

PLAINTIFF'S EXHIBIT

CT-1328

Small
System
100

Industrial Hygiene Survey

RIVERSIDE A/C PIPE PLANT

May 24-27, 1982

IHS 82-153 RIVERSIDE PIPE
PPC
5/24-27/82

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Smead MFG. CO. HASTINGS MN. LOS ANGELES - CHICAGO
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Industrial Hygiene Survey

RIVERSIDE A/C PIPE PLANT

May 24-27, 1982

CTD023042

Report

CertainTeed

Subject	Date	To	Location and mail code
	July 26, 1982	Naamen Rhoades	Riverside, #260
INDUSTRIAL HYGIENE SURVEY RIVERSIDE A/C PIPE PLANT MAY 24-27, 1982		From	Location and mail code
		Peter Norris <i>PJN</i>	1125/4

cc: F. Timpe - 2125/2B
J. M. Coulon - 2125/2B
J. McGinley - 2125/2B
D. Hall - 2125/2B
L. Megargee - Riverside, #260

Attached are the results and recommendations of the Industrial Hygiene Survey conducted on May 24-27, 1982. If you have questions or comments, please contact me.

PJN/cr

Attachment

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Industrial Hygiene Survey
Riverside Asbestos/Cement Pipe Plant
May 24-27, 1982

Introduction

An Industrial Hygiene Survey was conducted at the Riverside Asbestos/Cement Pipe Plant by Peter J. Norris of Corporate Health and Safety on May 24-27, 1982.

This survey was conducted to supplement the on-going in-plant asbestos fiber exposure surveillance program. Additional monitoring for total and respirable silica dust, welding fumes and noise was also performed.

This report is an employee exposure record as defined in Corporate Procedure GE003.02 and must be retained for 30 years. Upon request, this record must be made available to those Federal officials, employee designees or employees as provided for in Corporate Procedure AD011, paragraphs 7 and 8.

Appendix I of this report documents the air sampling methodologies; the analysis techniques; and the current standards used in evaluating the data. The field and in-house laboratory notes on this survey are on file in Corporate Health and Safety.

Summary

All personal exposures and environmental levels of asbestos were below the OSHA PEL of 2 fibers per cubic centimeter of air.

All respirable and total silica dust samples were found to be below the OSHA permissible exposure levels.

Sampling for Nickel, Chromium and Manganese metal fumes during welding operations were found to be less than the OSHA PELs.

A noise survey showed that the Lathe Operators, Lathe Assistants, 1/4 Tester Operator, Hydrotester Operator, Pipe Handlers, Cutoff Saw Operator, Boring Mill Operator, FM Lathe Operator, Coupling Tester and the Crusher Operator are exposed to noise levels of 90 dBA or greater and are required to wear hearing protection. Employees exposed to noise levels of 85 dBA or greater are the Machine Tender, Mandrel Handler, Press Operator, Coupling Cutoff Saw Operator and the Boilerman. These employees should be placed in a hearing conservation program and the use of hearing protection be encouraged.

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Manufacturing and Finishing Schedule

<u>Date</u>	<u>Manufacturing Department</u> <u>1st. Shift</u>	<u>Finishing Department</u> <u>1st. Shift</u>
Monday 5/24/82	8"150, 666 pcs Downtime - 0 hrs.	10"150 18"150 18"2400GS 18"FT30
Tuesday 5/25/82	8"150, 11 pcs 16"150, 15 pcs 24"150, 41 pcs 24"100, 11 pcs 24"150 c/s, 2 pcs Downtime - 1 hr.	10"150 24"3000D SD
Wednesday 5/26/82	21" FT 30, 70 pcs 24" FT 30, 99 pcs Downtime - 1/4 hr.	8"150 10"150 10"200
Thursday 5/27/82	12"150, 192 pcs 12"200, 52 pcs 12"150 c/s, 21 pcs Downtime - 1/4 hr.	12"150 24"150 24" FT 30

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Asbestos

Table I shows the results of the personal samples performed on the pipe manufacturing, pipe finishing, and plant maintenance personnel. The results of the environmental/area samples are listed in Table II and a summary of the sampling results are found in Table IV.

Exposure to asbestos fibers is very well controlled in all areas of the plant and meet the present PEL of 2 f/cc. Forty-five samples or 98% were less than the proposed OSHA standard of 0.5 f/cc and thirty-three or 72% were less than the recommended NIOSH standard of 0.1 f/cc.

The in-house sampling program is being well implemented and a comparison of the plants results with this survey show good correlation.

Manufacturing Department

Housekeeping in this department is excellent. The warehouse is very well kept, no open/torn bags or loose fibers were observed in the warehouse.

Personal exposure samples were taken on all job positions in the department. A number of environmental samples were also taken to determine general airborne levels of asbestos fiber in the area.

Fiber exposure levels were found to be generally less than 0.1 f/cc and all exposures were less than 0.5 f/cc. Samples on two separate days on the Mixer Operator varied from 0.007 to 0.209 f/cc. This is not to be unexpected considering the number of tasks he performs, from staging bags for the opener, driving fork lift truck, and operating Tennant floor cleaner. He must also, on occasion, open the access doors to the bag opener to unjam the fiber bag compactor system. He was observed to wear a 3M 8710 dust respirator. While his exposure does not mandate this, it is an excellent precautionary measure considering the variety of tasks and potential for short term higher level exposures.

Air flow measurements on the bag opener conveyor entrance, portholes and access door openings were in the range of 200-250 ft/min and higher providing excellent negative pressure to minimize leakage from the system. Visual observations using smoke tubes showed excellent air movement characteristics. An environmental sample (037) taken on the bag opener ledge directly in front of the operator's control panel found no appreciable leakage occurring from the opener in normal operation.

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Manufacturing Department (cont.)

While dust transport velocities from the opener to dry mixing could not be obtained due to lack of access, visible observation of the plexiglass section at the old bag dumping section shows excellent flow characteristics.

Two environmental samples on the second level near the mixer (038) and next to the spreader (039), measured 0.76 f/cc and 0.4 f/cc, respectively. The relatively higher levels in these areas probably reflect a lower level effort of housekeeping or minor leaks in the operations. If the asbestos standard is lowered to 0.1 f/cc in the future, better fiber confinement and housekeeping in this area should be considered to reduce the general airborne fiber levels in the department.

Finishing/Fittings Department

Housekeeping and control of asbestos fiber in this Department is excellent.

Personal exposure samples were measured on all job positions in this department. A number of environmental samples were also taken to determine general airborne levels of fiber in the area.

Fiber exposures were all less than 0.5 f/cc and most were found to be less than 0.1 f/cc. The highest levels were found on the Coupling Loader Tester, 0.253 f/cc and the Crusher Operator 0.241 f/cc. The latter employee also operates a forklift and dump truck. Environmental samples in the Finishing Department all measured less than 0.1 f/cc.

Exhaust ventilation face and capture velocity measurements on all finishing tools in operation during the survey found to meet or exceed the American Conference of Governmental Industrial Hygienists recommended practice (Ref: ACGIH Industrial Ventilation Manual - 16th Edition).

The capture efficiency of the large lathes is periodically compromised by the buildup of tailings generated in cutting. The particles or pieces generated are too large to remain airborne and settle in the entrance reducing the capture efficiency. It is recommended that the tailings be cleaned out prior to each shift and checked during the shift and cleaned as necessary.

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Respiratory Protection

Even though asbestos fiber levels are below the PEL, disposable 3M 8710 model respirators and reusable Willson 1200 model respirators are used by some employees in the plant. This is an excellent added precaution in case of any short term exposures over the present PEL. I noted a few problems in the plants respirator program which are not consistent with the OSHA regulations governing the use of respirators.

- There are no written operating procedures governing the selection and use of respirators pertaining to the plant. These should include all information and guidance necessary for their proper selection, use, and care.
- The respirators were not qualitatively fit tested to the employees who wish to wear them. This test is used to select specific types, makes, and models of negative-pressure respirators for use by individual wearers. This qualitative test shall be carried out at least annually on each individual and utilizes irritant smoke or an odorous vapor.
- There is no maintenance program established to clean and sanitize the respirators, inspect and replace defective parts, and store them in a manner that will protect them against dust, sunlight, heat, excessive moisture, or damaging chemicals. These sections are required by OSHA if respirators are to be used at any location. Attached to this report is an outdated copy of the American National Standard on respiratory protection and a copy of a 3M New Products Bulletin pertaining to their 8710 models. The information which is of interest to you is still current and can be of help in complying with the regulations.

Silica

All measured silica exposures for both respirable size and total silica dust were below the OSHA PELs. The results of these samples are provided in Table III.

It should be noted that the silica sampling method measures all dust and the PEL will vary depending upon the percentage of silica in the sample. In Table III, the total or respirable dust exposure should be compared to the calculated OSHA PEL stated in the remarks column for evaluating the silica exposure. To compare with the OSHA Nuisance Dust Standard, the total or respirable dust exposure should be compared to the applicable OSHA PELs of 15 mg/m³ total dust or 5 mg/m³ respirable dust. Formulas for calculating the silica PEL are provided in Appendix I.

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Silica (cont.)

The silica exposures for the Boring Mill Operator is approaching the OSHA PEL (0.82 vs. 1.0 mg/m³). The Coupling Saw Operator exposure was right at the PEL (1.25 vs. 1.3 mg/m³). Using the OSHA published procedure for compliance monitoring, we cannot state with 95% confidence level that these exposures did not exceed the PEL.

[Note: When an employee is sampled and the results analyzed, the measured exposure will rarely be the same as the true exposure due to sampling and analytical inaccuracies. To account for this in compliance monitoring OSHA uses a one-sided statistical confidence test to be able to state with 95% confidence that the PEL was definitely exceeded - Upper Confidence Level (UCL), the PEL was not exceeded - Lower Confidence Level (LCL), or they cannot be sure it was exceeded or not. They state the Sampling and Analytical error (SAE) for silica is 0.24. To determine the UCL and LCL, first divide the concentration measured (X) by the PEL, i.e., $Y = X/PEL$.

$$\text{The UCL (95\%)} = Y + \text{SAE}$$

$$\text{The LCL (95\%)} = Y - \text{SAE}$$

These formulas apply only to full shift samples. For multiple, consecutive samples a different procedure is used.

Thus for Sample 049:

$$\begin{aligned} Y &= 0.823/1.0 = 0.823 \\ \text{UCL} &= 0.823 + 0.24 = 1.06 \\ \text{LCL} &= 0.823 - 0.24 = 0.38 \end{aligned}$$

Since the LCL is less than 1.0 and the UCL is greater than 1.0, OSHA would classify this as a possible overexposure, possibly take more samples, but would not issue a citation.

Our recommendation is to monitor such positions more frequently, improve housekeeping and check for and eliminate leaks in the system.

For sample 052:

$$\begin{aligned} Y &= 1.25/1.30 = 0.96 \\ \text{LCL} &= 0.96 - 0.24 = 0.72 \\ \text{UCL} &= 0.96 + 0.24 = 1.20 \end{aligned}$$

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The same conclusion as above for Sample 049 applies. OSHA would be more prone to retest this area however, because of the higher UCL making it more probable that the PEL may be exceeded.

If the LCL exceeds 1.0, they would definitely issue a citation. If both the LCL and UCL are less than 1.0, you can be 95% confident the PEL was not exceeded.

[The same analysis can be applied to asbestos sampling using an SAE of 0.25 for full shift monitoring.]

Welding Fumes

Personal samples were performed on the plant welder, P. McGregor, to measure his exposure to welding fumes and to evaluate the effectiveness of the local exhaust ventilation system in the maintenance shop. Twice a month, P. McGregor removes the grates and hammers from the secondary crusher and rebuilds the metal up and/or squares off the part with 3/16" x 14" manganese, nickel-chromium alloy electrodes and 3/16" x 14" chromium hardfacing overlay electrodes. Nickel, Chromium and Manganese metals are the predominate metals found in the welding rods and the secondary crusher parts. Sample 055 and 056 were analyzed for these three contaminants and were found to be less than their respective PELs. Nickel and Chromium both have a Permissible Exposure Limit of 1 mg/m³ and Manganese has a Ceiling Limit of 5 mg/m³. A Ceiling Limit refers to a limit which should never be exceeded even instantaneously.

The ventilation hood capture velocities were found to be a minimum 150 fpm at 9 inches away from the flanged duct. This is adequate exhaust ventilation for the control of welding fumes as recommended by the ACGIH Ventilation Manual.

Noise

The major sources of noise in the plant result from the various machines used to cut the pipe and fittings, i.e., Lathes, boring mill, saws, drills, various pipe testers, the crusher. Lesser noise sources are motors, gears, chain belts, and impulse noises from pipe and mandrels impacting.

The high level noises generated in the Finishing Department also raise the noise levels in Manufacturing. Reducing noise in the Finishing Department should be a first priority as it affects the most number of employees. This is no small task either technically or cost-wise. Technically, it may be beyond the capabilities of plant or group engineering and outside acoustical consulting services may be needed.

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Noise (cont.)

The following discussion is intended to suggest possible measures for reducing the noise sources in the plant. No specific recommendations are being made except a general recommendation that noise abatement efforts be increased and all efforts, including rejected suggestions be documented. The documentation, including rejections based on excessive costs is important for defending against OSHA citations. It should be noted that the OSHA regulation does not require that you engineer noise to less than 90 dBA, but rather that you do everything feasible to reduce the noise when exposures are above 90 dBA.

It should also be remembered that a reduction of 3 or more db is a significant reduction because of the logarithmic decibel base.

Damping

A major source of noise in cutting operations is resonance from the vibrating saw blade. Damping of the vibration by adding mass and structural rigidity such as in Fig. 1 is a common method of reducing noise from these sources.

Silencers

The use of silencers or high velocity air exhausts is a common method for attenuating noise which may have application on the air noises from the large lathes and hydrotesters.

Isolation

Probably the most effective means of reducing the noise exposure to the most employees would be to isolate some of the noisier Finishing Department Lathes, such as the 1/4 Tester.

To minimize interference with work processes, the use of flexible curtains or transparent strip curtains made of vinyl, rubber or lead impregnated fiberglass is suggested. These are commercially available from a number of sources. Isolation for lathes, saws, etc. will not reduce the exposures to the operator, but will substantially reduce the transmission of noise to other areas of the plant. A combination of saw blade dampening and isolation could produce significant reductions to both the operator and other employees.

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Sound Absorbing Ceilings

Sound absorption using materials such as acoustical foams and fiberglass are particularly effective with high frequency noise, i.e., 1000 cps and above such as generated in the Finishing Department. Typically, the lathe and saw noises while cutting all pipe generate most noise at frequencies of about 1 to 2 Hz (1000 to 2000 cps).

Ceilings, or panels suspended from ceilings, using good sound absorbing materials will substantially reduce noise in this type of environment. A typical installation is shown in Fig. 2.

Impulse Noises

The bumping of pipes and mandrels produces impulse noises in excess of 110db. While the number of impulses are relatively few and their contribution to the total acoustic energy entering the ear are relatively low as compared to the continuous noise sources, they are a source of hearing loss and loss of comfort in the plant. Dampening of these noises by the use of rubber guards at key impact areas is a possibility.

These are a few methods of noise control but in the interim, high noise areas (greater than 90 decibels) should be posted and the use of hearing protection be required by the employees. Employees exposed to noise levels of 85dB or greater are advised to wear hearing protection, and a hearing conservation program be established to incorporate all employees who have a risk of occupational hearing impairment.

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Recommendations

1. Clean out pipe tailings in the ventilation system prior to each shift on the Large Lathe lines.
2. Update the respiratory protection program to insure proper protection for the individual wearers and to comply with the OSHA regulations.
3. Resampling for silica dust should be performed to substantiate the airborne concentrations measured during this survey. Equipment and instructions will be forwarded to the plant safety manager in the near future.
4. A Hearing Conservation program should be established for employees who are exposed to noise levels of 85 dBA or greater and 90 dBA or greater for an 8 hour day.

This is contained in the elements of the unit programs found in the Corporate Safety Manual which include periodic audiometric testing, use of hearing protection, and recordkeeping. Refer to the unit programs on Hearing Conservation, Occupational Noise Exposure and Audiometric Testing for details.

5. Noise abatement efforts in the finishing department should be increased and all efforts should be documented for compliance purposes. The services of an acoustical consultant should also be considered in solving these noise problems.

Industrial Hygiene Survey
Riverdale A/C Pipe Plant
May 24-26, 1982

TABLE 1
Personal Dust Exposure

NO. R2	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc*	TWA FOR SAMPLE PERIOD (f/cc)	REMARKS
MANUFACTURING DEPARTMENT								
001	Mixer May 24, 1982	Joe Contreras	Fiber	10:28a- 1:05p	157 2.06	0.01	6.14 - 18.2 3.354	Wore 3M 8710 dust respirator 8"150 pipe produced
002	Mixer May 25, 1982	Joe Contreras	Fiber	8:05a- 2:54p	411 2.0	0.21	257.8 - 2.5	Wore 3M 8710 dust respirator
003	Machine Tender May 24, 1982	Albert Horton	Fiber	10:39a- 14:35p	236 2.015	0.17	124.2168	8"150 pipe produced
004	Press Operator May 24, 1982	John Peterson	Fiber	10:36a- 2:30p	242 2.0	0.01	8.78019	8"150 pipe produced
005	Mandrel Handler May 24, 1982	John Casas	Fiber	10:32a- 2:34p	242 1.885	0.09	65.57655	8"150 pipe produced
006	Supervisor May 24, 1982	George Bixler	Fiber	10:43a- 2:36p	233 1.865	0.16	102.2152	8"150 pipe produced
007	Pipe Stripper May 24, 1982	Glen Soncrant	Fiber	10:55a- 2:48p	233 1.97	0.02	10.26	8"150 pipe produced
008	Tray Loader May 24, 1982	Joe Ledford	Fiber	10:49a- 2:40p	231 2.053	0.01	0.63138	8"150 pipe produced
009	Tray Loader/ Truck Operator May 24, 1982	Harry Cole	Fiber	10:52a- 2:40p	228 1.82	0.07	3.8475	8"150 pipe produced
010	Relief May 24, 1982	Ed Renfro	Fiber	11:05a- 2:41p	216 2.043	0.09	62.546535	Relieved: Mandrel Handler 1105 - 1125 Press Operator 1125 - 1145 Machine Tender 1145 - 1200 Forklift Operator/ Warehouse Cleanup 1200 - 100 Mixer Operator 100 - 300
FINISHING DEPARTMENT								
011	Lathe Operator #1 May 26, 1982	David Pasillas	Fiber	8:07a- 3:06p	419 2.045	0.07	85.2369	8"150 Type II pipe finished
012	Hydro Tester/ Lathe Asst. May 26, 1982	George Ray	Fiber	8:18a- 3:06p	408 1.645	0.03	13.48542	8"150 Type II pipe finished

*f/cc = fibers per cubic centimeter of air

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Industrial Hygiene Survey
Riverdale A/C Pipe Plant
May 24-26, 1982

TABLE 1

Personal Dust Exposure

NO. 02	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc	TWA FOR SAMPLE PERIOD (f/cc)	REMARKS
013	Hydro Tester/ Pipe Handler May 26, 1982	Avery Albert AIA	Fiber <i>asbestos</i>	8:02a- 3:01p	419 <i>2PM</i> 1,895	0.06	<i>65.80212</i> <i>65.80212</i>	Lathe Line #1 8"150 Type II pipe finished
014	Pipe Handler May 26, 1982	Richard Amaro	Fiber	8:05a- 3:00p	415 1.98	0.04	<i>47.017415</i>	Lathe Line #1 8"150 Type II pipe finished
015	Inspector May 27, 1982	Benny Grandillo	Fiber	7:29a- 3:00p	451 2.00	0.17	<i>23.57827</i>	Lathe Line #1
016	Supervisor May 27, 1982	Roger Schielke	Fiber	7:25a- 3:00p	455 1.985	0.004	<i>5.45556</i>	
017	1/4 Tester Operator May 26, 1982	Jeff Dobbs	Fiber	8:12a- 3:03p	411 1.58	0.14	<i>136.7015</i>	6"150
018	Boring Mill #2 Operator May 27, 1982	Phil Dobbs	Fiber	7:20a- 3:01p	461 1.90	0.06	<i>79.90962</i>	8"150 T
019A	Cutoff Saw Operator #1 & #2 May 26, 1982	Greg Palomara	Fiber	7:32a- 10:48a	196 1.9	0.05	<i>26.53788</i> 0.045	8"150 Type II pipe and 10"200 Type II pipe. 75% of time on #2 Cutoff Saw.
020				11:45a- 2:52p	<i>383</i> 1.9	0.04	<i>23.085</i>	
021	PM Lathe May 26, 1982	Larry Gil	Fiber	7:45a- 2:55p	430 2.02	0.01	<i>7.30038</i>	18" Sewer
022	Fittings Gluer May 26, 1982	Brian Taylor	Fiber	7:50a- 11:55a	245 1.88	0.05	<i>35.416725</i> 0.045	Various pipes
023				11:55a- 2:57p	<i>482</i> 1.88	0.04	<i>18.615975</i>	
024	Fittings Maker May 26, 1982	Chris Hamilton	Fiber	8:29a- 10:40p	139 1.765	0.06	<i>23.578275</i> 0.065	Various pipes Core Drill, Stone Hinge Drill
025				11:55a- 2:58p	<i>183</i> 1.765	0.07	<i>33.44364</i>	

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TABLE 1
Personal Dust Exposures

POSITION NO.	LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc	TWA FOR SAMPLE PERIOD (f/cc)	REMARKS
026	Coupling Tester/Loader May 26, 1982	Janet Bivens	Fiber	7:57a-12:47p	290 1.805	0.14	5.42	757a - 910 a Loader in Shipping Yard
027				12:47p-3:04p	137 1.025	0.16	107.52	1147a - 304p Coupling to end of 10"200 pipe on lathe line #2
028	Coupling Tester/Loader May 27, 1982	Janet Bivens	Fiber	7:35a-2:58p	443 2.0	0.25	335.8	735a - 930a Coupling Tester 930a - 1015a Loader 1015a - 258p Coupling Tester 8"150 T Pipe
029	Forklift Operator May 26, 1982	Anzy Sanders	Fiber	7:38a-11:52p	252 2.0	0.01	5.82	Roams around entire plant and pipe yard. Trucks various pipe for the day.
030				11:52a-2:56p	184 2.0	0.01	8.16	
031	Crusher Operator May 27, 1982	Tony Silva	Fiber	12:25p-3:13p	168 1.8075	0.24	107.9026	Forklift operator Dump truck operator also
MAINTENANCE DEPARTMENT								
032	Electrician May 25, 1982	Ken Swank	Fiber	7:40a-3:00p	440 1.885	0.01	12.73307	Roams throughout the plant
033	Machinist May 25, 1982	Joe McFann	Fiber	7:30a-3:01p	451 1.987	0.01	7.596345	Remains in shop
034	Boiler Operator May 25, 1982	Don Heuton	Fiber	7:35a-2:46p	431 1.815	0.004	4.340775	Time spent in machine shop, Boiler Room, and autoclave area.

