveralls, respirator, handled wet

JOB DESCRIPTION: Removing insulation from a pipe in the scrap yard
Pipe already removed

ANALYTICAL TECHNIQUE: PCM

EXPOSURE CONCENTRATION CALCULATION

Lab Result = .025 f/cc = $\frac{.02 \times 30}{480}$ = .001 f/cc T.W.A.

9860271

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-28-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Karen Tidge

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-27

SAMPLE TYPE: ☒ Breathing Zone ☒ General Air

SPECIAL:

FILTER TYPE: 0.8μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #4

CALIBRATION DATE: 4-10-86

TIME ON: 0735

FLOWRATE: 2.0 Lpm

TIME OFF: 10:30

FLOWRATE:

Minutes 175 X 2 Flowrate = Sample Volume 350 ℓ

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
75°	94%	SE 8 mph	29.95

CONTROL MEASURES: Handled wet Disposable gloves, coveralls half face Respirator, hard hat safety glasses

JOB DESCRIPTION: Removing asbestos from exchangers in Crude I unit

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION

Lab Result = .08 f/cc $\frac{.08 \times 175}{480}$ = .03 f/cc T.W.A.

9860261

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-28-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: JTuttle

SAMPLE NUMBER: 86-26

SAMPLE TYPE: ☒ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: 0.8 μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #3

CALIBRATION DATE: 4-10-86

TIME ON: 0737

FLOWRATE: 1.9

TIME OFF: 10:30

FLOWRATE:

Minutes 173 x 1.9 Flowrate = Sample Volume 328.7 ℓ

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
75°	94%	SE 8 mph	29.95

CONTROL MEASURES

Handled wet. Disposable gloves, coveralls, respirator - half face, hard hat, safety glasses

JOB DESCRIPTION

Removing asbestos from exchangers in crude I unit

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Lab Result = .09 f/cc $\frac{.09 \times 173}{480}$ = .03 f/cc T.W.A.

9860028.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 4-29-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint.

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Victor Vallejo

EMPLOYEE NUMBER:

SURVEYOR: CTuttle

SAMPLE NUMBER: 86-28

SAMPLE TYPE: ☒ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: 0.8 u

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #3

CALIBRATION DATE: 4-10-86

TIME ON: 0807

FLOWRATE: 1.9 lpm

TIME OFF: 0825

FLOWRATE:

Minutes 18 X 1.9 Flowrate = Sample Volume 34.2 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
74°	97%	SE 9 mph	30.00

CONTROL MEASURES

Handled wet, Disposable gloves, coveralls, half face respirator Hard hat, safety glasses

JOB DESCRIPTION

Removing insulation from pipe ~6ft in BTX unit

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Lab Result = .03 f/cc $\frac{03 \times 18}{480} =$ .001 f/cc TWA.

986032.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 5-1-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS:

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-32

SAMPLE TYPE: ☒ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: 0.8 u

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #4

CALIBRATION DATE: 4-10-86

TIME ON: 8:00

FLOWRATE: 2.0 Lpm

TIME OFF: 8:50

FLOWRATE:

Minutes 50 x 1.9 Flowrate = Sample Volume 95 Lpm

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES: Handled wet, Disposable gloves, coveralls, hard hat, safety glasses, half face respirator

JOB DESCRIPTION: Removing asbestos east of control room inside I.

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION:

Lab Result = .03 f/cc ÷ .003 f/cc TWA.

986031.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 5-1-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS: 1

EMPLOYEE: Victor Vallejo

EMPLOYEE NUMBER:

SURVEYOR: C Twate

SAMPLE NUMBER: 86-31

SAMPLE TYPE: [X] Breathing Zone [ ] General Air

SPECIAL:

FILTER TYPE: 0.8 μ

[ ] Resp. [ ] Total

TUBE: [ ] Detector [ ] Silgel [ ] Charcoal

IMPINGER: [ ] Midget [ ] Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #3

CALIBRATION DATE: 4-10-86

TIME ON: 8:00

FLOWRATE: 1.9

TIME OFF: 8:50

FLOWRATE:

Minutes 50 x 1.9 Flowrate = Sample Volume 95 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES: Handled wet, Disposable gloves coveralls, half face respirator, Hard hat + safety glasses

JOB DESCRIPTION: Removing insulation east of control room in Crude I

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION

Lab Result = < .01 f/cc $\frac{.01 \times 50}{480}$ = .001 f/cc T.W.A

Janet

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 5/22/86

FACILITY: SOUTHWESTERN REFINING

DEPARTMENT: MAINTENANCE

OPERATION/JOB TITLE: INSULATOR

NUMBER OF SHIFTS: 1

EMPLOYEE: LUIS MIRANDA

EMPLOYEE NUMBER:

SURVEYOR: M ZIMMER

SAMPLE NUMBER: 86 - 33

SAMPLE TYPE: ☑ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: MILLIPORE 0.8 μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: ASBESTOS

PUMP NUMBER: BENDIX # 3

CALIBRATION DATE: 6-12-86

TIME ON: 7:45

FLOWRATE: 1.7 lpm

TIME OFF: 8:55

FLOWRATE:

Minutes (65 X 1.7) Flowrate = Sample Volume 110.5 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
65 ° F	97 %	5 7 MPH	29.92 ↑

CONTROL MEASURES

DISPOSABLE COVERALLS W/ HOOD AND BOOTIES, RESPIRATOR, GLOVES

ALL MATERIAL HANDLED WET — ↳ what type respirator?