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TABLE 11

Environmental Test Levels

NO. 02	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc	TWA FOR SAMPLE PERIOD (f/cc)	REMARKS
035	Asbestos bag warehouse May 27, 1982	Area	Fiber	7:00a- 2:28p	448	0.14	1.66 / 100 173.222	Center of storage area. 5' off floor. 4 open garage door size openings into warehouse
036	Asbestos bag warehouse May 27, 1982	Area	Fiber	7:05a- 2:29p	444	0.14	1.50 140.4231	Far end of storage area. 5' off floor. 4 open garage door size openings into warehouse
037	Next to bag Opener May 24, 1982	Area	Fiber	11:15a- 2:44p	209	0.05	1.605 24.466155	Top of ledge next to control panel
038	Mixing May 24, 1982	Area	Fiber	11:20a- 2:49p	209	0.76	1.62 42.120725	Mixing area, 2nd level next to stairs
039	Manufacturing May 27, 1982	Area	Fiber	7:12a- 2:30p	438	0.4	1.76 466.0407	Hanging 5' off floor opposite spreader tray. Area where Machine Tender roams
040	Manufacturing May 27, 1982	Area	Fiber	7:10a- 2:32p	442	0.02	2.0175 23.57826	Hanging 5' off floor underneath pipe return. Opposite safety office
041	Finishing Fittings Gluer May 27, 1982	Area	Fiber	7:30a- 2:57p	439	0.03	1.69 29.4975	Top of cabinet next to Fittings Gluer bench
042	Finishing Area May 27, 1982	Area	Fiber	7:16a- 2:34p	438	0.01	1.69 10.407775	Top of soda machine #2 cutoff saw running
043	Finishing Between lathes May 27, 1982	Area	Fiber	7:40a- 2:55p	435	0.01	2.05 8.66121	5' off floor between #2 & #3 lathes. #1 lathe running
044	Maintenance May 25, 1982	Area	Fiber	7:35a- 2:59p	444	0.002	2.052 2.505	Side of tool cage - center of machine shop
045	Maintenance May 25, 1982	Area	Fiber	7:35a- 2:58p	443	VOID		Top of cabinet on wall nearest Finishing area
046	Forklift Maintenance May 25, 1982	Area	Fiber	7:52a- 3:09p	437	0.003	2.02 3.55153	5' off floor directly over workbench next to forklift pit
047	Forklift Maintenance May 25, 1982	Area	Fiber	7:55a- 3:09p	434	0.001	1.918 1.381155	Top of cabinet by door which had been welded shut

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Industrial Hygiene Survey (IHS 83-25)
Riverside A/C Pipe Plant
October 24-28, 1983

TABLE III
Sample Results for Dust

SAMPLE NO. 83-	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT	REMARKS
085 24A	Coupling Saw Operator (10/27/83)	D. Cooley 38	Respirable Dust	11:35a 3:10p	215	<0.09 mg/m ³	
			Silica			not performed	
086 P.A.	#1 Boring Mill 1st Shift (10/27/83)	J. James 36	Respirable Dust	11:43a 3:12p	209	0.12 mg/m ³	
			Silica			not performed	
087 B	Fittings Maker 1st Shift (10/27/83)	C. Hamilton 35	Respirable Dust	11:41a 3:51p	214	<0.093 mg/m ³	
			Silica			not performed	

*Sample not entered
in computer
no field notes.*
JW

*entered
8/16/93
Sld*

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Industrial Hygiene Survey
Riverdale A/C Pipe Plant
May 24-26, 1982

TABLE III

Personal Dust Exposure, Environmental Dust Levels,
Personal Exposure to Welding Fumes

POSITION NO. LOCATION 82 (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT	TWA FOR SAMPLE PERIOD	REMARKS
<i>Method</i>							
~~049~~ 046A, 047A, May 25, 1982	Cutoff Saw #1 & #2	Greg Palmara 3B	Respirable Dust	7:10a- 2:48p	420 1.75	0.23 mg/m ³ 0.196 mg/m ³	30 min. lunch, left left plant 24" - #2 lathe 10" - #1 lathe OSHA limit = 0.51 mg/m ³
			Silica			Not performed	
~~049~~ 046A, 047A, May 25, 1982	Boring Mill #2	Phil Dobbs 3A	Total Dust	7:15a- 2:50p	455 1.6875	0.82 mg/m ³ 0.632 mg/m ³	8" class 150 T
			Silica		1.6875	28% 0.17696 mg/m ³	OSHA limit=1.0 mg/m ³
~~050~~ 048A, May 26, 1982	Boring Mill #2	Phil Dobbs 3B	Respirable Dust	7:43a- 10:50p	187 1.76	0.26 mg/m ³ 0.086 mg/m ³	Left plant for lunch 8" class 150 T
			Silica			Not performed	
~~051~~ 049A, May 26, 1982		3B	Respirable Dust	11:50a- 2:53p	183 1.76	0.17 mg/m ³ 0.55 mg/m ³	OSHA limit= 0.51 mg/m ³
			Silica			Not performed	
~~052~~ 050A, 051A, May 25, 1982	Coupling Saw	Dennis Cooley 3A	Total Dust	7:22a- 2:49p	450 1.79	1.2 mg/m ³ 1.0095 mg/m ³	8" class 150 CG machine cuts 7 couplings at once OSHA limit=1.3 mg/m ³
			Silica		1.79	21% 0.211995 mg/m ³	
~~053~~ 056A, May 25, 1982	Large FM Lathe	Larry Gil 3A	Total Dust	7:22a- 2:52p	450 1.95	0.49 mg/m ³ 0.4335 mg/m ³	18" Sewer
			Silica			Not performed	OSHA limit = 1.53 mg/m ³
~~054~~ 057A, 058A, May 25, 1982	Mixing	Area	Total Dust	8:01a- 3:13p	432 2.052	1.38 mg/m ³ 1.22 mg/m ³	2nd level next to stairs
			Silica		2.052	3.9% 0.04758 mg/m ³	OSHA limit=5.1 mg/m ³
~~055~~ 059A, 060A, 061A, 062A, 063A, 064A, May 26, 1982	Welder	Paul McGregor 55A	Nickel	12:52p- 2:42p	110 2.0	0.22 mg/m ³ 48.4 ug	Building up grates and hammers of the secondary crusher
		ISA	Chromium			0.14 mg/m ³ 30.8 ug	
		54A	Manganese			0.72 mg/m ³ 158.4 ug	OSHA Limit:
		55A	Nickel	2:42p- 3:50p	68	0.10 mg/m ³ 13.6 ug	Nickel - 1 mg/m ³
		ISA	Chromium			0.07 mg/m ³ 9.52 ug	Chromium - 1 mg/m ³
		54A	Manganese			0.62 mg/m ³ 84.32 ug	Manganese-5 mg/m ³

CTD023060

Industrial Hygiene Survey
 Riverside Asbestos/Cement Pipe Plant
 May 24-27, 1982

Table IV

<u>Department</u>	<u>No. Samples</u>	<u>Mean</u>	<u>No. > 2 f/cc</u>	<u>No. > .5 f/cc</u>	<u>No. > .1 f/cc</u>	<u>No. > .05 f/cc</u>	<u>No. > .01 f/cc</u>	<u>No. > .001 f/cc</u>
Manufacturing	16	0.14	0	1	7	10	16	16
Finishing	24	0.07	0	0	6	13	23	24
Maintenance	6	0.01	0	0	0	0	2	6
Plant	46	0.07	0	1	13	23	41	46

1 sample voided due to overloading.

CTD023061

Diagram 1

CertainTeed

CERTAINTEED CORPORATION

PAGE _____

NOISE SURVEY SHEET

REF. 0.0002 MICROBAR

DATE: MAY 24, 1982 PLANT: RIVERSIDE A/C PIPE

JOB DESCRIPTION: VARIOUS

CONDITIONS: NORMAL

ENGINEER: PJ NORRIS

INSTRUMENT: B & K

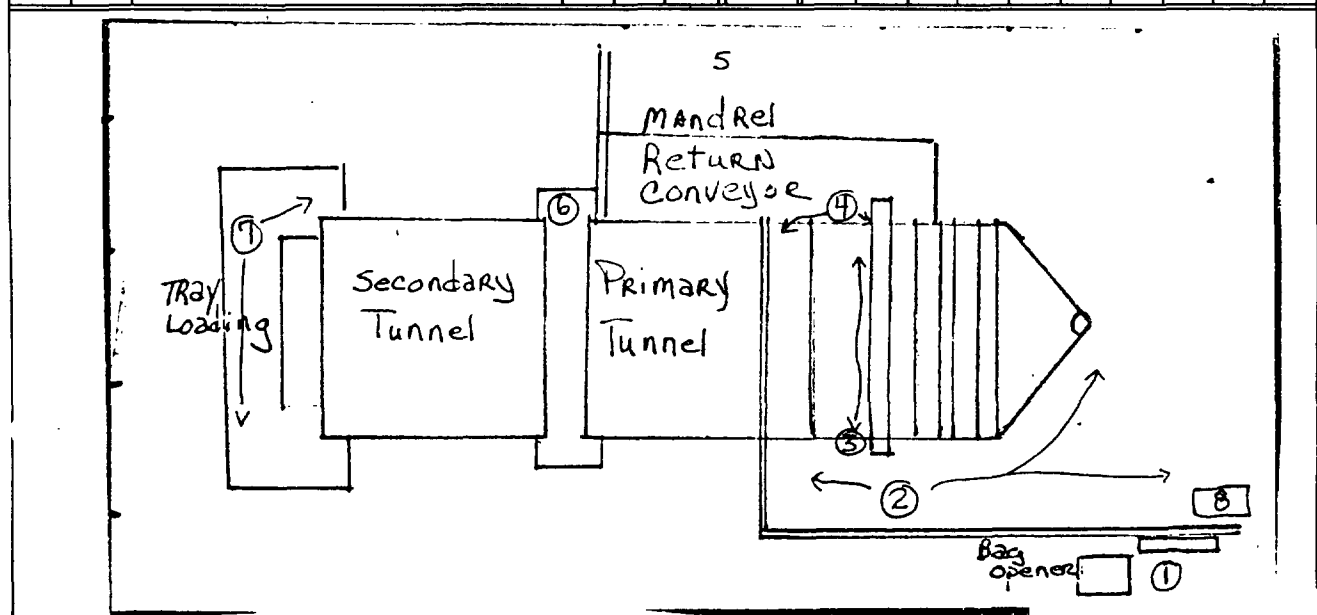
MICROPHONE: B & K

PROTECTOR: FOAM

CALIBRATOR: B & K

CALIBRATION DATE: MAY 24, 1982 BEFORE 93.5 AFTER 93.8

STA. NO.	TIME	EMPLOYEE	NETWORK			PEAK HOLD	OCTAVE CENTER FREQ. (Hz.)									
			A		LIN.		31.5	63	125	250	500	1K	2K	4K	8K	16K
①	5/24	MIXER OPERATOR @ BAG OPENER	79- 80													
2		ALLEY, MACHINE TENDER	85- 92													
3		PRESS OPERATOR	84- 90													
4		MANDREL HANDLER	85- 92													
5		ALLEY, NEAR SAFETY OFFICE	79- 82													
6		PIPE STRIPPER	79- 96													
7		TRAY LOADING	60- 78													
8		GARDNER-DENVER TRIPLEX PLUNGER PUMP	91													



CTD023062

CertainTeed

CERTAINTEED CORPORATION

PAGE _____

NOISE SURVEY SHEET

REF. 0.0002 MICROBAR

DATE: MAY 24-27, 1982 PLANT: RIVERSIDE A/C PIPE

JOB DESCRIPTION:

CONDITIONS:

ENGINEER: P. NORRIS

INSTRUMENT: B & K 2209

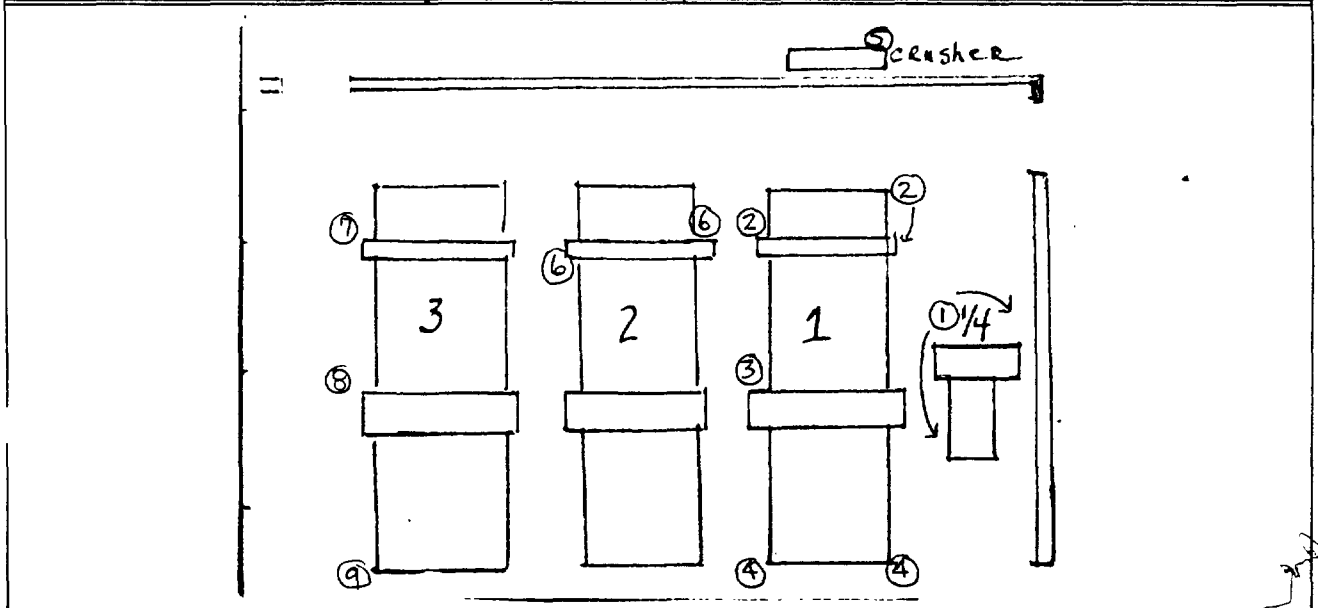
MICROPHONE:

PROTECTOR:

CALIBRATOR:

CALIBRATION DATE: MAY 24, 1982 BEFORE 93.8 AFTER 93.8

STA. NO.	TIME	EMPLOYEE	NETWORK			PEAK HOLD	OCTAVE CENTER FREQ. (Hz.)										
			A		LIN.		31.5	63	125	250	500	1K	2K	4K	8K	16K	
1	5/26	1/4 TESTER, JEFF DOBBS (6" PIPE)	87- 102														
2	5/26	LATHE ASSISTANT, LATHE OPERATOR (8" 150 PIPE)	90- 102 97- 107														
3	5/26	HYDROTESTER (8" 150 PIPE)	92- 101														
4	5/26	PIPE HANDLERS "	87- 95														
-	5/25	CRUSHER, INSIDE BARRIER	106- 110				85	96- 106	97- 102	102	97	95	92	83	78	65- 70	
		OUTSIDE BARRIER (VARIOUS PIPE)	88- 92														
6	5/25	LATHE ASSISTANT, LATHE OPERATOR	85- 104 85- 102														
7	5/24	LATHE OPERATOR (24" PIPE)	85- 104														



CTD023063

DATE: MAY 25, 1982 PLANT: RIVERSIDE A/C PIPE

JOB DESCRIPTION: CUTS SECTIONS OF PIPE

CONDITIONS: NORMAL, CUTTING 18" CLASS ISO PIPE

ENGINEER: PJNORRIS

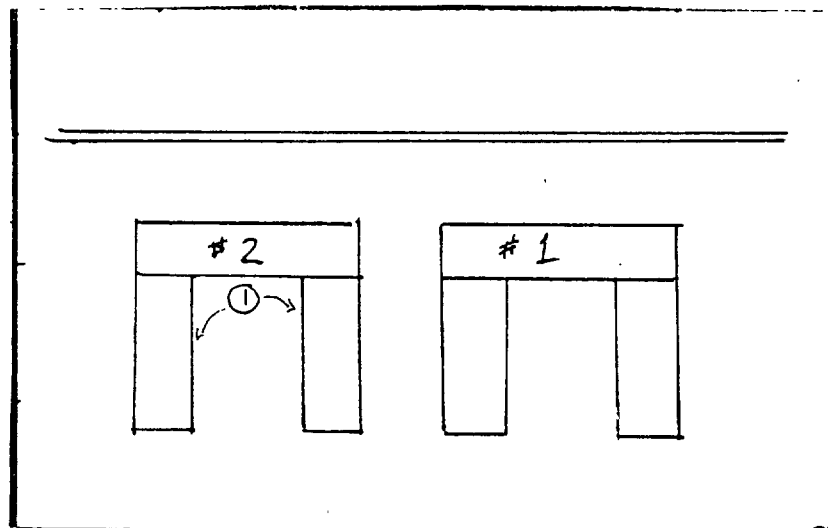
INSTRUMENT: Bick

MICROPHONE: B & K

PROTECTOR: FOAM

CALIBRATOR: BIK

CALIBRATION
DATE: MAY 25, 1982 BEFORE 93.8
AFTER 93.8

[illegible]

CTD023065

Diagram 4

CertainTeed

CERTAINTEED CORPORATION

PAGE _____

NOISE SURVEY SHEET

REF. 0.0002 MICROBAR

DATE: MAY 24-27, 1982 PLANT: RIVERSIDE A/C PIPE

JOB DESCRIPTION:

VARIOUS

CONDITIONS:

NORMAL

ENGINEER: PJ NORRIS

INSTRUMENT:

B&K

MICROPHONE:

B&K

PROTECTOR:

FOAM

CALIBRATOR:

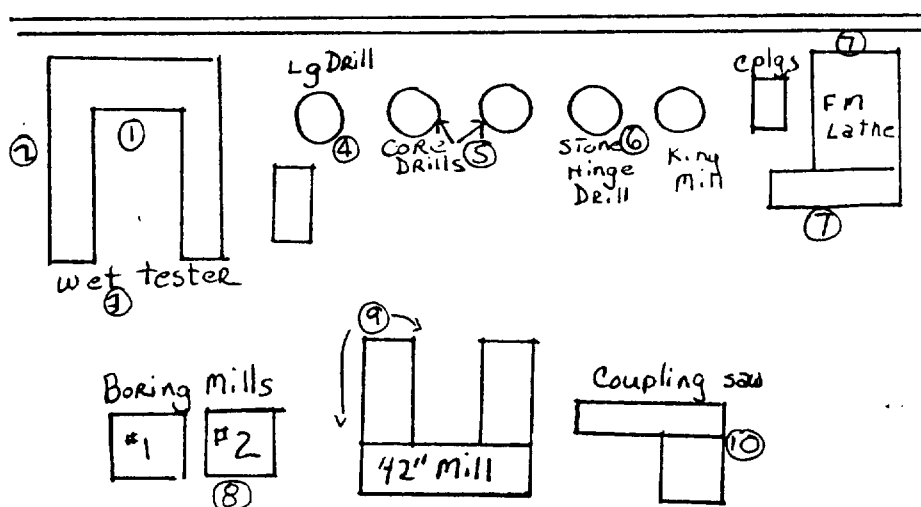
B&K

CALIBRATION DATE:

EACH DAY

BEFORE 93.8
AFTER 93.8

STA. NO.	TIME	EMPLOYEE	NETWORK			PEAK HOLD	OCTAVE CENTER FREQ. (Hz.)										
			A		LIN.		31.5	63	125	250	500	1K	2K	4K	8K	16K	
1	5/27	COUPLING TESTER	85-97			} SPILL OVER FROM LATHE LINES INCLUDED											
2		"	85-95														
3		"	84-90														
4		Large Drill (Band Saw)	83														
5		CORE DRILLS	86														
6		STONE HINGE DRILL	88-91														
		FM LATHE	90-94														
		(10" FT60 AC PIPE)															
8		BORING MILL #2	85-94														
		(8" class ISO)															
9		42" MILL (18"S-3380)	82-87														
10		COUPLING SAW (8" ISO)	83-85														



CTD023066

DATE: MAY 25, 1982 PLANT: DR. KANTERS OFFICE

JOB DESCRIPTION: BACKGROUND NOISE LEVELS IN PROPOSED ROOM FOR AUDIOMETRIC TESTING

CONDITIONS: NORMAL ENGINEER: P.J. NORRIS

INSTRUMENT: B:K 2215

MICROPHONE: B 1 K

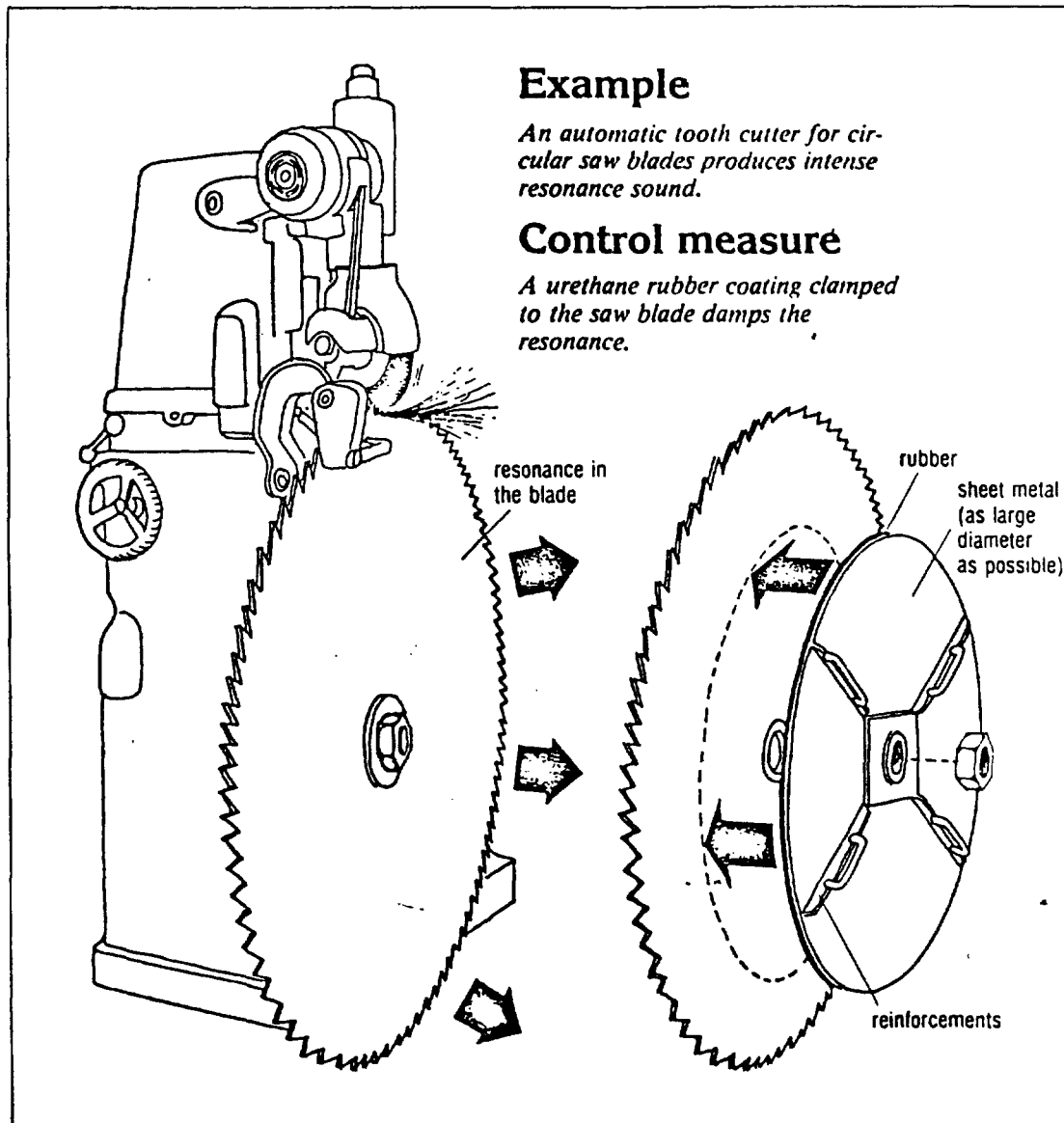
PROTECTOR:

CALIBRATOR: B & K

CALIBRATION DATE:	25 MAY 82	BEFORE 93.8 AFTER 93.8
----------------------	-----------	---------------------------

[illegible]

Figure 1



CTD023068

Figure 2

SOUND MOVEMENT INDOORS • ABSORPTION

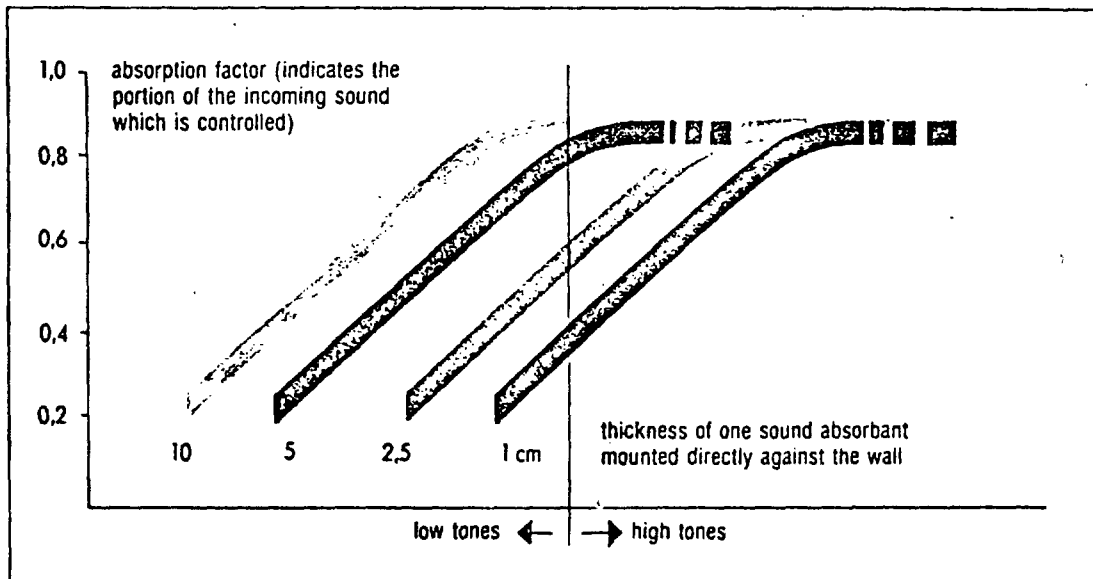
E2

Thick, porous layers absorb both high and low frequency sound

Porous material through which air can be pressed often makes a good sound absorbant. Examples of such materials include felt, foam rubber, foamed plastic, textile fibers and a number of sintered metals and ceramic materials. If the pores are closed, the absorption

is slight. Thin porous absorbants handle high tones. For good effects below 100Hz, the thicknesses required may become impractical. Low frequency absorption is improved with the aid of an air gap behind the absorbant.

Principle



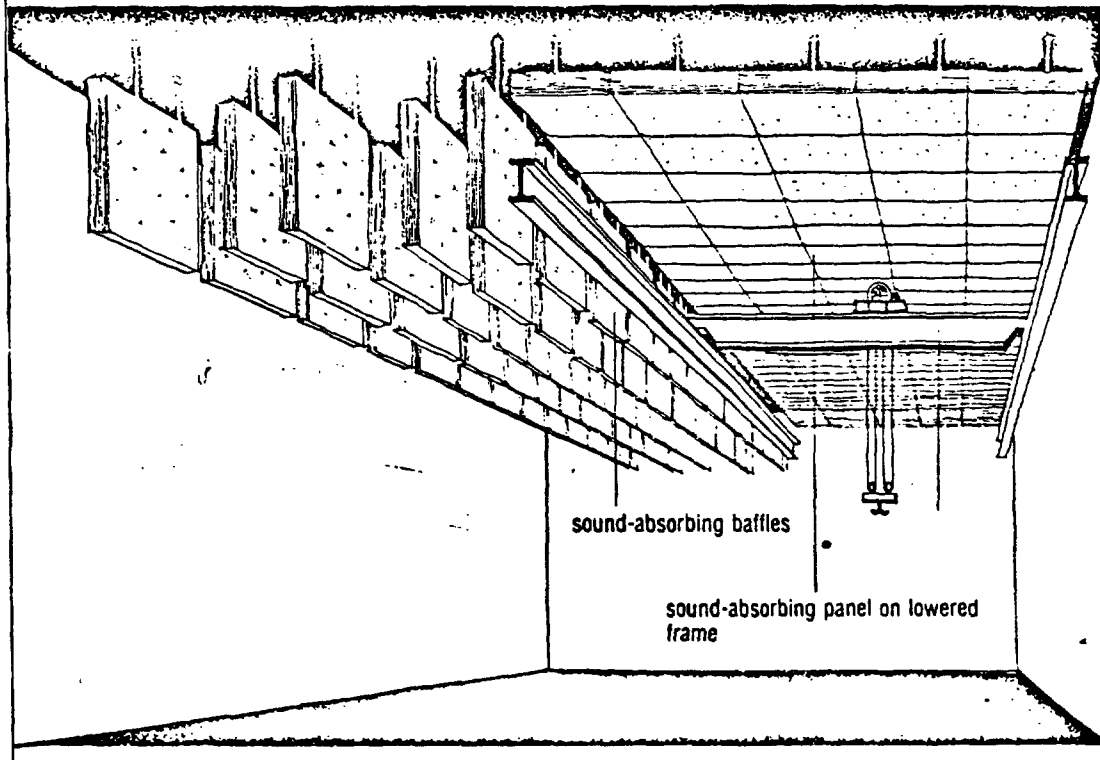
2 inches of fiberglass
72 negligible effectiveness

CTD023069

Example

A workshop with intense low frequency noise is provided with absorbants that are effective for low tones. One part of the shop contains space for hanging absorption baffles, which provide good low frequency absorption and are easily in-

stalled. A traverse leaves no room for baffles in the other part of the shop. Instead, horizontal absorbant panels are installed above the traverse, 8 inches from the ceiling, to improve the low frequency absorption.



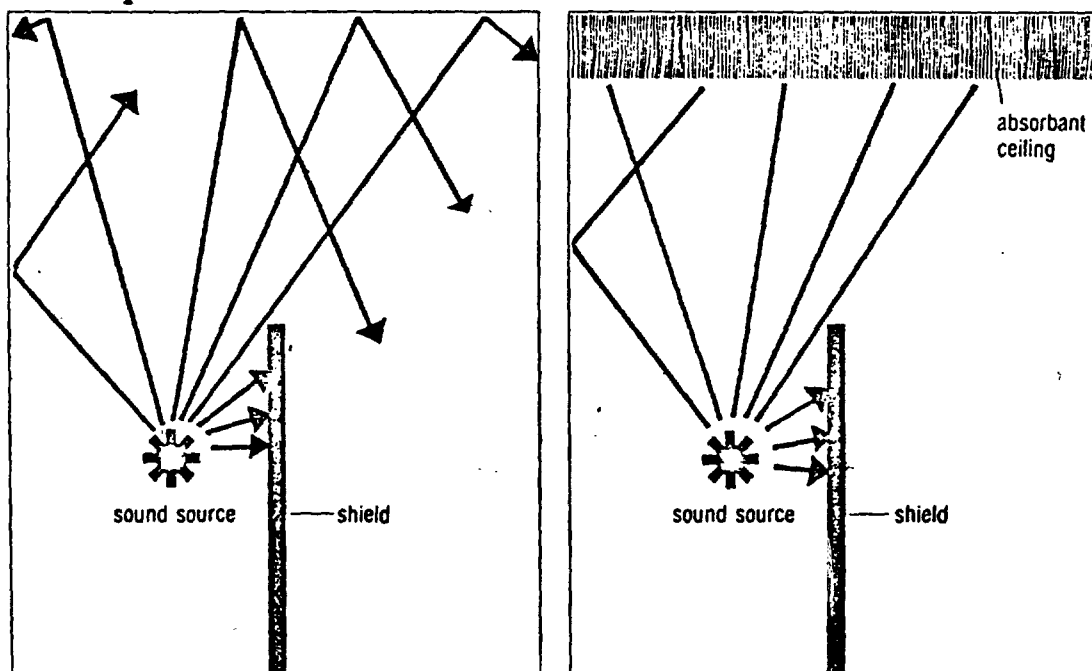
CTD023070

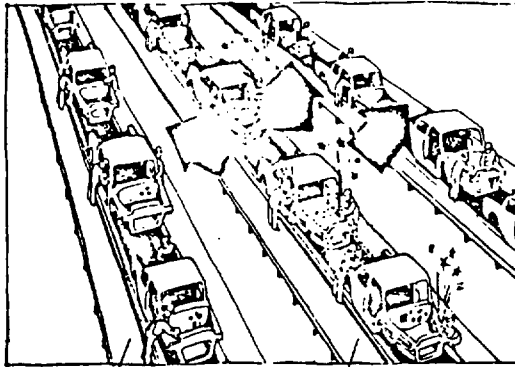
Sound shields may be combined with sound absorbing ceilings

High frequency noise can be reduced by using a shield. The shield is more effective the taller it is and the closer it is placed to the source. The ef-

fect of a shield is considerably reduced if the ceiling is not sound absorbant.

Principle





line with slight noise

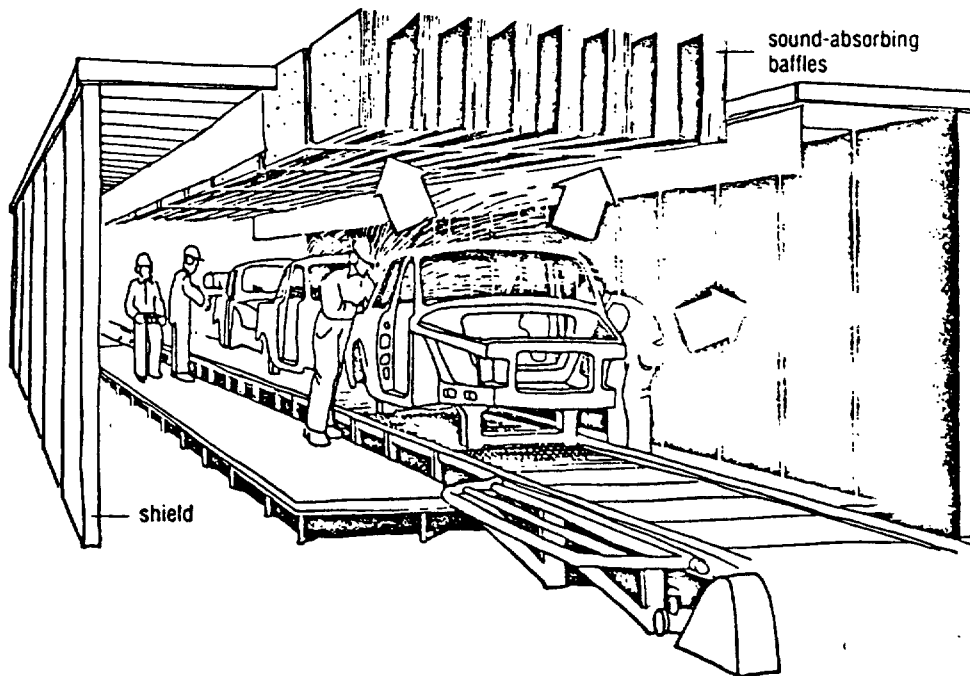
line with intense noise

Example

In an auto plant with several assembly lines, the work on one line is noisier than the other. Grinding work on the bodies produces a shrieking, high frequency sound, disturbing everyone in the plant.

Control measure

The other lines are protected from the grinding noise by means of shields on both sides of the line and sound-absorbing baffles suspended above the open area.



Industrial Hygiene Survey
Riverside Asbestos/Cement Pipe Plant
May 24-27, 1982

Appendix I
Sampling and Analytical Procedures
and
Current Standards

Asbestos

Personal and environmental samples were collected on Millipore 0.8 micrometer cellulose ester filters with DuPont P4000 and P2500 sampling pumps. The pumps were calibrated within the flow rate range of 1.5 - 2.0 lpm.

Analysis was conducted according to the USPHS/NIOSH Membrane Filter Method for Evaluating Airborne Asbestos Fibers (P&CAM 239). Fibers were counted on a Nikon model 96982 phase contrast microscope at 400X magnification.

The current OSHA standard in 29 CFR 1910.1001 states an 8 hour time weighted average to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air (f/cc). Also, no employee shall be exposed at any time to airborne concentrations in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air.

Silica Dust

Total and respirable dust samples were obtained on MSA FWS-B polyvinyl-chloride filters. DuPont P4000 and P2500 air sampling pumps were utilized for area and personal samples and were calibrated at 2.0 liters per minute before and after each sampling period. Gravimetric analysis was accomplished on a Cahn C-25 electro-balance according to methods given in the OSHA Industrial Hygiene Field Operators Manual, April 2, 1979. The percent free silica (quartz, cristobalite, tridymite) in the airborne dust samples were analyzed by the National Loss Control Service Corporation (NATLSCO of Long Grove, IL.). The method utilized for this analysis was the NIOSH Manual of Analytical Methods, 2nd Edition, P&CAM #259. This method utilized the redeposition of the particulate material onto a silver membrane filter followed by X-ray diffraction scan for silica peaks.

The OSHA acceptable limiting for total silica dust and respirable silica dust in the air is given by the formulae below.

$$\text{Silica (total): } \frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$$

$$\text{Silica (respirable): } \frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$$

CTD023073

Industrial Hygiene Survey
Riverside Asbestos/Cement Pipe Plant
May 24-27, 1982

Welding Fumes (Nickel, Chromium, Manganese)

Personal samples were collected on Millipore 0.8 micrometer cellulose ester filters with a DuPont P2500 sampling pump. The pump was calibrated at a flowrate of 1.5 liters per minute before and after each sampling period.

Analysis is performed by NATLSCO following the NIOSH Manual of Analytical Methods, 2nd Edition, Validated Methods, S206 (Nickel); S352 (Chromium); and S5 (Manganese). The analytical procedure involves acid digestion of the filter matrix and analysis by atomic absorption spectroscopy.

These metals are limited to the following airborne concentrations.

- Nickel, 1 mg/m³, TWA
- Chromium, 1 mg/m³, TWA
- Manganese, 5 mg/m³, Ceiling

Noise

A Bruel and Kjaer 2215 sound level meter was used to obtain sound pressure level measurements. This instrument was calibrated before and after each day's measurements.

The permissible exposure (OSHA 29 CFR 1910.95) ranges between 90 decibels for an 8 hour day through 115 decibels for a maximum duration of 1/4 hour per day.

CTD023074

New Safety Products from 3M

March 1, 1981

3M Disposables can be Face Fit too!

Face-fit of negative pressure respirators has recently become a popular and important subject. We would like to bring you up-to-date on the methods available to fit test 3M respirators to meet current requirements.



Quantitative Fit Testing

Quantitative fit testing of negative pressure respirators used for protection against lead aerosols became a requirement on March 1, 1980 per the lead standard 1910.1025.

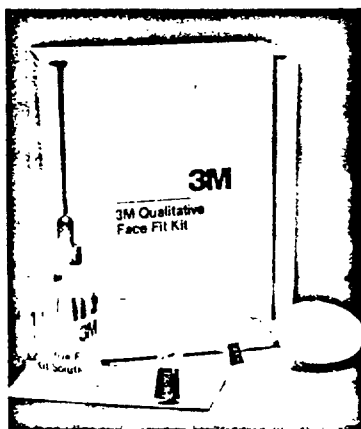
When performing quantitative fit testing the area of interest is the face-to-respirator seal. Therefore, it is desirable to

minimize the amount of test media that can enter the respirator through filter penetration. With a dual cartridge respirator, the normal practice is to replace the filter cartridge with high efficiency particulate filter (HEPA) cartridges. To accomplish the same result, 3M has available special fit test respirators, the 8710Q, 9900Q, 9910Q, and 9920Q. These respirators are of the same construction as their

numerical counterparts except that special higher efficiency filter material is used to reduce filter penetration during quantitative fit testing.

For convenience of testing, the fit respirators are supplied with a probe in place ready for attachment in the fit test booth.

For performing quantitative fit testing of the 3M Gas and Vapor respirators, the #8735 QNFT Kit is available.



Qualitative Fit Testing

OSHA Directive CPL 2-2.29 issued October 27, 1980 clarified the requirement and enforcement of qualitative fit testing. To comply with this requirement, 3M has available the 3M 9912 Qualitative Fit Test Kit. The kit provides a simple and quick method of testing respirator fit. A test atmosphere is provided by a nebulizer that creates an aerosol mist of saturated sodium saccharin. If a leak is present, it is detected as an extremely sweet taste. The 9912 Kit provides an

excellent method of fit testing without the hazards of the irritant smoke test, i.e., eye and respiratory irritation.

If a customer insists on using irritant smoke as a test agent, we recommend that the Q-series fit test respirators be used (with the test probe plugged). The higher filter efficiency of the Q series, will reduce the filter penetration. For the proper method of irritant smoke testing refer to "A Guide To Industrial Respiratory Protection" by John Pritchard, NIOSH Publication, No. 76-189.

R-NSPL(11.5)R2

Made in U.S.A.

Occupational Health and Safety Products Division/3M
220-7W 3M Center
St. Paul, MN 55144

CTD023075



American National Standard

This 1969 edition of American National Standard Z88.2 has been superseded by a revised edition approved by ANSI on May 22, 1980. This earlier edition is provided for information purposes.

practices for
respiratory protection

ANSI Z88.2-1969



american national standards institute, inc.
1430 broadway, new york, new york 10018

CTD023076

**American National Standard
Practices for Respiratory Protection**

Sponsor

**U. S. Department of the Interior
Bureau of Mines**

Approved August 11, 1969

American National Standards Institute, Inc

CTD023077

American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

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CTD023078

Foreword

(This Foreword is not part of American National Standard Practices for Respiratory Protection, Z88.2-1969.)

This is a revision of the respiratory protection portion of American National Standard Safety Code for Head, Eye, and Respiratory Protection, Z2.1-1959. The United States Department of the Interior, Bureau of Mines, which acted as cosponsor of Z2.1-1959, accepted sponsorship of the project on respiratory protection when it was deemed advisable to separate the portions of that Z2.1 standard. A Z88 Standards Committee was organized and met on September 24, 1963, to review the section of Z2.1-1959 dealing with respiratory protection. The Committee decided to revise and rewrite that section. The fifth draft of the proposed standard was submitted to letter ballot and accepted by the Z88 Committee on May 2, 1969. It was approved as an American National Standard on August 11.

Since questions may arise from time to time concerning interpretation of this standard, an Interpretation and Review Committee has been established, to provide for the uniform handling of doubtful cases. Anyone using this standard and desiring an interpretation may communicate with the Standards Institute. The Committee will also review new developments in respiratory protection and determine the need for revision or supplementation of this standard.

Suggestions for improvement gained in the use of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

The Z88 Standards Committee had the following personnel at the time it approved this standard.

Robert H. Schutz, *Chairman*

Francis X. Worden, *Secretary*

<i>Organization Represented</i>	<i>Name of Representative</i>
American Conference of Governmental Industrial Hygienists	E. C. Hyatt
American Foundrymen's Society	William B. Huelsen
American Gas Association	T. L. Powers
.....	H. W. Becker (<i>Alt</i>)
American Industrial Hygiene Association	E. C. Hyatt
.....	W. H. Revoir (<i>Alt</i>)
American Insurance Association	Robert R. Conroy
.....	Victor Bohn (<i>Alt</i>)
American Mutual Insurance Alliance	J. A. Houghton
.....	Frederick H. Deeg (<i>Alt</i>)
American Petroleum Institute	W. E. Carroll
.....	J. F. McKenna (<i>Alt</i>)
American Society of Mechanical Engineers	Thomas R. Curran
American Society of Safety Engineers	Richard H. Burr
.....	Harold Ritchie (<i>Alt</i>)
American Welding Society	A. D. Brandt
Association of American Railroads	D. P. Russell
Electronic Industries Association	F. X. Worden
.....	James J. Sullivan (<i>Alt</i>)
General Services Administration	Lane Parsons
Industrial Medical Association	Ernest M. Dixon
Industrial Safety Equipment Association	Eugene W. Merry
.....	Benjamin Smilg
.....	Harley N. Trice
.....	Charles N. Sumwalt (<i>Alt</i>)
.....	Howard M. Weiss (<i>Alt</i>)
International Association of Fire Chiefs	Raymond J. Brady
.....	Donald M. O'Brien (<i>Alt</i>)
International Association of Governmental Labor Officials	Martin Slotkin
National Safety Council	H. H. Fawcett
.....	Julian B. Olishifski (<i>Alt</i>)
Telephone Group	F. X. Worden
U. S. Atomic Energy Commission	Carl G. Welty, Jr
.....	Humphery Gilbert (<i>Alt</i>)

CTD023079

<i>Organization Represented</i>	<i>Name of Representative</i>
U. S. Coast Guard	Norman W. Lemley
U. S. Department of Agriculture	Rolland M. Waters
U. S. Department of the Army	Robert A. Duguid
	Harry H. Ackerman (<i>Alt</i>)
U. S. Department of the Interior	Robert H. Schutz
	E. J. Kloos (<i>Alt</i>)
U. S. Department of Labor	G. Walker Daubenspeck
	John O'Neill (<i>Alt</i>)
U. S. Department of the Navy	Samuel H. Barboo, Jr
	N. E. Rosenwinkel (<i>Alt</i>)
U. S. Public Health Service (<i>Liaison</i>)	Howard E. Ayer
	Charles H. Powell (<i>Alt</i>)
Individual Member	William E. Clark

The subcommittee which prepared the final draft on this standard had the following personnel.