JOB DESCRIPTION

REMOVE SUSPECTED ASBESTOS INSULATION FROM PIPES IN CRUDE I AND SULFOLANE

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Invalid - sample not collected on filter

Not entered in computer

RECEIVED
AUG 1 1 1986
Medical Services

986834-1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 5/22/86

FACILITY: SOUTHWESTERN REFINING

DEPARTMENT: MAINTENANCE

OPERATION/JOB TITLE: INSULATOR

NUMBER OF SHIFTS: 1

EMPLOYEE: KAREN TELGE

EMPLOYEE NUMBER:

SURVEYOR: M ZIMMER

SAMPLE NUMBER: 86-34

SAMPLE TYPE: ☑ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: MILLIPORE 0.8 μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: ASBESTOS

PUMP NUMBER: BENDIX # 4

CALIBRATION DATE: 6-12-86

TIME ON: 7:46

FLOWRATE: 1.8 lpm

TIME OFF: 8:55

FLOWRATE:

Minutes 64 X 1.8 Flowrate = Sample Volume 115.2

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
65°F	97%	5 ? MPH	29.82 ↑

CONTROL MEASURES

DISPOSABLE COVERALLS W/ HOOD AND BOOTIES, RESPIRATOR, GLOVES

ALL MATERIAL HANDLED WET

JOB DESCRIPTION

REMOVE SUSPECT ASBESTOS INSULATION FROM PIPES IN CRUDE I AND SULFOLANE

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Lab Results = .96 f/cc

$\frac{.96 \times 64}{480} = .13$ f/cc T.W.A.

986035.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 6-9-86

FACILITY: Southwestern Refinery	DEPARTMENT: Maintenance
OPERATION/JOB TITLE: Insulator	NUMBER OF SHIFTS: 1
EMPLOYEE: Roy Wolford	EMPLOYEE NUMBER:
SURVEYOR: C Tuttle M Zimmer	

SAMPLE NUMBER: 86-35	SAMPLE TYPE: ☒ Breathing Zone ☐ General Air	SPECIAL:
FILTER TYPE: 0.8u	☐ Resp. ☐ Total	TUBE: ☐ Detector ☐ Silgel ☐ Charcoal
IMPINGER: ☐ Midget ☐ Bubbler	SOLUTION:	
CONTAMINANT: Asbestos	PUMP NUMBER: BOX #3	CALIBRATION DATE: 6-12-86
TIME ON: 0820	FLOWRATE: 1.7 lpm	
TIME OFF: 12:00	FLOWRATE:	

Minutes 220 x 1.7 Flowrate = Sample Volume 374 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE

CONTROL MEASURES

~~Disposable~~ Class B type clothing, respirator, handled wet

JOB DESCRIPTION

Removing asbestos from 150 Butane Heater in Alky Units 15 [illegible]

ANALYTICAL TECHNIQUE

EXPOSURE CONCENTRATION CALCULATION

Lab Result = .15 f/cc

$\frac{220 \times .15}{480}$ = .07 f/cc T.W.A.

SWRf/Asbestos 9910

9860 36-1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 6-9-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maintenance

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS:

EMPLOYEE: Victor Vallejo

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-36

SAMPLE TYPE: ☒ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: 0.8 μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #4

CALIBRATION DATE: 6-12-86

TIME ON: 0827

FLOWRATE: 1.8 lpm

TIME OFF: 12:00

FLOWRATE:

Minutes 213 x 1.8 Flowrate = Sample Volume 383.4 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
80°	88%	Calm	29.82

CONTROL MEASURES: Class B type clothing, half face respirator Heartridge, handed wet

JOB DESCRIPTION: Removing Asbestos from Isobutane Heater in Alky Unit

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION

Lab Results = .03 f/cc

$\frac{.03 \times 213}{480} = .01$ f/cc T.W.A.

986037.1

INDUSTRIAL HYGIENE SURVEY DATA - WORKPLACE AIR MONITORING KM-4293

DATE: 6-12-86

FACILITY: Southwestern Refinery

DEPARTMENT: Maint

OPERATION/JOB TITLE: Insulator

NUMBER OF SHIFTS:

EMPLOYEE: Roy Wolford

EMPLOYEE NUMBER:

SURVEYOR: C Tuttle

SAMPLE NUMBER: 86-37

SAMPLE TYPE: ☒ Breathing Zone ☐ General Air

SPECIAL:

FILTER TYPE: 0.8μ

☐ Resp. ☐ Total

TUBE: ☐ Detector ☐ Silgel ☐ Charcoal

IMPINGER: ☐ Midget ☐ Bubbler

SOLUTION:

CONTAMINANT: Asbestos

PUMP NUMBER: BDX #4

CALIBRATION DATE: 6-12-86

TIME ON: 0847

FLOWRATE: 1.8 lpm

TIME OFF: 0945

FLOWRATE:

Minutes 58 × 1.8 Flowrate = Sample Volume ~~127.2~~ 104.4 l

SAMPLING CONDITIONS

TEMPERATURE	HUMIDITY	AIR VELOCITY	BAROMETRIC PRESSURE
80°	94%	SE 5 mph	30.02 ↑

CONTROL MEASURES: Handled wet, Disposable gloves, coveralls, half face respirator

JOB DESCRIPTION: Removing insulation from overhead

Asbestos From: 4/13/84 To: 6/12/86 crude T.

ANALYTICAL TECHNIQUE:

EXPOSURE CONCENTRATION CALCULATION

Lab Result = .02 f/cc

$\frac{.02 \times 58}{480} = .002$ f/cc