Carl G. Welty, Jr, *Chairman*

H. H. Ackerman
Raymond J. Brady
R. H. Burr

H. H. Fawcett
E. C. Hyatt
W. H. Revoir

CTD023080

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American National Standard Practices for Respiratory Protection

1. Introduction

This standard sets forth accepted practices for respirator users. It provides information and guidance on the proper selection, use, and care of respirators and sets forth recommended requirements suitable for adoption into regulations governing their use.

1.1 Scope. The scope of this standard includes safe practices and requirements for using respirators for protection of the respiratory system from inhalation of particulate matter, noxious gases and vapors, and oxygen deficiency. *Excluded* are 1) underwater protection, 2) high-altitude aircraft oxygen systems, and 3) protection against military munitions. Although the standard does not cover engineered protective measures (for example, ventilation), exposure control shall be accomplished as far as is feasible by accepted engineering methods before considering or instituting use of respirators.

1.2 Purpose. The standard is intended to provide guidance that will assist respirator users in safeguarding health and life through proper selection and use of respirators. Use of respirators implies that the wearer needs protection from an atmosphere that might threaten his life or health. Therefore, it is imperative that the level of protection needed be determined and provided in both normal and emergency conditions of use, particularly if exposure to the atmosphere could be immediately dangerous to life or health. Use of respirators in atmospheres that are dangerous to life or health is discussed in 6.3.

1.3 "Shall" and "Should". The provisions of this standard are mandatory in nature where the word "shall" is used and advisory in nature where the word "should" is used.

1.4 Exceptions. Exceptions to the requirements in Section 3, Recommended Requirements for Codes, may be granted by competent authority, provided that an equally acceptable mode and degree of protection is afforded.

2. Definitions

abrasive-blasting respirator. See *respirator*.

aerodynamic diameter. The diameter of a unit density sphere having the same settling velocity as the particle in question of whatever shape and density.

air-line respirator. See *respirator*.

air-purifying respirator. See *respirator*.

air-regulating valve. An adjustable valve used to regulate airflow to the facepiece, helmet, or hood of an air-line respirator.

air-supply device. A hand- or motor-operated blower for the hose mask, or a compressor or other source of respirable air for air-line and abrasive-blasting respirators.

approved. Tested and listed as satisfactory by an authority having jurisdiction, such as U.S. Department of the Interior, Bureau of Mines, or U.S. Department of Agriculture.

breathing tube. A tube through which air or oxygen flows to the facepiece, helmet, or hood.

canister (air-purifying). A container filled with sorbents and catalysts that remove gases and vapors from air drawn through the unit. The canister may also contain an aerosol (particulate) filter to remove solid or liquid particles.

canister (oxygen-generating). A container filled with a chemical which generates oxygen by chemical reaction.

cartridge. A small container filled with air-purifying media.

catalyst. In respirator use, a substance which converts a toxic gas (or vapor) into a less-toxic gas (or vapor).

chemical-cartridge respirator. See *respirator*.

contaminant. A harmful, irritating, or nuisance material that is foreign to the normal atmosphere.

corrective lens. A lens ground to the wearer's individual corrective prescription.

detachable coupling. A device by means of which the respirator wearer, without using hand-

tools, may detach the air-supply line from that part of the respirator worn on the person or from the air-supply source.

disinfection. The destruction and removal of pathogenic organisms, especially by means of chemical substances.

dust. See Table 2.

exhalation valve. A device that allows exhaled air to leave a respirator and prevents outside air from entering through the valve.

eyepiece. A gastight, transparent window(s) in a full facepiece through which the wearer may see.

facepiece. That portion of a respirator that covers the wearer's nose and mouth in a half-mask facepiece or nose, mouth, and eyes in a full facepiece. It is designed to make a gas-tight or dust-tight fit with the face and includes the headbands, exhalation valve(s), and connections for air-purifying device or respirable-gas source or both.

filter respirator. See *respirator*.

filter. A fibrous media (canned or uncanned) used in respirators to remove solid or liquid particles from the airstream entering the respirator enclosure.

fog. See Table 2.

full facepiece. See *facepiece*.

fume. See Table 2.

gas. An aeriform fluid which is in the gaseous state at ordinary temperature and pressure.

gas mask. See *respirator*.

half-mask facepiece. See *facepiece*.

head harness. a device for holding the facepiece securely in place on the wearer's head.

helmet. A device that shields the eyes, face, neck, and other parts of the head.

hood. A device that completely covers the head, neck, and portions of the shoulders.

hose mask. See *respirator*.

immediately dangerous to life or health. Included are conditions that pose an immediate threat to life or health and conditions that pose an immediate threat of severe exposure to contaminants such as radioactive materials which are likely to have adverse delayed effects on health.

inhalation valve. A device that allows respirable air to enter the facepiece and prevents exhaled

air from leaving the facepiece through the intake opening.

irrespirable. Unfit for breathing.

mist. See Table 2.

MPC. Maximum permissible concentration. These concentrations are set by the National Committee on Radiation Protection. They are recommended maximum average concentrations of radionuclides to which a worker may be exposed, assuming that he works 8 hours a day, 5 days a week, and 50 weeks a year.

particulate matter. A suspension of fine solid or liquid particles in air, such as dust, fog, fume, mist, smoke, or sprays. Particulate matter suspended in air is commonly known as an aerosol.

pneumoconiosis-producing dust. Dust, which when inhaled, deposited, and retained in the lungs, may produce signs, symptoms and findings of pulmonary disease.

resistance. Opposition to the flow of air, as through a canister, cartridge, particulate filter, or orifice.

respirable. Fit to be breathed.

respirator. A device designed to protect the wearer from inhalation of harmful atmospheres. See Section 5, Classification, Description, and Limitations of Respirators.

self-contained breathing apparatus. See *respirator*.

sorbent. A material which removes toxic gases and vapors from air inhaled through a canister or cartridge.

spray. See Table 2.

supplied-air respirator. See *respirator*.

supplied-air suit. A one- or two-piece suit that is impermeable to most particulate and gaseous contaminants and is provided with an adequate supply of respirable air.

TLV. Threshold limit value. A table of these values and accompanying precautions is published annually by the American Conference of Governmental Industrial Hygienists.

toxic dust. Dust that may be harmful to the respiratory system or to other parts of the body through passing from the respiratory tract into the blood stream.

valve (air or oxygen). A device which controls the direction of air or oxygen flow or the rate and pressure at which air or oxygen is delivered, or both.

vapor. The gaseous state of a substance that is solid or liquid at ordinary temperature and pressure.

window indicator. A colorimetric indicator for gas mask canisters which denotes the service life for a particular gas.

3. Recommended Requirements for Codes

3.1 Purpose. This section includes recommended requirements for authorities considering establishment of respirator regulations or codes. The following recommended requirements are supplemented by recommended practices in subsequent sections of this standard.

3.2 Permissible Practice. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, *the primary objective shall be to prevent atmospheric contamination.* This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to the following requirements.

3.3 Employer Responsibility

3.3.1 Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee.

3.3.2 The employer shall provide the respirators which are applicable and suitable for the purpose intended.

3.3.3 The employer shall be responsible for the establishment and maintenance of a respiratory protective program which shall include the general requirements outlined in 3.5.

3.4 Employee Responsibility

3.4.1 The employee shall use the provided respiratory protection in accordance with instructions and training received.

3.4.2 The employee shall guard against damage to the respirator.

3.4.3 The employee shall report any malfunction of the respirator to the responsible person.

3.5 Minimal Acceptable Program

3.5.1 Written standard operating procedures governing the selection and use of respirators shall be established.

3.5.2 Respirators shall be selected on the basis of hazards to which the worker is exposed. See Section 4, Classification of Respiratory Hazards.

3.5.3 The user shall be instructed and trained in the proper use of respirators and their limitations. See 7.4 and 7.5.

3.5.4 Where practicable, the respirators should be assigned to individual workers for their exclusive use.

3.5.5 Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use, or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use. See 8.3.

3.5.6 Respirators shall be stored in a convenient, clean, and sanitary location. See 8.5.

3.5.7 Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use. See 8.2.

3.5.8 Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained. See 6.3.4 and 10.4.

3.5.9 There shall be regular inspection and evaluation to determine the continued effectiveness of the program. See Section 8, Maintenance and Care of Respirators, and Section 10, Evaluation of Respirator Program Effectiveness.

3.6 Program Administration. The plant or company industrial hygiene, health physics, safety engineering, or fire department shall administer the program in close liaison with the plant medical department. Responsibility for the program shall be vested in one individual. In small plants having no formal industrial hygiene, health physics, safety, fire, or medical department, the respirator program shall be administered by an upper-level superintendent, foreman, or other qualified individual responsible to the principal manager. The administrator shall have sufficient knowledge of the subject to properly supervise the program.

Table 1
Classification of Respiratory Hazards According to Their Biological Effect

Oxygen Deficiency	Gas and Vapor Contaminants	Particulate Contaminants (Dust, fog, fume, mist, smoke, and sprays)
Occurrence: Confined or unventilated cellars, wells, mines, ship holds, tanks, burning buildings, and enclosures containing inert atmospheres. (See Note 1.) Atmospheric O₂ content (percent by volume) versus expected conditions: 20.9 percent: Oxygen content of normal air. 16 percent: Flame of safety lamp or ordinary combustibles extinguished, and symptoms of anoxia begin to appear in humans.	Asphyxiants: Interfere with utilization of O₂ in the body. Simple asphyxiants: Physiologically inert substances that dilute O₂ in the air (for example, nitrogen, hydrogen, helium, methane). See Oxygen Deficiency, Column 1. Chemical asphyxiants: Low concentrations interfere with supply or utilization of O₂ in the body (for example, carbon monoxide, hydrogen cyanide, cyanogen and nitriles). Irritants: Corrosive in action. May cause irritation and inflammation of parts of the respiratory system (also skin and eyes) and pulmonary edema (for example, ammonia, hydrogen chloride, formaldehyde, sulfur dioxide, chlorine, ozone, nitrogen dioxide, phosgene, and arsenic trichloride). Anesthetics: Cause loss of feeling and sensation with unconsciousness and death possible (for example, nitrous oxide, hydrocarbons and ethers). Some anesthetics injure body organs; for example, carbon tetrachloride (liver and kidneys), chloroform (liver and heart), benzene (bone marrow), and carbon disulfide (nervous system). Systemic poisons: Damage organs and systems in the body; for example, mercury (nervous system and various organs), phosphorous (bone), hydrogen sulfide (respiratory paralysis), and arsine (red blood cells and liver).	Relatively inert: May cause discomfort and minor irritation, but generally without injury at reasonable concentrations (for example, marble, gypsum). Pulmonary fibrosis-producing: Produce nodulation and fibrosis in the lung, possibly leading to complications (for example, quartz, cristobalite, tridymite, asbestos). Cancer-producing: Produce cancer in some individuals after "latent" period of 20-40 years (for example, asbestos, chromates, radioactive particulates). Chemical irritants: Produce irritation, inflammation, ulceration, and so forth, in upper respiratory tract (for example, acid mists, alkalis). Systemic poisons: Produce pathologic reactions in various systems of the body (for example, lead, manganese, cadmium). Allergy-producing: Produce reactions such as itching, sneezing and asthma (for example, pollens, isocyanates, gums, spices). Febrile reaction-producing: Produce chills followed by fever (for example, fumes of zinc and copper).
Combinations of Gas, Vapor, and Particulate Contaminants Combinations of contaminants may occur simultaneously in the atmosphere. Contaminants may be entirely different substances (dusts and gases from blasting) or the particulate and vapor forms of the same substance. Synergistic effects (joint action of two or more agents that results in an effect which is greater than the sum of their individual effects) may occur. Such effects may require extraordinary protective measures.		

NOTE 1: The adverse effects of oxygen deficiency increase with decreasing atmospheric pressure or increased altitude.

NOTE 2: *Conditions Immediately Dangerous to Life or Health* (see Section 2, Definitions) may result from most of the above hazards with the probable exception of nuisance or low toxicity dusts. Such conditions constitute atmospheres that would rapidly lead to death or to injury that would eventually impair health. For example, a ten-minute exposure to 120 parts per million (ppm) of phosgene may be fatal, and exposure to very high concentrations of a radioactive material such as plutonium 239 could present a danger to health from delayed effects of radiation damage to body tissues.

3.7 Medical Limitations. Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually).

3.8 Approval. Approved or accepted respirators shall be used when they are available (see Section 6, Selection of Respirators). The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed in accordance with standards established by competent authorities. The U. S. Department of the Interior, Bureau of Mines, and the U. S. Department of Agriculture are recognized as such authorities. (See Appendix, Respirator Approval and Acceptance Listings.) Although respirators listed by the U.S. Department of Agriculture continue to be acceptable for protection against specified pesticides, the U. S. Department of the Interior, Bureau of Mines, is the agency now responsible for testing and approving pesticide respirators.

4. Classification of Respiratory Hazards

4.1 Introduction. The purpose of this section is to list and briefly describe various categories of respiratory hazards that might be encountered and which may require use of respirators. The information provides a general background for relating the guidance in subsequent sections to the type of hazard encountered. Management, however, will find it necessary to consult references on industrial hygiene and toxicology and perhaps expert individuals to develop the necessary comprehensive information on specific airborne contaminants.

Respiratory hazards for the purpose of this standard, are classified as follows:

- (1) oxygen deficiency
- (2) gas and vapor contaminants
 - (a) immediately dangerous to life or health
 - (b) not immediately dangerous to life or health
- (3) particulate contaminants (dust, fog, fume, mist, smoke, and spray)
 - (a) immediately dangerous to life or health
 - (b) not immediately dangerous to life or health

(4) combination of gas, vapor, and particulate contaminants

- (a) immediately dangerous to life or health
- (b) not immediately dangerous to life or health

Respirators may afford some protection against high temperature atmospheres. See 9.4. Further information on the hazards of and use of respirators in high temperatures is presented in a National Fire Protection Association publication, *Breathing Apparatus for The Fire Service*, published in 1966.

4.2 Classification and Description of Respiratory Hazards. The basic respiratory hazards listed in 4.1 are classified in Table 1 according to expected biological effects of the contaminants. Many respirators, particularly air-purifying respirators, are designed and selected on the basis of chemical and physical properties of the air contaminants. Therefore, gas, vapor, and particulate contaminants are also presented in Table 2 according to their physical and chemical properties.

Particle size distribution and solubility are important parameters for particulate contaminants. Particles smaller than 5 microns in aerodynamic diameter more readily reach the lungs and are more readily dissolved and absorbed into the bloodstream or deposited on lung tissue. The solubility of the material usually determines whether the resulting toxic effect, if any, is in the lungs or other organs. Particles larger than 5 microns aerodynamic diameter are generally trapped in the upper respiratory tract, cleared, and swallowed with possible subsequent absorption from the gastrointestinal tract, depending on their solubility.

5. Classification, Description, and Limitations of Respirators

5.1 Introduction. The purpose of this section is to provide a description of the various types of respirators, their limitations, and capabilities, as a background for subsequent sections which discuss their selection, use, and maintenance.

Respirators fall into the following general classifications, according to mode of operation:

- (1) atmosphere-supplying respirators
 - (a) self-contained
 - (b) hose-mask
 - (c) air-line
 - (d) combination self-contained and hose-mask or air-line

- (2) air-purifying respirators
 - (a) gas and vapor (gas mask and chemical cartridge)
 - (b) particulate (dust, fog, fume, mist, smoke, and sprays)
 - (c) combination gas, vapor, and particulate
- (3) combination atmosphere-supplying and air-purifying respirators

5.2 Classification, Description and Limitations of Respirators. This information is presented in two tables. Table 3 covers the classification and description of respirators according to the general classifications in 5.1. Table 4 covers capabilities and limitations of respirators arranged to correspond to the subject headings in Table 3.

More detailed information on specific types of respirators can be obtained from respirator manufacturers and from the *Respiratory Protective Devices Manual* published by the American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists in 1963.

The canister color code table from American National Standard Identification of Gas Mask Canisters, K13.1-1967, is provided in Table 5. The code indicates the colors assigned to canisters to identify the types of atmospheric contaminants against which they will protect.

5.3 Respirable Air and Oxygen for Self-Contained Breathing Apparatus and Hose-Type Respirators. Compressed air, compressed oxygen, liquid air, and liquid oxygen used for res-

Table 2
Classification of Respiratory Hazards According to Their Properties
which Influence Respirator Selection

Gas and Vapor Contaminants	Particulate Contaminants
Inert: They do not react with other substances under most conditions and create a respiratory hazard by displacing air and producing oxygen deficiency (for example, helium, neon, argon). Acidic: Substances that are acids or that react with water to produce an acid. In water they produce positively charged hydrogen ions. They taste sour and many are corrosive to tissues (for example, hydrogen chloride, sulfur dioxide, fluorine, nitrogen dioxide, acetic acid, carbon dioxide, hydrogen sulfide, and hydrogen cyanide). Alkaline: Substances that are alkalies or that react with water to produce an alkali. When in water solutions, they result in the production of negatively charged hydroxyl ions (OH^-). They taste bitter, and many are corrosive to tissues (for example, ammonia, amines, phosphine, arsine, and stibine). Organic: These are the compounds of carbon. Examples are saturated hydrocarbons (methane, ethane, butane), unsaturated hydrocarbons (ethylene, acetylene), alcohols (methyl alcohol, propyl alcohol), ethers (methyl ether, ethyl ether), aldehydes (formaldehyde), ketones (dimethyl ketone), organic acids (formic acid, acetic acid), halides (chloroform, carbon tetrachloride), amides (formamide, acetamide), nitriles (acetonitrile), isocyanates (toluene diisocyanate), amines (methylamine), epoxies (epoxyethane, propylene oxide), and aromatics (benzene, toluene, xylene). Organometallic: Compounds in which metals are chemically bonded to organic groups (for example, ethyl silicate, tetraethyl lead, and organic phosphates). Hydrides: Compounds in which hydrogen is chemically bonded to metals and certain other elements (for example, diborane and lithium hydride).	Particles are produced by mechanical means by the disintegration processes of grinding, crushing, drilling, blasting, and spraying; or by the physiochemical reactions such as combustion, vaporization, distillation, sublimation, calcination, and condensation. Particles are classified as follows: Dust: A solid mechanically produced particle with sizes varying from submicroscopic to visible or macroscopic. Spray: A liquid mechanically produced particle with sizes generally in the visible or macroscopic range. Fume: A solid condensation particle of extremely small particle size, generally less than one micron in diameter. Mist: A liquid condensation particle with sizes ranging from submicroscopic to visible or macroscopic. Fog: A mist of sufficient concentrate to perceptibly obscure vision. Smoke: A system which includes the products of incomplete combustion of organic substances in the form of solid and liquid particles and gaseous products in air. Smoke is usually of sufficient concentration to perceptibly obscure vision.

piration shall be of high purity. Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Breathing air shall meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966.

Compressed oxygen shall not be used in supplied-air respirators or in open-circuit self-contained breathing apparatus that have previously used compressed air. Compressed air might contain low concentrations of oil. When high-pressure oxygen passes through an oil- or grease-coated orifice, an explosion or fire may occur.

Breathing air may be supplied to respirators from cylinders or air compressors. Cylinders shall be tested and maintained in accordance with applicable Department of Transportation or Interstate Commerce Commission Specifications for shipping containers. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable in-line air purifying sorbent beds and filters installed to further assure breathing air quality. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in event of compressor failure, and alarms to indicate compressor failure and overheating shall be installed in the system (see 6.3.2). Air-line couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air-line respirators with nonrespirable gases or oxygen.

Breathing-gas containers shall be marked in accordance with American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, Z48.1-1954; Federal Specification BB-A-1034a, June 21, 1968, Air, Compressed for Breathing Purposes; or Interim Federal Specification GG-B-00675b, April 27, 1965, Breathing Apparatus, Self-Contained. Further details on sources of compressed air and its safe use will be found in Compressed Gas Association Pamphlet G-7-1968.

6. Selection of Respirators

6.1 Approved or Accepted Respirators. Whenever possible, approved or accepted respirators shall be used. Respirator approval and acceptance tests and listings and selection of other than approved or accepted respirators are discussed in the Appendix.

6.2 General Considerations. The multiplicity of hazards that may exist in a given operation requires careful and intelligent respirator selection. This selection is made even more complex by the many types of respirators available. Each type has its limitations, areas of application, and operational and maintenance requirements.

The selection of a proper respirator for any given situation requires consideration of the following factors: 1) nature of the hazard (see Section 4); 2) extent of the hazard; 3) work requirements and conditions; and 4) characteristics and limitations of available respirators (see Section 5).

~~Table 6 is a quick reference guide for the selection of respiratory protection appropriate to the type and degree of hazard. The Table provides minimal guidance, however, and shall be used along with other information, such as that given in this standard and in directions provided by respirator manufacturers.~~

When there is doubt about the concentration of oxygen or hazardous material present in the atmosphere, only those respirators listed as suitable for respiratory protection against oxygen deficiency shall be used. Any erring in the selection of respirators shall be on the safe side.

6.3 Nature of the Hazard. The chemical and physical properties, toxicity, and concentration of the hazardous material shall be considered in respirator selection (see Section 4 for classifications and discussion of respiratory hazards).

6.3.1 Oxygen-Deficient Atmospheres. Only respirators that provide an independent, respirable atmosphere shall be used in oxygen-deficient atmospheres. Normally, a self-contained breathing apparatus, hose mask with blower, or air-line respirator with auxiliary self-contained air supply is used for this purpose. Air-line respirators without auxiliary air supply shall be used only with the precautions outlined in 6.3.2.

An attendant shall be standing by at the entrance to the oxygen-deficient atmosphere at all times with proper communications and rescue equipment in case of an emergency. See 7.3 for use of respirators in oxygen-deficient atmospheres.

6.3.2 Immediately Dangerous Atmospheres. If it is probable that atmospheres immediately dangerous to life or health may occur, then both the normally expected *inward leakage* (see 6.3.3) and the *reliability* of the respirator shall

Table 3
Classification and Description of Respirators by Mode of Operation

Atmosphere-Supplying Respirators		Air-Purifying Respirators	
A respirable atmosphere independent of the ambient air is supplied to the wearer. Self-Contained Breathing Apparatus (SCBA) Supply of air, oxygen, or oxygen-generating material carried by wearer. Normally equipped with a full facepiece, but some with a mouthpiece for escape purposes. (1) Closed-Circuit SCBA (oxygen only) (a) Compressed or liquid oxygen type. High-pressure O₂ from a gas cylinder passes through a high-pressure reducing valve and, in some designs, through a low-pressure admission valve to a breathing bag or container. Liquid oxygen is converted to a low-pressure gaseous oxygen and delivered to the breathing bag. The wearer inhales from the bag through a corrugated tube connected to a mouthpiece or facepiece and a one-way check valve. Exhaled air passes through another check valve and tube into a container of carbon dioxide removing chemical and reenters the breathing bag. Make up O₂ enters the bag continuously or as the bag deflates sufficiently to actuate an admission valve. A pressure relief system is provided and a manual bypass system and saliva trap may be provided depending upon the design. (b) Oxygen-generating type. Water vapor in the exhaled breath reacts with chemical in the canister to release O₂ to the breathing bag. The wearer inhales from the bag through a corrugated tube and one-way check valve at the facepiece.		Half-mask, full facepiece, or mouthpiece respirator equipped with air-purifying units to remove gases, vapors, and particulate matter from the ambient air prior to its inhalation. Some air-purifying respirators are blower-operated and provide respirable air to the facepiece (or hood) under a slight positive pressure. Gas- and Vapor-Removing Respirators Packed sorbent beds (cartridge or canister) remove single gases or vapors (for example, chlorine gas), a single class of gases or vapors (for example, organic vapors) or a combination of two or more classes of gases and vapors (for example, acid gases, organic vapors, ammonia, and carbon monoxide) by absorption, adsorption, chemical reaction or catalysis or a combination of these methods. (1) Full Facepiece Respirator (Gas Mask) Equipped with a single large chin canister or harness mounted canister with breathing tube and inhalation and exhalation valves. Canisters come in the "super" size, "industrial" size (regular), and chin style. The service life is approximately proportional to the canister size for a given type of canister. Canisters for protecting against CO have an indicator or timer that shows when the canister shall be changed. Canisters are marked in bold letters with the contaminant against which they protect and are color coded for quick identification according to the American National Standard Identification of Gas Mask Canisters, K13.1-1967 (see Table 5). The maximum concentration in which the canister can be safely used is indicated on the label.	
Hose Mask and Air-Line Respirator (1) Hose Mask Equipped with full facepiece, non-kinking breathing tube, rugged safety harness and a large diameter heavy-duty nonkinking air supply hose. The breathing tube and hose are securely attached to the harness. A check valve allows airflow only toward the facepiece. The facepiece is fitted with an exhalation valve. The harness has provision for attaching a safety line. (a) Hose mask with blower. Air is supplied by a motor-driven or hand-operated blower. The wearer can continue to inhale through the hose if the blower fails. Up to 300 feet of hose length is permissible. (b) Hose mask without blower. The wearer provides motivating force to pull air through the hose. The hose inlet is anchored and fitted with a funnel or like object covered with a fine mesh screen to prevent entrance of coarse particulate matter. Up to 75 feet of hose length is permissible. (2) Air-Line Respirator Respirable air is supplied through a small-diameter air-line from a compressor or compressed air cylinders. The airline is attached to the wearer by belt and can be detached rapidly in an emergency. A flow-control valve or orifice is provided to govern the rate of airflow to the wearer. Exhaled air passes to the ambient atmosphere through a valve (a) or opening in the enclosure (facepiece, hood, suit). Up to 250 feet of air-line is permissible.		Particulate-Removing Respirators Filter media in pads, cartridges, or canisters remove dust, fog, fume, mist, smoke or spray particles. Filters are designed to remove a single type of particle (silica dust) or classes of particles (dusts and fumes). Filters may be replaceable or a permanent part of the respirator. Some filters can be used only once; others are reusable and should be cleaned according to the manufacturer's instructions. (1) Full Facepiece Respirator Normally equipped with a high-efficiency filter canister designed to protect against hazardous particulates. Equipped with inhalation and exhalation valves. (2) Half-Mask Respirator Normally equipped with one or two dust, mist or fume filters designed to protect against nuisance and low to moderate toxicity dusts, fumes, and mists, an exhalation valve, and (normally) inhalation valves. A knitted fabric cover is sometimes worn on dust respirators to decrease discomfort. (3) Mouthpiece Respirator Infrequently used as a particulate respirator. (See Mouthpiece Respirator, Gas- and Vapor-Removing, in column 3.)	

Exhaled air passes through a second check valve breathing tube assembly into the canister. The O₂ release rate is governed by the volume of exhaled air. CO₂ is removed by the canister fill.

(2) Open-Circuit SCBA (compressed air, compressed oxygen, liquid air, or liquid oxygen)

(a) Demand type.* The demand valve permits oxygen or air flow only during inhalation. Exhaled breath passes to ambient atmosphere through a valve(s) in the facepiece. A bypass system is provided in case of regulator failure except on escape-type units.

(b) Pressure-demand type.† Equipped with full facepiece only. Positive pressure is maintained in the facepiece at all times. The wearer usually has the option of selecting the demand or pressure-demand mode of operation.

(a) Continuous-flow class. Equipped with a half-mask or full facepiece, or a helmet (abrasive blasting) or hood covering the wearer's head and neck. At least four cubic feet of air per minute to tight-fitting facepieces and six cubic feet per minute to loose-fitting hoods and helmets shall be required.

(b) Demand type.* Equipped with a half mask or full facepiece. The demand valve permits flow of air only during inhalation.

(c) Pressure-demand type.† Equipped with a half-mask or full facepiece. A positive pressure is maintained in the facepiece at all times.

(3) Supplied Air Suit
A form of continuous air-line respirator (see air-line respirator above). The suit is one or two piece and of leak-resistant material. Air is supplied to the suit through a system of internal tubes to the head, trunk, and extremities. Air exhausts through valves located in appropriate parts of the suit.

Combination Self-Contained and Air-Line Respirators

Normally a demand or pressure-demand type air-line respirator with full or half-mask facepiece, together with a small compressed-air cylinder to provide air if the normal supply fails. Wearer immediately returns to a respirable atmosphere if the normal air supply fails.

(2) Half-Mask Respirator (Chemical-Cartridge Respirator)

Equipped with one or more cartridge and exhalation and inhalation valves.

(3) Mouthpiece Respirator

A compact device designed for quick application when the atmosphere unexpectedly is contaminated with a hazardous material. Normally consists of a housing with a mouthpiece and a single cartridge, a nose clamp, exhalation and inhalation valves, and a neckband.

Combination Gas, Vapor, and Particulate-Removing Respirators
Some canisters and cartridges contain both filters and sorbents to provide protection against contaminants. Some filters are designed to be attached to a sorbent cartridge as a pre-filter (for example, for paint spray operation).

Combination Atmosphere-Supplying and Air-Purifying Respirators

These provide the wearer the option of using either of two different modes of operation. They may be an airline respirator with an air-purifying attachment to provide protection in the event the air supply fails or an air-purifying respirator with a small air cylinder in case the atmosphere unexpectedly exceeds safe conditions for use of an air-purifying respirator.

*Equipped with a demand valve that is activated on initiation of inhalation and permits the flow of breathing atmosphere to the facepiece. On exhalation, pressure in the facepiece becomes positive and the demand valve is deactivated.

†A small positive pressure is maintained at all times in the facepiece by a spring-loaded or balanced regulator and exhalation valve.

Table 4
Capabilities and Limitations of Respirators

Atmosphere-Supplying Respirators	Air-Purifying Respirators
(See 5.3 for specifications on respirable atmospheres.)	General Limitations: Air-purifying respirators do not protect against oxygen-deficient atmospheres nor against skin irritation by, or sorption through the skin of, airborne contaminants. See 6.3.1.1 and 6.3.5.1.
Atmosphere-supplying respirators provide protection against oxygen deficiency and most toxic atmospheres. The breathing atmosphere is independent of ambient atmospheric conditions.	The maximum contaminant concentration against which an air purifying respirator will protect is determined by the designed efficiency and capacity of the cartridge, canister, or filter. For gases and vapors and for particles having a TLV of less than 0.1 mg/m³, the maximum concentration for which the air purifying unit is designed is specified on the label. Respirators without a blower to maintain a constant positive pressure within the facepiece will not provide the maximum design protection specified unless the facepiece is carefully fitted to the wearer's face to prevent inward leakage. See 7.5. The time period over which protection is provided is dependent on canister, cartridge, or filter type, concentration of contaminant, and the wearer's respiratory rate.
Self-Contained Breathing Apparatus (SCBA)	The proper type of canister, cartridge, or filter shall be selected for the particular atmosphere and conditions. Air-purifying respirators generally cause discomfort and objectionable resistance to breathing although these problems are minimized in blower-operated units. Respirator facepieces present special problems to individuals required to wear prescription lenses. (See 9.1 and 9.2.) These devices do have the advantage of being small, light, and simple in operation.
The wearer carries his own breathing atmosphere. Use is permissible in atmospheres immediately dangerous to life or health.	Gas- and Vapor-Removing Respirators
Limitations: The period over which the device will provide protection is limited by the amount of air or oxygen in the apparatus, the ambient atmospheric pressure (service life is cut in half by a doubling of the atmospheric pressure), and work load. A warning device shall be provided to indicate to the wearer when the service life has been reduced to a low level. Some SCBA devices have a short service life (few minutes) and are suitable only for escape (self-rescue) from an irrespirable atmosphere. Chief limitations of SCBA devices are their weight or bulk or both, limited service life, and the training required for their maintenance and safe use.	Additional Limitations: No protection is provided against particulate contaminants, unless specified on canister or cartridge label. A rise in canister or cartridge temperature indicates that a gas or vapor is being removed from the inspired air. This is not a reliable indicator of canister performance. An uncomfortably high temperature indicates a high concentration of gas or vapor and requires an immediate return to fresh air.
(1) Closed-circuit SCBA	Particulate-Removing Respirators
The closed circuit operation conserves oxygen and permits longer service life.	Additional Limitations: Protect against non-volatile particles only. No protection against gases and vapors. The filter shall be replaced or cleaned when breathing becomes difficult due to plugging by retained particles.
	These respirators shall not be used during shot and sand blasting operations. Abrasive-blasting respirators shall be used.
	(1) Full Facepiece Respirator
	Should avoid use in atmospheres immediately dangerous to life or health if the contaminant(s) lacks sufficient warning properties (that is, odor or irritation).
	(1) Full Facepiece Respirator (Gas Mask)
	Should avoid use in atmospheres immediately dangerous to life or health if the contaminant(s) lacks sufficient warning properties (that is, odor or irritation).

(2) Open-circuit SCBA—demand and pressure-demand

The demand type produces a negative pressure in the facepiece on inhalation whereas the pressure-demand type maintains a positive pressure in the facepiece and is less apt to permit inward leakage of contaminants.

a positive pressure in the facepiece at all times and are less apt to permit inward leakage of contaminants.

Limitations: Air-line respirators are limited to use in atmospheres not immediately dangerous to life or health except under conditions specified in 6.3.2 and 7.3. Air-line respirators provide no protection if the air supply fails.

(3) Supplied-Air Suit

These suits protect against atmospheres that affect the skin or mucous membranes or that may be absorbed through the unbroken skin.

Limitations: Some contaminants, such as tritium, may penetrate the suit material and limit its effectiveness. Other contaminants, such as fluorine, may react chemically with the suit material and damage it. See 6.3.5.1.

These suits are limited in use to atmospheres not immediately dangerous to life or health except under the conditions specified in 6.3.2 and 7.3.

(2) Half-Mask Respirator (Chemical-Cartridge Respirator)

Shall not be used in atmospheres immediately dangerous to life or health and should be limited to low concentrations of gases and vapors. A fabric covering shall not be worn on the facepiece since it will permit gases and vapors to pass.

No protection is provided to the eyes.

(3) Mouthpiece Respirator (Chemical Cartridge)

Shall not be used in atmospheres immediately dangerous to life or health. Mouth breathing prevents detection of contaminants by odor. The nose clip shall be securely in place to prevent nasal breathing.

No protection is provided to the eyes.

(4) Self-Rescue Mouthpiece Respirator

Designed for self-rescue from immediately dangerous atmospheres of gases and vapors. Mouth breathing prevents detection of contaminants by odor. The nose clip shall be securely in place to prevent nasal breathing.

No protection is provided to the eyes.

(2) Half-Mask Respirator

Shall not be used in atmospheres immediately dangerous to life or health. A fabric covering on the facepiece is permissible only in atmospheres of coarse dusts and mists of low toxicity.

No protection is provided to the eyes.

(3) Mouthpiece Respirator (Filter)

Shall not be used in atmospheres immediately dangerous to life or health. Mouth breathing prevents detection of contaminants by odor. The nose clip shall be securely in place to prevent nasal breathing.

No protection is provided to the eyes from irritating aerosols.

(4) Self-Rescue Mouthpiece Respirator (Filter)

Designed for self-rescue from atmospheres having immediately dangerous concentrations of toxic particles. Mouth breathing prevents detection of contaminants by odor. The nose clip shall be securely in place to prevent nasal breathing.

No protection is provided to the eyes from irritating aerosols.

Combination Self-Contained and Air-Line Respirators

The equipping of an air-line respirator with a small cylinder of compressed air to provide an emergency air supply qualifies the respirator for use in immediately dangerous atmospheres. See 6.3.2.

Combination Particulate and Vapor- and Gas-Removing Respirators

The advantages and disadvantages of the component parts of the combination respirator as described above will apply.

Combination Atmosphere-Supplying and Air-Purifying Respirators

The advantages and disadvantages, expressed above, of the mode of operation being used will govern. The mode with the greater limitations (air-purifying mode) will mainly determine the overall capabilities and limitations of the respirator since the wearer may for some reason fail to change the mode of operation even though conditions would require such change.

be given full consideration. In oxygen-deficient atmospheres with no toxic materials, inward leakage is normally not a problem unless the leakage exceeds a few percent. It is essential that, in highly toxic atmospheres, inward leakage, if any, be minute. See 6.3.2.1 and 7.3 for use of respirators in immediately dangerous atmospheres.

6.3.2.1 Respirators Recommended for Immediately Dangerous Atmospheres. The U. S. Bureau of Mines and responsible industrial hygiene and safety organizations recommend the following respirators, listed in decreasing order

with regard to the protection they offer the wearer, for use in atmospheres immediately dangerous to life or health. These atmospheres include those which are oxygen deficient or where high concentrations of gases or vapors exist:

(1) pressure-demand open-circuit or pressure-type closed-circuit self-contained breathing apparatus

(2) combination pressure-demand air-line respirator with auxiliary self-contained air supply

(3) combination constant-flow air-line respirator with auxiliary self-contained air supply

Table 5
Color Code for Gas-Mask Canisters (ANSI K13.1-1967)

Atmospheric Contaminants to be Protected Against	Colors Assigned*
Acid gases	White
Hydrocyanic acid gas	White with $\frac{1}{2}$ -inch green stripe completely around the canister near the bottom
Chlorine gas	White with $\frac{1}{2}$ -inch yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	Green with $\frac{1}{2}$ -inch white stripe completely around the canister near the bottom
Carbon monoxide	Blue
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with $\frac{1}{2}$ -inch blue stripe completely around the canister near the bottom
Acid gases, organic vapors, and ammonia gases	Brown
Radioactive materials, excepting tritium and noble gases	Purple (Magenta)
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors	Canister color for contaminant, as designated above, with $\frac{1}{2}$ -inch gray stripe completely around the canister near the top
All of the above atmospheric contaminants	Red with $\frac{1}{2}$ -inch gray stripe completely around the canister near the top

*Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

(4) demand-flow open-circuit or closed-circuit self-contained breathing apparatus (where there may be a negative pressure in the breathing system at any time)

(5) combination demand-flow air-line respirator with auxiliary self-contained air supply

(6) hose mask with blower

When self-contained breathing apparatus or hose masks with blowers are used in atmospheres immediately dangerous to life or health, standby men must be present with suitable rescue equipment.

6.3.2.2 Other Respirators Which May Be Used under Certain Conditions in Atmospheres Immediately Dangerous to Life or Health. Air-line respirators are not approved or recommended for use in immediately dangerous atmospheres because no respiratory protection is provided if the air supply fails. However, if

routine protection or operational designs preclude use of the recommended types of respirators which workers should wear, the following air-line respirators may be considered, provided an adequate flow of respirable air is maintained. These are listed in decreasing order with regard to the protection they provide for the wearer.

(1) pressure-demand air-line respirator with full facepiece

(2) continuous-flow air-line respirator with full facepiece, helmet, hood, or suit

(3) demand-flow air-line respirator with full facepiece

(4) pressure-demand air-line respirator with half-mask facepiece (only for atmospheres that do not cause eye irritation or injury)

(5) continuous-flow air-line respirator with half-mask facepiece (only for atmospheres that do not cause eye irritation or injury)

~~Table 6~~ Outdated
Guide for Selection of Respirators

Hazard	Respirator (See Note 1.)
Oxygen Deficiency	Self-contained breathing apparatus. Hose mask with blower. Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Gas and Vapor Contaminants Immediately dangerous to life or health. (See Note 2.)	Self-contained breathing apparatus. Hose mask with blower. <i>de-certified</i> Air-purifying, full facepiece respirator with chemical canister (gas mask). Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Not immediately dangerous to life or health.	Air-line respirator. Hose mask without blower. Air-purifying, half-mask or mouthpiece respirator with chemical cartridge.
Particulate Contaminants Immediately dangerous to life or health. (See Note 2.)	Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full facepiece respirator with appropriate filter. Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Not immediately dangerous to life or health.	Air-purifying, half-mask or mouthpiece respirator with filter pad or cartridge. Air-line respirator. Air-line abrasive-blasting respirator. Hose mask without blower.
Combination gas, vapor, and particulate contaminants Immediately dangerous to life or health. (See Note 2.)	Self-contained breathing apparatus. Hose mask with blower. Air-purifying, full facepiece respirator with chemical canister and appropriate filter (gas mask with filter). Self-rescue mouthpiece respirator (for escape only). Combination air-line respirator with auxiliary self-contained air supply or an air-storage receiver with alarm.
Not immediately dangerous to life or health.	Air-line respirator. Hose mask without blower. Air-purifying, half-mask or mouthpiece respirator with chemical cartridge and appropriate filter.

NOTE 1: For details on descriptions, capabilities, and limitations of respirators, refer to Tables 3 and 4.

NOTE 2: For details on use of respirators in hazardous atmospheres, see 6.3.2 and 7.3.

(6) demand-flow air-line respirator with half-mask facepiece (only for atmospheres that do not cause eye irritation or injury)

Pressure-demand or continuous-flow air-line respirators with full facepiece provide the wearer with a degree of respiratory protection equal to that afforded by a positive pressure self-contained breathing apparatus as long as an adequate flow of respirable air is maintained. Also, a demand-flow air-line respirator with full facepiece would be equivalent to a demand-flow open-circuit or closed-circuit self-contained breathing apparatus as long as an adequate supply of respirable air is maintained.

Persons using air-line respirators in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres or other and equivalent provisions for the rescue of persons from hazardous atmospheres shall be used. A standby man or men with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue.

Before a person is permitted to wear an air-line respirator in a hazardous atmosphere, an industrial hygiene, health physics, or safety engineering department representative or a qualified industrial hygienist, health physicist, or safety engineer shall be responsible for compliance with the following:

(1) Air-line hose from a compressor or cylinder air supply shall be protected from damage, including cutting, kinking, crushing, or burning. In some cases an armored hose shall be used. Hose couplings shall be protected against disconnection. Trailing air-line hose shall be arranged to minimize tripping and to permit ready escape.

(2) The cylinder containing the air supply for an air-line respirator shall be tested for oxygen concentration and carbon monoxide content and shall be respirable. All air shall meet the minimum specification for Type I, Grade D gaseous air of the Compressed Gas Association *Commodity Specification for Air*, G-7.1-1966. The air supply in the cylinder shall be adequate for completion of the work and escape. *Oxygen must never be used with air-line respirators.*

(3) The compressor for supplying air shall be equipped with necessary safety and standby devices. A breathing air-type compressor shall be used. An air-storage receiver shall also be

provided to furnish the wearer with an adequate supply of escape air if the compressor fails to operate. A compressor shutoff alarm and necessary aerosol and vapor and gas filters shall also be incorporated into the system.

If an oil-lubricated compressor is used, it shall have a high-temperature or carbon monoxide alarm, or both. If only a high-temperature alarm is used, the air from the compressor shall be frequently tested for carbon monoxide to insure that it meets the specifications in 6.3.2.2 (2).

(4) The wearer shall be properly trained in the use of the air-line respirator and shall be well-informed of the hazard. A standard operating procedure shall be prepared for each situation for which air-line respirators are employed in atmospheres immediately hazardous to life or health, and air-line respirator users shall be thoroughly familiar with this procedure.

(5) Continuous-flow air-line respirators are designed for maximum comfort with a minimum airflow that will adequately protect the wearer in a non-hazardous atmosphere. However, they are capable of providing adequate airflow to protect the wearer in a hazardous atmosphere. This adequate airflow is obtained when the airflow control valve is fully open.

The recommended minimum airflows for use of air-line respirators in hazardous atmospheres are five cubic feet per minute to tight fitting facepieces and seven cubic feet per minute to loose fitting hoods or helmets. Persons wearing supplied-air suits shall follow the manufacturer's instructions concerning minimum airflow.

For further information on furnishing compressed air to air-line respirators, refer to Compressed Gas Association Pamphlet G-7-1968. See 7.3 concerning safe procedures during use of respirators in atmospheres immediately dangerous to life or health.

6.3.3 Not Immediately Dangerous Atmospheres. If immediately dangerous atmospheres are not present or will not occur, then the consequences of respirator failure are lessened and emphasis can be placed on other factors such as long term protection, convenience, cost, comfort, and wearer acceptance. These factors should be weighed one against another since they are not always compatible. However, long term protection should be given priority over all other factors.

Long term protection is determined primarily by the amount of inward leakage of atmospheric contaminants during normal usage of the respirator. The various types of respirators are grouped below according to the increasing amount of inward leakage one might expect during their routine use.

Group 1

Supplied-air suit

Pressure-demand full facepiece open-circuit and air-line devices

Pressure-type full facepiece closed-circuit self-contained breathing apparatus

Continuous-flow full facepiece air-line respirator

Air-line respirator with loose-fitting hood gathered around the waist

Hose-mask with blower and full facepiece mask

Group 2

Demand-type full facepiece open-circuit self-contained breathing apparatus

Demand-type full facepiece air-line respirator

Pressure-demand half-mask air-line respirator

Group 3

Continuous-flow half-mask air-line respirator

Demand-type half-mask air-line respirator

Air-line respirator with loose-fitting hood gathered around the neck

Group 4

Air-purifying respirator with blower and with full facepiece or hood gathered around the waist

Group 5

Air-purifying respirator with blower and with half-mask facepiece or hood gathered around the neck

Group 6

Hose mask without blower

Air-purifying full facepiece respirator without blower

Group 7

Air-purifying half-mask respirator without blower

Mouthpiece respirator

The negative pressure produced in the facepiece of many respirators (some in Groups 2 and 3 and all in Groups 6 and 7) during inhalation will cause inward leakage of ambient air if leaks exist. The amount of inward leakage expected for various types of respirators is vaguely understood and is related to the facepiece-to-face seal and leakage of various components including air-purifying units. For Group 1, inward leakage will normally be infinitesimal or

nonexistent. For Groups 2, 3, 4, and 5, inward leakage will normally be minute. In Group 6, inward leakage with a good facepiece-to-face seal and with ideal wearing conditions may be as low as 0.1 percent. In practice, however, this low level leakage is usually not attained due to poor facepiece-to-face fit and adverse wearing conditions such as face movements and beard growth. For Group 7, inward leakage with good facepiece-to-face fit and ideal wearing conditions may be as low as 1 percent. This leakage level, however, is seldom attained for reasons similar to those cited for devices in Group 6. It is, therefore, important (particularly for devices in Groups 6 and 7) that due consideration be given to potential inward leakage in selecting devices.

Experience has demonstrated that not all persons can obtain a satisfactory facepiece-to-face seal with a single full facepiece or half-mask air-purifying respirator. Therefore, to provide an adequate facepiece-to-face seal on a variety of facial features, it may be necessary that two or more models of full facepiece or half-mask respirators be available. When an individual can be fitted with two or more respirators, he should be permitted to select the most comfortable device. See 7.5 for a discussion of face fit tests and procedures.

6.3.4 Monitoring of Air Contaminants. Evaluation of contaminant concentration to which a person wearing a respirator may be exposed is an integral part of an effective respirator program. Air sampling data are important in the selection of the proper respirator and should include: 1) identification of the contaminant; 2) nature of the hazard; and 3) concentration at the breathing zone. The data are also helpful in estimating the possible levels of exposure that may have occurred during use of respirators.

In an air monitoring program, sampling should be carried out over at least one cycle of operation and, preferably, over several cycles when production activity varies. Normally, samples should be collected at the worker's breathing zone. However, where necessary, general air samples should be collected in the vicinity of the operation. The sampling period will be determined by the sensitivity of the analytical method and the acceptable contaminant concentration.

It is important that representative samples be obtained. The number of samples to be taken depends on the variation in contaminant

generation rate during the operation. Sampling data should permit estimation of the worker's time weighted exposure. The peak contaminant concentration should also be estimated to assure that the respirator selected will provide adequate protection against high transient air concentrations.

Breathing zone sampling is important since significant variations in concentrations are noted between general air and the worker's breathing zone. Use of personal or lapel air samplers is encouraged since they have been shown to more closely identify the true exposure.

Although it is recognized that in emergency situations air sampling cannot be carried out as outlined above, every reasonable effort shall be made to evaluate conditions of exposure and to provide appropriate respiratory protection. Where a high hazard potential exists, a conservative estimate should be made.

6.3.5 Unusual Hazards. Unusual factors can add new dimensions to a hazardous situation and should be anticipated in selecting respirators. Some examples are provided here.

6.3.5.1 Absorption through or Irritation of the Skin. Some airborne contaminants are extremely irritating to the skin (for example, ammonia and hydrochloric acid) while others are capable of being absorbed through the skin and into the blood stream with serious, possibly fatal, results. Hydrocyanic acid gas and many of the organic phosphate pesticides, such as parathion, malathion, and tetraethyl-pyrophosphate (TEPP), will penetrate the unbroken skin. A facepiece or hood respirator will not afford complete protection against these contaminants. If the concentration is high, or if exposure is prolonged, a full body-covering suit of impermeable material shall be worn with respiratory protection. A facepiece may not be required if the suit is leakproof and adequately ventilated.

6.3.5.2 Radiation of Skin and Whole Body. The respirator may not protect the skin or whole body against radiation from airborne concentrations of certain radionuclides including noble gas radionuclides and other relatively biologically inert gases.

6.4 Extent and Location of Hazard. The extent of the hazard in space and time and its physical location shall be considered in respirator selection. They include the length of time protection will be needed, entry and exit times, accessibility of a fresh air supply, and the ability

to use air lines or move about freely while wearing the respirator.

The location of the contaminated area in respect to a possible source of respirable air requires special consideration. In using a hose mask, air-line respirator, or abrasive-blasting respirator, the distance that the wearer can go into a contaminated atmosphere is limited by the length of hose connected to the source of respirable air. Furthermore, the presence of the hose requires that he enter and leave the area by the same route unless the device is equipped with an auxiliary air cylinder, chemical canister or cartridge, or particulate filter appropriate for use in withdrawal. While wearing a self-contained breathing apparatus or a gas mask, a person may leave the contaminated area by any exit, but he should make certain that the device will afford protection until he reaches respirable air, taking into account possible delays.

6.5 Work Requirements and Conditions

6.5.1 Work Time. Work time usually determines the length of time for which respiratory protection is needed, including the time necessary to enter and leave a contaminated area. A self-contained breathing apparatus, gas mask, or chemical-cartridge respirator provide respiratory protection for relatively short periods, whereas the hose mask with blower, air-line respirator, and abrasive-blasting respirator provide protection for as long as the facepiece is supplied with adequate respirable air. Particulate-filter respirators can provide protection for long periods, without need for filter replacement, only if the atmospheric particulate loading is low. Therefore, for protracted periods of use, the hose mask with blower and air-line respirators offer definite advantages. They also cause less discomfort than air-purifying respirators.

Some respirators have a means for indicating the remaining service life. Some type of warning is available for all self-contained breathing apparatus and some gas masks. This may be a pressure gage, timer, audible or physical alarm, or window indicator in the canister. The user should understand the operation and limitations of each type of warning device. Most other gas masks and chemical-cartridge respirators have no indicator of remaining service life. Canisters and cartridges should be changed according to the manufacturer's directions.

6.5.2 Activity of Wearer. The work area to be covered, work rate, and mobility required of

the wearer in carrying out his work should be considered in respirator selection.

Air-purifying respirators present minimal interference with the wearer's movement. Supplied-air respirators with trailing hoses severely restrict the area the wearer can cover and present a potential hazard where the trailing hose can come in contact with machinery. Self-contained breathing apparatus present a size and weight penalty which may restrict climbing and movement in tight places.

The wearer's work rate determines his respiratory minute volume, maximum inspiratory flow rate, and inhalation and exhalation breathing resistance. The respiratory minute volume is of great significance in self-contained and air-line respirators operated from cylinders since it determines their operating life. Useful life under moderate work conditions may be one-third that under rest conditions.

Peak airflow rate is important in the use of constant-flow air-line equipment. The air-supply rate should always be greater than the peak inspiratory flow rate to maintain the respiratory enclosure under positive pressure.

High breathing resistance of air-purifying respirators under conditions of heavy work can result in distressed breathing.

6.5.3 Vision. All facepieces will restrict, to some degree, the wearer's vision. This may increase accident potential. Other problems include wearing of prescription glasses and fogging of the respirator lens (see 9.1, 9.2, and 9.3).

6.5.4 Communications. Effective speech communication may be required in jobs for which the respirator is being selected. Section 9.5 provides information in this subject.

6.5.5 Temperature Extremes. The ability to cope with stress caused by temperature extremes is especially important in emergency situations when only immediately available respirators can be used. See 9.3 and 9.4 for further details on use of respirators in temperature extremes.

6.5.6 Eye Protection. Where required, full-facepiece respirator eyepieces and eye protection worn with half-mask facepieces shall meet the pertinent requirements of American National Standard Practice for Occupational and Educational Eye and Face Protection, Z87.1-1968.

6.6 Employee Acceptance and Face Fit. These factors are of prime importance in respirator

selection. The wearer's acceptance of a particular respirator depends on the lack of facepiece discomfort, interference with vision, weight of the device, breathing resistance, and individual physical condition and psychological factors. The ability to form a good facepiece-to-face seal depends on respirator design and facial features, and is usually the most important factor in obtaining proper protection with an air-purifying respirator, particularly of the half-mask type. See 7.5 for a discussion of face-fit tests and procedures.

7. Use of Respirators

7.1 Operating Procedures. Standard procedures shall be developed for respirator use. These should include all information and guidance necessary for their proper selection, use, and care. Possible emergency and routine uses of respirators should be anticipated and planned for.

7.2 Issuance of Respirators. The correct respirator shall be specified for each job. The respirator type is usually specified in the work procedures by a qualified individual supervising the respiratory protective program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned. This mark shall not affect the respirator performance in any way. The date of issuance should be recorded.

7.3 Use in Dangerous Atmospheres. Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional man shall be present. Communications (visual, voice, or signal line) shall be maintained between both or all individuals present. Planning shall be such that one individual will be unaffected by any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency. See 6.3.1 and 6.3.2 for guidance on selection of respirators for use in dangerous atmospheres.

7.4 Training and Education in Proper Use. For safe use of any respirator, it is essential that the user be properly instructed in its selection, use, and maintenance. Both supervisors and workers shall be so instructed by competent persons.

Minimum training shall include the following:

(1) Instruction in the nature of the hazard, whether acute, chronic, or both, and an honest appraisal of what may happen if the respirator is not used.

(2) Explanation of why more positive control is not immediately feasible. This shall include recognition that every reasonable effort is being made to reduce or eliminate the need for respirators.

(3) A discussion of why this is the proper type of respirator for the particular purpose.

(4) A discussion of the respirator's capabilities and limitations.

(5) Instruction and training in actual use of the respirator (especially a respirator for emergency use) and close and frequent supervision to assure that it continues to be properly used.

(6) Classroom and field training to recognize and cope with emergency situations.

(7) Other special training as needed for special use.

Training shall provide the men an opportunity to handle the respirator, have it fitted properly, test its facepiece-to-face seal, wear it in normal air for a long familiarity period, and, finally, to wear it in a test atmosphere.

7.5 Facepiece Fit Tests and Procedures. Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal. Such conditions may be a growth of beard, sideburns, a skull cap that projects under the facepiece, or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a facepiece. The worker's diligence in observing these factors shall be evaluated by periodic checks.

To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This may be done by

following the manufacturer's facepiece-fitting instructions such as these two simple field tests:

(1) **Positive Pressure Test.** Close the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators, this method of leak testing requires that the wearer first remove the exhalation valve cover and then carefully replace it after the test.

(2) **Negative Pressure Test.** Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is probably satisfactory.

Potential users of respirators should also be required to test their facepiece fit by wearing the respirator under realistic test conditions. A concentration of 100 parts per million isoamyl acetate vapor (obtained by vaporizing 17.3 milliliters of isoamyl acetate for each 1,000 cubic feet of room volume) may be prepared in a special chamber, a small plastic enclosure, or in a vacant room. If the person wearing the respirator can enter and remain in this test atmosphere without detecting the odor of isoamyl acetate, he has a good fit. If he detects the odor, he should retreat to fresh air, readjust the facepiece, and repeat the test. If leakage is still noted, it can be concluded that this particular respirator will not protect the wearer. The wearer should not continue to tighten the headband straps until they are uncomfortably tight, simply to achieve a gas-tight face fit. If fitted too tightly, the wearer will not wear the respirator or will wear it fitting comfortably loose and will not have a gas-tight seal.

Particulate-filter respirators can frequently be adapted for use with chemical cartridges and may also be tested for face fit in isoamyl acetate.

To check the fit of a respirator equipped with a high-efficiency particulate filter, an irritant smoke tube (glass tube 12 centimeters long by 1 centimeter diameter, filled with stannic chloride-impregnated pumice) produces a very irritating smoke when air is blown through it. The smoke is directed at the facepiece seal and leakage is indicated by irritation of the throat and lungs. (When testing half-mask facepieces,

do not direct the smoke into the eyes and instruct the wearer to keep his eyes closed during the test.) Freshly produced smoke particles from this tube range from less than 0.1 to 3 microns in diameter. The glass tube is scored at each end for easy breaking. A squeeze bulb with a short rubber tube aspirates air through the tube; visible smoke is immediately formed by contact with moisture in the air. The irritant is hydrochloric acid absorbed on the particulate. A similar smoke is produced with a sulfur trioxide or titanium tetrachloride tube.

Several methods of determining facepiece fit are described in detail in the *Respiratory Protective Devices Manual*, published by the American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists in 1963.

8. Maintenance and Care of Respirators

8.1 General. A program for maintenance and care of respirators shall be adjusted to the type of plant, working conditions, and hazards involved, and shall include the following basic services:

- (1) inspection for defects (including a leak check)
- (2) cleaning and disinfecting
- (3) repair
- (4) storage

Equipment shall be properly maintained to retain its original effectiveness.

8.2 Inspection. All respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in satisfactory working condition.

Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. It shall be determined that the regulator and warning devices function properly.

Respirator inspection shall include a check of the tightness of connections and the condition of the facepiece, headbands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber

or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage.

A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

8.3 Cleaning and Disinfection. Routinely used respirators shall be collected, cleaned, and disinfected as frequently as necessary to insure that proper protection is provided for the wearer. Each worker should be briefed on the cleaning procedure and be assured that he will always receive a clean and disinfected respirator. Such assurances are of greatest significance when respirators are not individually assigned to workers. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

The following procedure is recommended for cleaning and disinfecting respirators:

(1) Remove any filters, cartridges, or canisters.

(2) Wash facepiece and breathing tube in cleaner-disinfectant or detergent solution (see following paragraphs). Use a hand brush to facilitate removal of dirt.

(3) Rinse completely in clean, warm water.

(4) Air dry in a clean area.

(5) Clean other respirator parts as recommended by manufacturer.

(6) Inspect valves, headstraps, and other parts; replace with new parts if defective.

(7) Insert new filters, cartridges, or canisters; make sure seal is tight.

(8) Place in plastic bag or container for storage.

Cleaner-disinfectant solutions are available that effectively clean the respirator and contain a bactericidal agent. The bactericidal agent is generally a quaternary ammonium compound. The respirator may be immersed in the solution, rinsed in clean, warm water, and air dried.

Alternatively, respirators may be washed in a liquid detergent solution, then immersed in: 1) a hypochlorite solution (50 parts per million of chlorine) for 2 minutes; 2) an aqueous iodine solution (50 parts per million of iodine) for 2 minutes; or 3) a quaternary ammonium solution (200 parts per million of quaternary ammonium compounds in water with less than 500 parts per million total hardness).

Different concentrations of quaternary ammonium salts are required to achieve a disinfecting solution with waters of varying hardness. Also, dermatitis may occur if the quaternary ammonium compounds are not completely rinsed from the respirator. The hypochlorite and iodine solutions are not stable; they age rubber parts, and are corrosive to metallic parts. Therefore, immersion times should not be extended and the disinfectants shall be thoroughly rinsed from the respirator parts.

Strong cleaning and disinfecting agents can damage respirator parts. Temperatures above 185 degrees Fahrenheit and vigorous mechanical agitation should not be used. Solvents which affect elastomer or rubber parts should be used with caution.

Respirators may be contaminated with toxic materials (that is, organic phosphate pesticides and radionuclides). If the contamination is light, normal cleaning procedures should provide satisfactory decontamination; if heavy, a separate decontamination step may be required before cleaning.

For complete decontamination against phosphate pesticides, the respirator should be washed with alkaline soap and rinsed with 50 percent alcohol (ethyl or isopropyl).

Respirators used to protect against radioactive contaminants should be decontaminated to levels not exceeding 100 disintegrations per minute per 100 square centimeters fixed alpha and 0.2 millirad per hour of beta-gamma above background at contact. There should be no detectable removable activity using standard swipe techniques.

8.4 Repair. Replacement or repairs shall be done only by experienced persons with parts designed for the respirator. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

8.5 Storage. After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture or damaging chemicals. Respirators placed at stations and work areas for emergency use should be stored in compartments built for the purpose, be quickly accessible at all times, and be clearly marked. Routinely

used respirators, such as dust respirators, may be placed in plastic bags. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons.

Respirators should be packed or stored so that the facepiece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid.

9. Special Problems

9.1 Corrective Lens with Full Facepiece. Providing respiratory protection for individuals wearing corrective glasses is a serious problem. A proper seal cannot be established if the temple bars of eye glasses extend through the sealing edge of the full facepiece. As a temporary measure, glasses with short temple bars or without temple bars may be taped to the wearer's head. Wearing of contact lenses in contaminated atmospheres with a respirator shall not be allowed.

Systems have been developed for mounting corrective lenses inside full facepieces. When a workman must wear corrective lenses as part of the facepiece, the facepiece and lenses shall be fitted by qualified individuals to provide good vision, comfort, and a gas-tight seal.

9.2 Eyewear with Half-Mask Facepiece. If corrective spectacles or goggles are required, they shall be worn so as not to affect the fit of the facepiece. Proper selection of equipment will minimize or avoid this problem.

9.3 Respirator Use in Low Temperatures. Major problems in the use of full facepieces at low temperatures are poor visibility and freezing of exhalation valves. All full facepieces are designed so that the incoming fresh air sweeps over the inside of the lens to reduce fogging. Otherwise, it would be impossible to wear a full facepiece in ordinary room temperatures without severe fogging. Antifog compounds can be used to coat the inside of the lens to prevent fogging at room temperatures and down to temperatures approaching 32 degrees Fahrenheit. However, below zero degrees Fahrenheit, antifog compounds will not prevent severe fogging.

Full facepieces are available with nose cups that direct moist exhaled air through the exhalation valve. A properly fitted nose cup should provide satisfactory or adequate visibility at temperatures down to -30 degrees Fahrenheit.

At very low temperatures, the exhalation valve may collect moisture and freeze open, allowing the wearer to breathe contaminated air, or freeze closed, preventing normal exhalation. The Bureau of Mines has published two pamphlets on this subject: *Performance of Open-Circuit Self-Contained Breathing Apparatus at -25° F*, R.I. 7077 (1966), and *Low-Temperature Performance of Compressed-Oxygen Closed-Circuit Breathing Apparatus*, R.I. 7192 (1968). Dry respirable air shall be used with self-contained breathing apparatus or air-line respirators at low temperatures. The dewpoint of the breathing gas shall be appropriate to the ambient temperature.

High-pressure connections on self-contained breathing apparatus may leak because of metal contraction at low temperatures. The connections should not be overtightened since they may break when the temperature returns to normal.

9.4 Respirator Use in High Temperatures. A man working in areas of high ambient or radiant temperature is under stress. Any additional stress resulting from use of respirators should, therefore, be minimized. This can be done by selecting and using respirators having minimum weight and breathing resistance. Supplied-air respirators and hoods and suits having an adequate supply of cool breathing air are recommended. Further information on use of respirators in high temperatures may be found in *Breathing Apparatus for the Fire Service*, published by the National Fire Protection Association in 1966.

9.5 Communications. Although conventional respirators distort the human voice to some extent, the respirator exhalation valve usually provides a pathway for some speech transmission over short distances in relatively quiet areas. Talking can induce facepiece or component leakage and therefore should be limited while wearing a respirator, especially those with half-mask facepieces.

Mechanical speech transmission devices called speaking diaphragms are available as an integral part of some respirators. These consist of a resonant cavity and diaphragm which amplify

sound in the frequency range most important to speech intelligibility. The diaphragm acts as a barrier to the ambient atmosphere. It should be carefully handled and protected by a cover to prevent puncture.

Various methods of electronically transmitting speech from the respirator are available. These utilize a microphone connected to a telephone or radio transmitter. Usually the microphone is mounted in the facepiece, while the amplifier, power pack, and loudspeaker or transmitter are attached to the exterior of the mask, carried on the body, or are remotely located.

Respirators with electric or electronic speech transmission devices having an integral or body-attached battery power supply should be used with caution in explosive atmospheres. Sealed power sources should be checked for integrity of seals. Connecting cables from microphones inside the facepiece shall have gas-tight seals where they emerge from the facepiece. When the loudspeaker diaphragm is part of the barrier between the respirator wearer and the ambient atmosphere, it shall be frequently inspected for leakage and should be adequately protected from puncture or rupture. The assembly of an electronic or electrical speech transmission device into a respirator shall be avoided if it results in a center of gravity and moment of inertia such that the mask may be dislodged from the face during wearer activity in a toxic environment. Removal of speech transmission devices may allow contaminant leakage into the facepiece.

9.6 Nonconventional Respirators. Special respirator designs, such as "neck respirators" for persons having a tracheotomy, may present problems not commonly encountered with conventional respirators. Therefore, the manufacturer should be consulted for special guidance or precautions.

10. Evaluation of Respirator Program Effectiveness

10.1 General. Feedback on how a respirator program is functioning is necessary if management is to maintain effective respiratory protection. Program improvements and elimination of deficiencies cannot be effected unless the program is monitored and evaluated on a continuing basis. The following techniques are used in evaluating the effectiveness of respirator programs.

10.2 Wearer Acceptance. The effectiveness of a respirator program can be largely determined by the degree of worker acceptance. Numerous factors affect the worker's acceptance of respirators. These include comfort, ability to breathe without objectionable effort, adequate visibility under all conditions, provisions for wearing prescription glasses if necessary, ability to communicate, ability to perform all tasks without undue interference, and confidence in the facepiece fit. Failure to consider these factors is likely to reduce cooperation of the wearers in promoting a satisfactory program. How well these problems have been overcome can be determined by observing wearers during normal activities and by soliciting their comments.

10.3 Examination of Respirators in Use. Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned, and maintained.

10.4 Evaluation of Protection Afforded. When respirators are worn in toxic atmospheres, the individual should be provided appropriate periodic laboratory tests. These may include urine, blood, or fecal analyses and other techniques to determine the intake and excretion of toxic substances. The findings of these tests, when correlated with other exposure data (especially air sampling data, as described in 6.3.4) for wearers of such equipment, can serve as an indication of the effectiveness of the program. Positive evidence of exposure shall be followed up to determine any relationship to inadequate respiratory protection and need for additional engineering controls.

Nasal or facepiece interior smears, or both, usually will detect any significant penetration of radioactive contaminants into the facepiece.

11. References to Other Codes, Standards and Manuals

11.1 American National Standards Institute. When any of the following American National Standards is superseded by a revision approved by the Standards Institute, the revision shall apply.

11.1.1 American National Standard Identification of Gas Mask Canisters, K13.1-1967

11.1.2 American National Standard Method of Marking Portable Compressed Gas Containers To Identify the Material Contained, Z48.1-1954

11.1.3 American National Standard Practice for Occupational and Educational Eye and Face Protection, Z87.1-1968

11.1.4 American National Standard Safety Guide for Respiratory Protection against Radon Daughters, Z88.1-1969

11.2 Compressed Gas Association

11.2.1 Commodity Specification for Air, Specification G-7.1, 1966

11.2.2 Compressed Air for Human Respiration, Pamphlet G-7, 1968

11.3 Interstate Commerce Commission; U.S. Department of Transportation

11.3.1 Code of Federal Regulations, Title 49, Parts 71-90, Rules and Regulations for the Transportation of Explosives and Other Dangerous Articles

11.4 U.S. Department of the Interior, Bureau of Mines. See A2.1 in the Appendix to this Standard.

11.4.1 Schedule 13E, Self-Contained Breathing Apparatus, Code of Federal Regulations, Part II, Subchapter B, Chapter 1 of Title 30.

11.4.2 Schedule 14F, Gas Masks, Code of Federal Regulations, Part 13, Subchapter B, Chapter 1 of Title 30.

11.4.3 Schedule 19B and Amendments to Schedule 19B, Supplied-Air Respirators, Code of Federal Regulations, Part 12, Subchapter B, Chapter 1 of Title 30.

11.4.4 Schedule 21B, Filter-Type Dust, Fume, and Mist Respirators, Code of Federal Regulations, Part 14, Subchapter B, Chapter 1 of Title 30.

11.4.5 Schedule 23B, Nonemergency Gas Respirators (Chemical-Cartridge Respirators Including Paint-Spray Respirators), Code of Federal Regulations, Part 14a, Subchapter B, Chapter 1 of Title 30.

11.4.6 Performance of Open-Circuit Self-Contained Breathing Apparatus at -25° F. R.I. 7077, 1966.

11.4.7 Low-Temperature Performance of Compressed-Oxygen Closed-Circuit Breathing Apparatus. R.I. 7192, 1968.

11.4.8 Information Circular 8281 (October 1, 1965 and annual supplements). Respiratory Protective Devices approved by the U.S. Bureau of Mines.

11.5 U.S. Department of Agriculture

11.5.1 Respiratory Devices for Protection Against Certain Pesticides, ARS-33-76-2. February 1966 (addendum March 1, 1966).

11.6 General Services Administration

11.6.1 Federal Specification BB-A-1034a (June 21, 1968). Air, Compressed for Breathing Purposes.

11.6.2 Interim Federal Specification GG-B-00675b (April 27, 1965). Breathing Apparatus, Self-Contained.

11.7 American Industrial Hygiene Association and American Conference of Governmental Industrial Hygienists.

11.7.1 Respiratory Protective Devices Manual, 1963.

11.8 National Fire Protection Association

11.8.1 Breathing Apparatus for the Fire Service, 1966.

11.9 American Conference of Governmental Industrial Hygienists

11.9.1 Threshold Limit Value of Air-Borne Contaminants for 1968, Recommended and Indexed Values. (1968 or latest revision.)

11.9.2 Documentation of Threshold Limit Values, 1962. (1962 or latest revision.)

Appendix

Respirator Approval and Acceptance Listings

(This Appendix is not a part of American National Standard Practices for Respiratory Protection, Z88.2-1969, but is included for information purposes only.)

A1. Approved or Listed Respirators

The Department of the Interior, Bureau of Mines, and the Department of Agriculture publish frequently revised lists of respirators. Samples of these have been tested and found to provide satisfactory respiratory protection against specific hazards or contaminants.

A1.1 Respirators Approved by the Department of the Interior, Bureau of Mines. A list of respirators approved by the Department of the Interior, Bureau of Mines, may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

A1.2 Respirators on Lists Published by the Department of Agriculture. A list of respirators for respiratory protection against certain pesticides may be obtained from the Department of Agriculture, Pesticide Chemicals Research Branch, Beltsville, Maryland 20705.

A2. Requirements for and Tests of Respirators

Requirements and testing procedures for respirators have been established and published by the Department of the Interior, Bureau of Mines, and the Department of Agriculture.

A2.1 Department of the Interior, Bureau of Mines, Requirements and Tests. Requirements for approval of most types of respirators used have been established. These requirements are published as the Department of the Interior, Bureau of Mines, schedules. A current list of these schedules appears in Section 11, References. These schedules are frequently revised and each subsequent revision is assigned a succeeding terminal letter (for example, schedule 19B is a revision of schedule 19A).

Copies of the most recent schedules may be obtained from the Publications Distribution Section, Department of the Interior, Bureau of Mines, 4800 Forbes Avenue, Pittsburgh, Pennsylvania 15213.

The Department of the Interior, Bureau of Mines, approval on a respirator continues in effect even though the schedule under which the respirator was approved has been revised one or more times. If the user wishes to check the minimum performance he may expect from an approved respirator, he should consult the schedule which was in effect when the approval was granted. Certain respirators are upgraded by the manufacturer to meet the requirements of more recent schedules. In general, each schedule revision makes the requirements more severe. A complete list of schedules and their effective dates, and a list of schedules under which each respirator has been approved, will be found in the Bureau's list of approved respirators.

Responsibility for testing and approval of pesticide respirators has been transferred to the Department of the Interior, Bureau of Mines.

A2.2 Department of Agriculture Requirements and Tests. The Department of Agriculture previously established requirements and tests for respirators intended to provide respiratory protection during the application and handling of pesticides. The requirements and tests are described in a publication of tests and requirements for respirators designed to provide respiratory protection against pesticides. The publication may be obtained from the Department of Agriculture, Pesticide Chemicals Research Branch, Beltsville, Maryland 20705.

In the Department of Agriculture's tests, pesticides were dispersed as water sprays, oil sprays, or dry dusts to simulate formulations used in field applications. Chemical cartridges were tested for one hour and gas mask canisters for four hours. Insect bioassay methods were used to determine the efficiency of canisters and cartridges.

The Department of Agriculture did not evaluate facepiece fit of chemical-cartridge respirators or gas masks. It did not test respirators for protection against rodenticides, herbicides, and fungicides.

A3. Selection of Other Than Approved or Listed Respirators

For special purposes the user may need to select a respirator which has not been submitted to the Department of the Interior, Bureau of Mines, or to the Department of Agriculture for testing, or cannot be tested by these agencies because it is outside their approval or testing authority. Among these are special-purpose respirators for which user demand does not warrant submitting the devices for testing or approval.

The user should compare unapproved respirators with similar approved or listed devices to evaluate the facepiece and other parts to assure himself that the manufacturer, or other reliable organization, has tested the filters, cartridges, or canisters, that they are adequate for the required service, and that quality control during manufacture can be expected. He should make or have made suitable tests of the respirators' effectiveness which, as far as feasible, simulate tests made by the official testing agencies.

American National Standards

The standard in this booklet is one of more than 10,000 standards approved to date by the American National Standards Institute.

The Standards Institute provides the machinery for creating voluntary standards. It serves to eliminate duplication of standards activities and to weld conflicting standards into single, nationally accepted standards under the designation "American National Standards."

Each standard represents general agreement among maker, seller, and user groups as to the best current practice with regard to some specific problem. Thus the completed standards cut across the whole fabric of production, distribution, and consumption of goods and services. American National Standards, by reason of Institute procedures, reflect a national consensus of manufacturers, consumers, and scientific, technical, and professional organizations, and governmental agencies. The completed standards are used widely by industry and commerce and often by municipal, state, and federal governments.

The Standards Institute, under whose auspices this work is being done, is the United States clearinghouse and coordinating body for voluntary standards activity on the national level. It is a federation of trade associations, technical societies, professional groups, and consumer organizations. Some 1000 companies are affiliated with the Institute as company members.

The American National Standards Institute is the United States member of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). Through these channels U.S. standards interests make their positions felt on the international level. American National Standards are on file in the libraries of the national standards bodies of more than 60 countries.

American National Standards Institute, Inc
1430 Broadway
New York, N.Y. 10018

CTD023107

Follow-up

CertainTeed

	Date	To	Location and mail code
	December 21, 1982	Naaman Rhoades	Riverside, 260
Subject	FOLLOWUP SAMPLING FOR INERT NUISANCE DUST AND SILICA DUST RIVERSIDE A/C PIPE PLANT	From <i>PJN</i> Peter J. Norris	Location and mail code 1125/4

cc: F. Timpe - 1125/2B
J. Coulon - 2125/2B
J. McGinley - 2125/2B
D. Hall - 2125/2B
L. Megargee - Riverside, 260

Attached are the results of additional dust sampling performed by Larry Megargee in conjunction with the May, 1982 Industrial Hygiene Survey (IHS 82-15). If you have any questions or comments, please contact me.

PJN/cr

Attachment

Industrial Hygiene Followup Sampling
Riverside A/C Pipe Plant
October 2 - November 7, 1982

The purpose of the additional sampling was to reproduce and validate the silica dust levels found during the May 24-27, 1982 Industrial Hygiene Survey (IHS 82-15). At that time using the published OSHA procedure for compliance monitoring, it was found that the 30" - Boring Mill Operator and the Coupling Saw Operator were potentially overexposed to silica. It was then recommended that these areas including the other pipe finishing operations be resampled. The results of the resampling performed by Larry Magargee of the Riverside plant are listed in Table I. Table II shows a comparison of dust levels between the two surveys. Fifteen samples were collected, 8 total and 7 respirable, and the results indicate that all silica and nuisance dust exposures were below their respective PELs.

CTD023109

Industrial Hygiene Survey
Riverside A/C Pipe Plant
October 2 - November 7, 1982

Table II
Personal Exposure Comparison

	10/2 - 11/2/82 Survey	5/82 Survey
Cutoff Saw 1 & 2	<0.001 - R 0.36 - T 0.06 - T	0.23 - R
Coupling Cutoff	0.09 - R 0.59 - T (16.8% SiO ₂)	1.2 - T (21% SiO ₂)
Boring Mill - 30"	0.02 - R 0.47 - T (16.1% SiO ₂)	0.82 - T (28% SiO ₂) 0.26 - R 0.17 - R
Boring Mill - 42"	0.05 - R 0.26 - T	
1/4 Lathe	0.08 - R 0.62 - T	
FM Lathe	<0.001 - R 0.15 - T	0.49 - T
Fitting Maker	0.05 - R 0.33 - T (8.7% SiO ₂)	

All levels are in units of mg/m³

R - respirable dust, T - Total dust

CTD023110

Industrial Hygiene Survey
Riverbend A/C Pipe Plant
October 7 - November 2, 1982

TABLE I

Personal Exposures to Total & Respirable Dust and Silica

NO.	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT	REMARKS
057 055A	Saw Operator 11/1/82	Steven Atencio	Respirable Dust	7:55a- 12:05p	250	<0.001 mg/m ³	Finished: 6"150 - 1/4 lengths 8"150 - 1/4 lengths 10"150 - random lengths Wore 3M 8710 respirator
			Silica				
058 060A	Saw Operator 11/2/82	Steven Atencio	Total Dust	7:54a- 2:45p	411	0.36 mg/m ³	Finished: 6"150 - 1/4 lengths 8"150 - 1/2 lengths, randoms Wore 3M 8710 respirator
			Silica			less than detectable	
059 060A	Saw Operator 10/11/82	John Clauson	Total Dust	8:00a- 1:10p	310	0.06 mg/m ³	Finished: 21" 3300 - Randoms 8"150 - 1/4 lengths, randoms
			Silica				
060 067A	Coupling Cutoff Operator 10/11/82	Dennis Cooley	Respirable Dust	7:40a- 12:00p	260	0.09 mg/m ³	Finished: 24" 35 - coupling Blanks (255) 12"150 - coupling Blanks (19)
			Silica				
061 070A	Coupling Cutoff Operator 10/28/82	Dennis Cooley	Total Dust	8:00a- 1:00p	300	0.59 mg/m ³	Finished: 6" - 150 couplings (2562 pcs) Sometimes wore 3M 8710 respirator OSHA Limit = 1.6 mg/m ³
			Silica			16.8 %	
062 072A	Boring Mill Operator-30" 11/2/82	P. Dobbs	Respirable Dust	8:02a- 2:02p	360	0.02 mg/m ³	Finished: 6" 150 couplings (828 pcs)
			Silica				
063 073A	Boring Mill Operator 10/20/82	P. Dobbs	Total Dust	8:01a- 2:00p	359	0.47 mg/m ³	Finished: 8" 150 couplings (951 pcs) Sometimes wore 3M 8710 respirators during cleanup OSHA Limit = 1.7 mg/m ³
			Silica			16.1 %	
064 075A	Boring Mill Operator-42" 11/21/82	Jim James	Respirable Dust	8:05a- 2:35p	390	0.05 mg/m ³	Finished: 24" 35 couplings (208 pcs)
			Silica				
065 076A	Boring Mill Operator-42" 11/29/82	Jim James	Total Dust	8:05a- 2:35p	390	0.26 mg/m ³	Finished: 24" 35 couplings (278 pcs)
			Silica			less than detectable	

* Sample weight too small for Silica analysis to be performed.

CTD023111

Industrial Hygiene Survey
Riverdale A/C Pipe Plant
October 2 - November 2, 1982

TABLE I

Personal Exposure to Total & Respirable Dust and Silica

NO.	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT	REMARKS
			<i>Method</i>			<i>PPM</i>	
066 070A	1/4 Lathe Operator 10/20/82	J. Dobbs	3B Respirable Dust <i>Silica</i>	8:10a- 3:20p	430 1.7	0.08 mg/m ³	0.055 mg Finished: 6"150 - 1/4 FM (145 pcs)
067 079A	1/4 Lathe Operator 10/29/82	J. Dobbs	3A Total Dust <i>Silica</i>	8:02a- 2:38p	396 2.0	0.62 mg/m ³	0.493 mg Finished: 8"150 - 1/4 MEO (175 pcs)
080A			26A Silica		2.0	less than detectable	< .025 mg Wore 3M 8710 respirator
068 081A	FM Lathe Operator 10/29/82	Larry Gil	3B Respirable Dust <i>Silica</i>	7:58a- 2:32p	392 1.7	<0.001 mg/m ³	< .001 mg Finished: 24" 2400 Sewer 1/2 MEO (10 pcs) 24" FT 35/150 PAD-19 (11 pcs) 12" FT 60 X 40 PAD-18 (2 pcs) Wore 3M 8710 respirator
069 082A	FM Lathe Operator 10/21/82	Larry Gil	3A Total Dust <i>Silica</i>	8:10a- 2:48p	398 2.0	0.15 mg/m ³	< .116 mg Finished: 16"150 1/4 MEO (24 pcs) 14"150 1/4 MEO (10 pcs)
070 083A	Fittings Maker 11/2/82	Chris Hamilton	3B Respirable Dust <i>Silica</i>	7:50a- 2:48p	418 1.7	0.05 mg/m ³	.036 mg Glues 6"150 X 1" TBIC (80 pcs)
071 084A	Fittings Maker 11/1/82	Chris Hamilton	3A Total Dust <i>Silica</i>	8:00a- 3:15p	435 2.0	0.33 mg/m ³	.285 mg Finished: 12"150 X 1" C.B. TNDS (36 pcs) Drilled 6"150 TBIC X 1" (100 pcs) OSHA Limit = 2.8 mg/m ³
085A			26A Silica		2.0	8.7	.025 mg

* Sample weight too small for Silica analysis to be performed.

CTD023112

CertainTeed

Date

10/7/83

To

O. H. Kittilstad

Location and mail code

1125/4

Subject

Corporate Industrial Hygiene
Recommendation Status Report

From

D. R. Hall/ev

Location and mail code

2125/2B

D. R. Hall

J. W. [unclear]

Per your August 12, 1983; attached are Corporate Industrial Hygiene recommendations updates for the following P&PG and VBPD plant locations:

A/C

Hillsboro, TX
Riverside, CA

5/82 82-15

PVC

Cameron Park, CA
Eads, TN
McPherson Pipe, Blend and Vinyl, KS
McPherson Fab/I.M., KS
Social Circle, GA
Waco, TX

Polymer

Lake Charles, LA

VBPD

Hagerstown, MD

This report has been compiled from information presently on file and/or direct communications with plant personnel.

The next update will be forwarded to you by December 31, 1983. Should you have any questions, contact me.

Attachments

CTD023113

RIVERSIDE A/C PIPE PLANT

Recommendations F/u

IHS, 4/80

IHS, 5/82

1. A review and upgrading of the present Respirator Program should be made. (IHS 4/80, 5/82)

Status: Basic program in place, will be upgraded. Respirator program guidelines to be established by Group Health and Safety, will be issued to the plant by 10/82. This being done to ensure a proper mechanism is set in place to address various aspects of proper respirator use and care. Guidelines will be consistent with those outlined in two NIOSH publications, Respiratory Protection...An Employer's Manual and Respiratory Protection...A Guide for the Employee. (6/82, DRH)

Status: Plant continues to use present programs. Group guidelines have yet to be established due to other priorities -- project appears near top of 1984 objectives. (10/83, DRH)

2. Until noise levels are reduced to acceptable limits, all employees whose job positions were found to exceed 100% should be required to wear hearing protection and be provided an annual audiometer exam. Several types of protectors should be made available. These machines and job positions should be posted as required hearing protection areas. (IHS, 4/80)

Status: A Hearing Conservation Program is being established; total development and implementation to be achieved by 12/31/82. Protectors are presently made available and are required in specific areas. Signs will be ordered and will be posted when received. (6/82, DRH)

Status: Signs posted throughout Finishing Department and at primary crusher; mandatory hearing protector use, enforced. Several types of hearing protective equipment made available to employees. Employees have viewed "Sound Advice". Considered complete. (10/83, DRH)

CTD023114

3. Clean out pipe tailings in the ventilation system prior to each shift on the Large Lathe Lines. (IHS, 5/82)

Status: Plant has on-going procedure for cleaning chips and sticks from dust hoods. Chips/dust from as few as 4 large pipes reaches accumulation level noted by P. Norris. Engineering looking into possibilities to improve dust hood design. (10/83, DRH)

4. Resampling for silica dust should be performed to substantiate the airborne concentrations measured during this survey. Equipment and instructions will be forwarded to the plant safety manager in the near future. (IHS, 5/82)

Status: Complete. Refer to 12/21/82 memo, P. Norris to N. Rhoades, this subject. (10/83, DRH)

5. A Hearing Conservation program should be established for employees who are exposed to noise levels of 85 dBA or greater and 90 dBA or greater for an 8-hour day. (IHS, 5/82)

Status: Refer to item #2 above. Presently following Cal-OSHA regulations, copies of which are posted and made available to employees. Considered complete. (10/83, DRH)

6. Noise abatement efforts in the finishing department should be increased and all efforts should be documented for compliance purposes. The services of an acoustical consultant should also be considered in solving these noise problems. (IHS, 5/82)

Status: For present, mandatory use of hearing protectors is the practical solution. Long term, the recommendation has been discussed, however, no engineering solutions have been taken, nor consulting services contracted. Cost factors being considered. (10/83, DRH)

RIVERSIDE
24-28 MAY 82

26
82

RIH01 Industrial Hygiene Survey: 82-15 PIPE & PLASTICS-EPG RIVERSIDE

Seq T Name CONTRERAS, JOE L.
0001 P Soc Sec 555-62-0421
Date 05/24/1982
Shift 1ST 8 HOUR
Dept BATCH/FORMING
Locn MIXER
Proc
Job OPERATOR
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.007100 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	001A	10:28	13:05	157	2.0600	3.5000/	100.0	0.0071	Y	DISPOSABLE SINGLE USE

Seq T Name CONTRERAS, JOE L.
0002 P Soc Sec 555-62-0421
Date 05/25/1982
Shift 1ST 8 HOUR
Dept BATCH/FORMING
Locn MIXER
Proc
Job OPERATOR
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.210000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	002A	08:05	14:54	409	2.0000	257.5000/	100.0	0.2100	Y	DISPOSABLE SINGLE USE

Seq T Name PETERSON, JOHN A.
0004 P Soc Sec 520-56-8597
Date 05/24/1982
Shift 1ST 8 HOUR
Dept PRODUCTION
Locn PRESS
Proc
Job OPERATOR
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.013000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	004A	10:36	14:30	234	2.0000	9.0000/	100.0	0.0130		

Seq T Name CASAS, JOHN A.
0005 P Soc Sec 573-94-2307
Date 05/24/1982
Shift 1ST 8 HOUR
Dept PRODUCTION
Locn MANDREL
Proc
Job HANDLER
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.094000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	005A	10:32	14:34	242	1.8850	65.5000/	100.0	0.0940		

Seq T Name BIXLER, GEORGE A.
0006 P Soc Sec 304-22-6065
Date 05/24/1982
Shift 1ST 8 HOUR
Dept PRODUCTION
Locn MANUFACTURING
Proc
Job SUPERVISOR
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.160000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	006A	10:43	14:36	233	1.8230	102.0000/	100.0	0.1600		

Seq T Name SONCRANT, WILLIAM G.
0007 P Soc Sec 385-22-0170
Date 05/24/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.015000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	007A	10:55	14:48	233	1.9700	10.5000/ 100.0	0.0150			

Seq T Name LEDFORD, JOE D.
0008 P Soc Sec 440-34-0878
Date 05/24/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.000690 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	008A	10:49	14:40	231	2.0530	0.5000/ 100.0	0.0007			

Seq T Name COLE, HARRISON
0009 P Soc Sec 425-68-7424
Date 05/24/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.006300 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	009A	10:52	14:40	228	1.8200	4.0000/ 100.0	0.0063			

Seq T Name RENFRO, EDWARD T.
0010 P Soc Sec 553-54-5445
Date 05/24/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.093000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	010A	11:05	14:41	216	2.0430	62.5000/ 100.0	0.0930			RELIEVED: MANDREL HA N 1105-1125 PRES OP 1125-1145 MACH TN 1145-1200 FORKLIF/1200

Seq T Name PASILLAS, DAVID
0011 P Soc Sec 562-74-5496
Date 05/26/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.065000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	011A	08:07	15:06	419	2.0450	85.0000/ 100.0	0.0650			

CTD022933

Seq T Name BEY, GEORGE M.
0012 P Soc Sec 546-98-9811
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn HYDROTETER
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.013000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Seq T Name ALBERT, AVERY
0013 P Soc Sec 999-99-2916
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc LINE 1
Job HANDLER

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.055000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Seq T Name AMARO, RICHARD
0014 P Soc Sec 560-98-0226
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc LINE 1
Job HANDLER

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.038000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Seq T Name GRANILLO, BENJAMIN
0015 P Soc Sec 557-56-8670
Date 05/27/1982
Shift 1ST 8 HOUR

Dept QUALITY CONTROL
Locn LAB
Proc LINE 1
Job INSPECTOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.017000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Seq T Name BEY, GEORGE M.
0012 P Soc Sec 546-98-9811
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn HYDROTETER
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.013000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Seq T Name ALBERT, AVERY
0013 P Soc Sec 999-99-2916
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc LINE 1
Job HANDLER

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.055000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Seq T Name AMARO, RICHARD
0014 P Soc Sec 560-98-0226
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc LINE 1
Job HANDLER

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.038000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 TYPE II PIPE FINISHED

Seq T Name GRANILLO, BENJAMIN
0015 P Soc Sec 557-56-8670
Date 05/27/1982
Shift 1ST 8 HOUR

Dept QUALITY CONTROL
Locn LAB
Proc LINE 1
Job INSPECTOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.017000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

CTD022934

Seq T Name DOBBS, JEFF M.
0017 P Soc Sec 571-92-9159
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn LATHE - 1/4
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.140000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 6" 150

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	017A	08:12	15:03	411	1.5800	136.0000/	100.0	0.1400		

Seq T Name DOBBS, PHILLIP R.
0018 P Soc Sec 557-68-1875
Date 05/27/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn BORING MILL
Proc LINE 2
Job OPERATOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.060000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 T

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	018A	07:20	15:01	461	1.9000	80.0000/	100.0	0.0600		

Seq T Name PALOMERA, GREGORY V.
0019 P Soc Sec 567-21-2535
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn SAW - REMORK
Proc LINE 2
Job OPERATOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.045000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150 & 10" 200 TYPE II PIPE

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	019A	07:32	10:48	196	1.9000	26.5000/	100.0	0.0470		75% OF TIME ON #2 CU TOFF SAW.
2.	019B	11:45	14:52	187	1.9000	23.0000/	100.0	0.0430		75% OF TIME OF #2 CU TOFF SAW.

Seq T Name GIL, LARRY L.
0021 P Soc Sec 570-58-4041
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn LATHE - FM
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.005700 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 18" SEWER

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	020A	07:45	14:55	430	2.0200	7.5000/	100.0	0.0057		

Seq T Name TAYLOR, BRIAN L.
0022 P Soc Sec 569-80-5194
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn FITTINGS
Proc
Job GLUER

Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.044000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product VARIOUS PIPES

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit	Respirator	Comments
1.	021A	07:50	11:55	245	1.8800	35.5000/	100.0	0.0510		

2. 021B 11:55 14:57 182 1.8800 18.5000/ 100.0 0.0360

Seq T Name HAMILTON, CHRISTOPHER Dept PRODUCTION Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0024 P Soc Sec 555-74-5800 Locn FITTINGS TWA 0.066000 F/CC

Date 05/26/1982 Proc Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job MAKER Product VARIOUS PIPES

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	022A	08:29	10:48	139	1.7650	23.5000/	100.0	0.0630			CORE DRILL, STONE HI NGE DRILL
2.	022B	11:55	14:58	183	1.7650	33.5000/	100.0	0.0680			CORE DRILL, STONE HI NGE DRILL

Seq T Name BIVENS, JANET R. Dept PRODUCTION Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0026 P Soc Sec 547-72-9345 Locn COUPLING TESTER TWA 0.140000 F/CC

Date 05/26/1982 Proc Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job LOADER Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	023A	07:57	12:47	290	1.8050	108.0000/	100.0	0.1400			7:57 A - 9:10 A LOADER IN SHIPPING YARD
2.	023B	12:47	15:04	137	1.8050	57.5000/	100.0	0.1500			1157A-304P COUPLING TO END OF 10" 200 PI PE ON LATHE LINE #2

Seq T Name BIVENS, JANET R. Dept PRODUCTION Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0028 P Soc Sec 547-72-9345 Locn COUPLING TESTER TWA 0.250000 F/CC

Date 05/27/1982 Proc Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job LOADER Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	024A	07:35	14:58	443	2.0000	336.0000/	100.0	0.2500			735A-930A COUPLING T ESTER 930A-1015A LOA DER 1015A-258P COUPLING TESTER 8" 150 PI

Seq T Name SANDERS, ANZY O. Dept PRODUCTION Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0029 P Soc Sec 431-64-0728 Locn GENERAL TWA 0.011000 F/CC

Date 05/26/1982 Proc Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job FORKLIFT OPERATOR Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	025A	07:38	11:52	254	2.0000	6.0000/	100.0	0.0078			ROADS AROUND ENTIRE PLT AND PIPE YARD. TRUCKS VARIOUS PIPE FOR THE DAY.
2.	025B	11:52	14:56	184	2.0000	8.0000/	100.0	0.0140			ROADS AROUND ENTIRE PLT AND PIPE YARD. TRUCKS VARIOUS PIPE FOR THE DAY.

CTD022936

Seq T Name SILVA, TONY G. Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0030 P Soc Sec 573-24-9440 Locn CRUSHER TWA 0.240000 F/CC

Date 05/27/1982 Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job OPERATOR Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	026A	12:25	15:13	168	1.8075	110.0000/	100.0	0.2400			FORKLIFT OPERATOR DU MP TRUCK OPERATOR AL SO

Seq T Name SWANK, KENNETH M. Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0031 P Soc Sec 540-22-6531 Locn GENERAL TWA 0.009500 F/CC

Date 05/25/1982 Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job ELECTRICIAN Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	027A	07:40	15:00	440	1.8850	12.0000/	100.0	0.0095			ROOMS THROUGHOUT THE PLT

Seq T Name MCFANN, JOSEPH R. Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0032 P Soc Sec 567-46-5755 Locn GENERAL TWA 0.005500 F/CC

Date 05/25/1982 Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job MACHINIST Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	028A	07:30	15:01	451	1.9870	7.5000/	100.0	0.0055			REMAINS IN SHOP

Seq T Name HEUTON, DONALD R. Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239

0033 P Soc Sec 482-30-7194 Locn BOILER TWA 0.003800 F/CC

Date 05/25/1982 Pel/Exp Limit OSHA PEL = 2 F/CC

Shift 1ST 8 HOUR Job OPERATOR Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	029A	07:35	14:46	431	1.8150	4.5000/	100.0	0.0038			TIME SPENT IN MACHIN E SHOP, BOILER ROOM, AND AUTOCLAVE AREA.

CTD022937

Seq T Name	AREA	Dept WAREHOUSE	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239	Comments
0034 A Soc Sec		Locn RECEIVING	TWA	0.130000 F/CC	CNTR OF STORAGE AREA 5' OFF FLOOR. 4 OPEN
Date	05/27/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC	GARAGE DOOR SIZE OPENINGS INTO WAREHOUSE
Shift	1ST	Job AREA SAMPLE	Product		
8 HOUR					
Equp	Samp	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit Respirator
1.	030A	1.8975	173.0000/	100.0	0.1300
Seq T Name	AREA	Dept WAREHOUSE	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239	Comments
0035 A Soc Sec		Locn RECEIVING	TWA	0.130000 F/CC	
Date	05/27/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC	
Shift	1ST	Job AREA SAMPLE	Product		
8 HOUR					
Equp	Samp	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit Respirator
1.	031A	1.5600	140.5000/	100.0	0.1300
Seq T Name	AREA	Dept BATCH/FORMING	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239	Comments
0036 A Soc Sec		Locn MIXER	TWA	0.048000 F/CC	FAR END OF STORAGE AREA 5' OFF FLOOR. 4
Date	05/24/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC	OPEN GARAGE DOOR SIZE OPENINGS INTO WARE
Shift	1ST	Job AREA SAMPLE	Product		
8 HOUR					
Equp	Samp	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit Respirator
1.	032A	1.6050	24.5000/	100.0	0.0480
Seq T Name	AREA	Dept BATCH/FORMING	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239	Comments
0037 A Soc Sec		Locn MIXER	TWA	0.750000 F/CC	TOP OF LEDGE NEXT TO CONTROL PANEL
Date	05/24/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC	
Shift	1ST	Job AREA SAMPLE	Product		
8 HOUR					
Equp	Samp	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit Respirator
1.	033A	1.8200	432.0000/	100.0	0.7500
Seq T Name	AREA	Dept PRODUCTION	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239	Comments
0038 A Soc Sec		Locn MANUFACTURING	TWA	0.400000 F/CC	MIXING AREA, 2ND LEV EL NEXT TO STAIRS
Date	05/27/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC	
Shift	1ST	Job AREA SAMPLE	Product		
8 HOUR					
Equp	Samp	LPM	Analysis-F/FLD	Conc-F/CC	ST Exp Limit Respirator
1.	034A	1.7600	466.0000/	100.0	0.4000
Comments					HANGING 5' OFF FLOOR OPPOSITE SPREADER TR
					AY. AREA WHERE MACHINE TENDER ROAMS

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Seq T Name AREA
0039 A Soc Sec
Date 05/27/1982
Shift 1ST 8 HOUR
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Equip Smp Start Stop Min LPM Analysis-F/FLD Conc-F/CC ST Exp Limit Respirator
1. 035A 07:10 14:32 442 2.0175 23.5000/ 100.0 0.0170
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Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.017000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
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Comments
HANGING 5' OFF FLOOR UNDERNEATH PIPE RETU
RN. OPPOSITE SAFETY OFFICE
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Seq T Name AREA
0040 A Soc Sec
Date 05/27/1982
Shift 1ST 8 HOUR
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Equip Smp Start Stop Min LPM Analysis-F/FLD Conc-F/CC ST Exp Limit Respirator
1. 036A 07:38 14:57 439 1.6900 29.5000/ 100.0 0.0260
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Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.026000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
-----
Comments
TOP OF CABINET NEXT TO FITTINGS GLUER
BENCH
=====
```

```
=====
Seq T Name AREA
0041 A Soc Sec
Date 05/27/1982
Shift 1ST 8 HOUR
-----
Equip Smp Start Stop Min LPM Analysis-F/FLD Conc-F/CC ST Exp Limit Respirator
1. 037A 07:16 14:34 438 1.6900 10.5000/ 100.0 0.0093
-----
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.009300 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
-----
Comments
TOP OF SOGA MACHINE #2 CUTOFF SAW RUNNIN
G
=====
```

```
=====
Seq T Name AREA
0042 A Soc Sec
Date 05/27/1982
Shift 1ST 8 HOUR
-----
Equip Smp Start Stop Min LPM Analysis-F/FLD Conc-F/CC ST Exp Limit Respirator
1. 038A 07:40 14:55 435 2.0500 8.5000/ 100.0 0.0063
-----
Contaminant Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
TWA 0.006300 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
-----
Comments
5' OFF FLOOR BETWEEN #2 & #3 LATHES. #1
LATHE RUNNING
=====
```

RIH01 Industrial Hygiene Survey: 82-15 PIPE & PLASTICS-EPG RIVERSIDE

Seq T Name	AREA	Dept MAINTENANCE	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
0043 A Soc Sec	Loen GENERAL	Loen GENERAL	TWA	0.001800 F/CC
Date	05/25/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC
Shift	1ST	Job AREA SAMPLE	Product	
8 HOUR				
Equip	Samp	LPM	ST Exp Limit	Respirator
039A	07:35	14:59	444	2.0520
1.	039A	07:35	14:59	444
Analysis-F/FLD	100.0	Conc-F/CC	0.0018	
Comments	SIDE OF TOOL CAGE CENTER OF MACHING SH OP			
Seq T Name	AREA	Dept MAINTENANCE	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
0044 A Soc Sec	Loen GENERAL	Loen GENERAL	TWA	0.002600 F/CC
Date	05/25/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC
Shift	1ST	Job AREA SAMPLE	Product	
8 HOUR				
Equip	Samp	LPM	ST Exp Limit	Respirator
040A	07:52	15:09	437	2.0200
1.	040A	07:52	15:09	437
Analysis-F/FLD	100.0	Conc-F/CC	0.0026	
Comments	5' OFF FLOOR DIRECTLY OVER WORKBENCH NEXT TO FORKLIFT PIT			
Seq T Name	AREA	Dept MAINTENANCE	Contaminant	Asbestos / CEF 37mm .013mm2 Fld/P&CAM 239
0045 A Soc Sec	Loen GENERAL	Loen GENERAL	TWA	0.001200 F/CC
Date	05/25/1982	Proc	Pel/Exp Limit	OSHA PEL = 2 F/CC
Shift	1ST	Job AREA SAMPLE	Product	
8 HOUR				
Equip	Samp	LPM	ST Exp Limit	Respirator
041A	07:55	15:09	434	1.9180
1.	041A	07:55	15:09	434
Analysis-F/FLD	100.0	Conc-F/CC	0.0012	
Comments	TOP OF CABINET BY DOOR WHICH HAD BEEN WE LDED SHUT			
Seq T Name	COOLEY, DENNIS D.	Dept PRODUCTION	Contaminant	Respirable Dust / CT PVC FILTER /CT gravimet R=A
0046 P Soc Sec 344-30-3938	Loen COUPLING CUT OFF	Loen COUPLING CUT OFF	TWA	<0.090000 mg/m3
Date	10/27/1983	Proc	Pel/Exp Limit	OSHA PEL = 5 MG/M3
Shift	1ST	Job OPERATOR	Product	
8 HOUR				
Equip	Samp	LPM	ST Exp Limit	Respirator
042A	11:35	15:10	215	0.0000
1.	042A	11:35	15:10	215
Analysis-mg/m3	0.0	Conc-mg/m3	<0.0900	
Comments				

Seq T Name JAMES, JIMMY L.
0047 P Soc Sec 572-82-0622
Date 10/27/1983
Shift 1st 8 HOUR

Contaminant Respirable Dust / CT PVC FILTER /CT gravimet R-A
TWA 0.120000 mg/m3
Pel/Exp Limit OSHA PEL = 5 MG/M3
Product

Eqp	Samp	Start	Stop	Min	LPM	Analysis-mg/m3	Conc-mg/m3	ST Exp Limit	Respirator	Comments
1.	043A	11:43	15:12	209	0.0000	0.1200/	0.0	0.1200		

Seq T Name HAMILTON, CHRISTOPHER
0048 P Soc Sec 555-74-5800
Date 10/27/1983
Shift 1st 8 HOUR

Contaminant Respirable Dust / CT PVC FILTER /CT gravimet R-A
TWA <0.093000 mg/m3
Pel/Exp Limit OSHA PEL = 5 MG/M3
Product

Eqp	Samp	Start	Stop	Min	LPM	Analysis-mg/m3	Conc-mg/m3	ST Exp Limit	Respirator	Comments
1.	044A	11:41	15:51	250	0.0000	0.0930/	0.0	<0.0930		

Seq T Name PALOMERA, GREGORY V.
0049 P Soc Sec 567-21-2535
Date 05/25/1982
Shift 1st 8 HOUR

Contaminant Respirable Dust / CT 5u PVC & 10mm Cyc/N0600 CT Nuisa.RESP
TWA 0.230000 MG/M3
Pel/Exp Limit OSHA PEL = 5 MG/M3
Product

Eqp	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST Exp Limit	Respirator	Comments
1.	045A	07:10	14:48	458	1.7750	0.1860/	0.0	0.2300		30 MIN LUNCH, LEFT LEFT PLANT 24" - #2 LATHE 10" - #1 LATHE

Seq T Name DOBBS, PHILLIP R.
0050 P Soc Sec 557-68-1875
Date 05/25/1982
Shift 1st 8 HOUR

Contaminant Total Nuisance Dust / PVC 5u 37mm2 /N0500
TWA 0.820000 MG/M3
Pel/Exp Limit OSHA PEL = 15 MG/M3
Product 8" CLASS 150 T

Eqp	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST Exp Limit	Respirator	Comments
1.	046A	07:15	14:50	455	1.6875	0.6320/	0.0	0.8200		

Seq T Name DOBBS, PHILLIP R.
0051 P Soc Sec 557-68-1875
Date 05/25/1982
Shift 1st 8 HOUR

Contaminant Sil-RD-Chry Quartz / CT PVC 5u 37mm +Cycl/OSHA 10142 EQUIVALEN
TWA 0.230000 MG/M3
Pel/Exp Limit OSHA PEL CALCULATED
Product 8" CLASS 150 T

Eqp	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST Exp Limit	Respirator	Comments
1.	047A	07:15	14:50	455	1.6875	0.1770/	0.0	0.2300		

CTD022941

Seq T Name HORTON, ALBERT N.
0052 P Soc Sec 267-86-0043
Date 05/24/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc
Job TENDER

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/FLD	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	003A	10:39	14:35	236	2.0150	125.0000/	100.0	0.1700			

Seq T Name DOBBS, PHILLIP R.
0053 P Soc Sec 557-68-1875
Date 05/26/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn BORING MILL
Proc LINE 2
Job OPERATOR

Equip	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST	Exp Limit	Respirator	Comments
1.	048A	07:43	10:50	187	1.7600	0.0865/	0.0	0.2600			LEFT PLANT FOR LUNCH
2.	049A	11:50	14:53	183	1.7600	0.0550/	0.0	0.1700			

Seq T Name COOLEY, DENNIS D.
0054 P Soc Sec 344-30-3938
Date 05/25/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn COUPLING CUT OFF
Proc
Job OPERATOR

Equip	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST	Exp Limit	Respirator	Comments
1.	050A	07:19	14:49	450	1.7900	1.0095/	0.0	1.3000			

Seq T Name COOLEY, DENNIS D.
0055 P Soc Sec 344-30-3938
Date 05/25/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn COUPLING CUT OFF
Proc
Job OPERATOR

Equip	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST	Exp Limit	Respirator	Comments
1.	051A	07:19	14:49	450	1.7900	0.2120/	0.0	0.2600			

Seq T Name GIL, LARRY L.
0056 P Soc Sec 570-58-4041
Date 05/25/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn LATHE - FM
Proc
Job OPERATOR

Equip	Samp	Start	Stop	Min	LPM	Analysis-MG	Conc-MG/M3	ST	Exp Limit	Respirator	Comments
1.	056A	07:22	14:52	450	1.9500	0.4335/	0.0	0.4900			

Seq T Name AREA Dept PRODUCTION Contaminant Total Nuisance Dust / PVC 5u 37mm2 /N0500
 0057 A Soc Sec Locn BAG OPENER & MIXER TWA 1.400000 MG/M3
 Date 05/25/1982 Pel/Exp Limit OSHA PEL = 15 MG/M3
 Shift 1ST 8 HOUR Job AREA SAMPLE Product

1. Equip Samp Start Stop Min LPM Analysis-MG Conc-MG/M3 ST Exp Limit Respirator
 057A 08:01 15:13 432 2.0520 1.2200/ 0.0 1.4000
 Comments
 2ND LEVEL NEXT TO ST AIRS

Seq T Name AREA Dept PRODUCTION Contaminant Sil-RD-Chry Quartz / CT PVC 5u 37mm +Cycl/OSHA ID142 EQUIVALEN
 0058 A Soc Sec Locn BAG OPENER & MIXER TWA 0.054000 MG/M3
 Date 05/25/1982 Pel/Exp Limit OSHA PEL CALCULATED
 Shift 1ST 8 HOUR Job AREA SAMPLE Product

1. Equip Samp Start Stop Min LPM Analysis-MG Conc-MG/M3 ST Exp Limit Respirator
 058A 08:01 15:13 432 2.0520 0.0476/ 0.0 0.0540
 Comments
 2ND LEVEL NEXT TO ST AIRS

Seq T Name MCGREGOR, PAUL W. Dept MAINTENANCE Contaminant Nickel / CEF 37mm Match Wt. /N7300 ICP
 0059 P Soc Sec 484-05-0739 Locn GENERAL TWA 0.170000 MG/M3
 Date 05/26/1982 Pel/Exp Limit OSHA PEL = 1 MG/M3
 Shift 1ST 8 HOUR Job WELDER Product

1. Equip Samp Start Stop Min LPM Analysis-UG Conc-MG/M3 ST Exp Limit Respirator
 059A 12:52 14:42 110 2.0000 48.4000/ 0.0 0.2200
 Comments
 BLDG UP GRATES & HAM MERS OF THE
 SECONDARY CRUSHER
 2. Equip Samp Start Stop Min LPM Analysis-UG Conc-MG/M3 ST Exp Limit Respirator
 062A 14:42 15:50 68 2.0000 13.6000/ 0.0 0.1000
 Comments
 BLDG UP GRATES & HAM MERS OF THE
 SECONDARY CRUSHER

Seq T Name MCGREGOR, PAUL W. Dept MAINTENANCE Contaminant Manganese / CEF 37MM MATCHED WT./N7300 METALS ICP
 0060 P Soc Sec 484-05-0739 Locn GENERAL TWA 0.680000 MG/M3
 Date 05/26/1982 Pel/Exp Limit OSHA PEL = 1 MG/M3
 Shift 1ST 8 HOUR Job WELDER Product

1. Equip Samp Start Stop Min LPM Analysis-UG Conc-MG/M3 ST Exp Limit Respirator
 061A 12:52 14:42 110 2.0000 158.4000/ 0.0 0.7200
 Comments
 BLDG UP GRATES & HAM MERS OF THE
 SECONDARY CRUSHER
 2. Equip Samp Start Stop Min LPM Analysis-UG Conc-MG/M3 ST Exp Limit Respirator
 064A 14:42 15:50 68 2.0000 84.3200/ 0.0 0.6200
 Comments
 BLDG UP GRATES & HAM MERS OF THE
 SECONDARY CRUSHER

Seq T Name MCGREGOR, PAUL W. Contaminant CHROMIUM METAL / CEF 37 MM MATCHED WT/ATOMIC ABSORPTION
 0061 P Soc Sec 484-05-0739 TWA 0.110000 MG/M3
 Date 05/26/1982 Pel/Exp Limit OSHA PEL = 1 MG/M3
 Shift 1ST 8 HOUR Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-UG	Conc-MG/M3	ST Exp Limit	Respirator	Comments
1.	060A	12:52	14:42	110	2.0000	30.8000/	0.0	0.1400		BLDG UP GRATES & HAM MERS OF THE SECONDARY CRUSHER
2.	063A	14:42	15:50	68	2.0000	9.5200/	0.0	0.0700		BLDG UP GRATES & HAM MERS OF THE SECONDARY CRUSHER

*** End Of Report *** DREXLESL

CTD022944

**NATLSCO**

National Loss Control Service Corporation
Long Grove, Illinois 60049 (312) 540-2488

ENVIRONMENTAL SCIENCES LABORATORY, A-1

TO: PETER J. NORRIS
CERTAINTED CORP.
760 E. SWEDES FORD RD.
P.O. BOX 860
VALLEY FORGE, PA. 19482

LABORATORY ANALYSIS REPORT

REPORT DATE: JUNE 22, 1982

SAMPLES REC'D: JUNE 21, 1982

REQUEST NUMBER: 24609

RESULTS

SAMPLE NUMBER	ANALYSIS REQUESTED	% QUARTZ	MG/M ³	MG/M ³	MG/M ³
			NICKEL	CHROMIUM	MANGANESE
✓ B-339	% SILICA	28			
✓ B-346	"	21			
✓ B-353	" BLANK	SUBT.			
✓ B-378	"	3.9			
✓ N-528	NICKEL, CHROMIUM, MANGANESE		0.10	0.067	0.62
✓ N-536	" "		0.22	0.14	0.72
ADD BLANK MPF			SUBT.	SUBT.	SUBT.

COMMENTS: METHOD: METALS-ATOMIC ABSORPTION, SILICA-X-RAY DIFFRACTION.
*ALL CAPS WERE OFF OF ONE HALF OF FILTERS.

Respectfully submitted,

Joan A. Wronski, Manager
Environmental Sciences Laboratory

ACCREDITED BY THE AMERICAN INDUSTRIAL HYGIENE ASSOCIATION

CTD022945

AMSCO**Hardfacing Alloys
Composite Electrodes****AMSCO'S "PAIR FOR WEAR"
Nicro Mang - X-53****Nicro Mang****Buildup and Joining Manganese Steel Parts**

By far the most universally preferred and used electrode for welding manganese steel — buildup, repair or joining. This electrode has weldor appeal plus in all positions, with light, non-popping slag producing top quality deposits with absolutely no cracking. Use Nicro Mang instead of stainless for all joining of manganese to carbon and alloy steels — deposits can be cut with a torch.

See S/A Nicro Mang (page 5) for semi-automatic welding.

Nicro Mang®

Tip — Silver

Coated Only AC-DC

14% Manganese, Nickel-Chromium alloyed

Deposit hardness average: 200 Brinell work hardening up to 500 BHN

Standard Package* — 50 lbs.

Type — Extrude Coated Composite

AWS—ASTM Spec: E Fe Mn-A

PRICES PER LB.

Nicro Mang	50-490 lbs.	500-1990 lbs.	2000 lbs.
5/32" x 14"	\$.90	\$.83	\$.76
3/16" x 14"	.81	.74	.67
1/4" x 18"	.80	.73	.66
5/16" x 18"	.80	.73	.66

AMSCO 60

Noted for its ease of handling — coating is extruded on this rod, not dipped — gives steady, even arc action. Use for multi-layer buildup on heavy impact hardfacing jobs. Put it on straight polarity and watch it go!

Applications: crusher ports, rolls, impactors, hammers, bucket lips, teeth, tractor parts, dredge parts.

AMSCO 60

For Heavy Impact — Moderate Abrasion

Tip — Copper

Coated Only AC or DC Straight and Reverse

Chrome-Manganese Martensitic Steel

Deposit Hardness — Rc 50

Standard Package* — 50 lbs.

Type — Extrude Coated Composite

PRICES PER LB.

AMSCO 60	Under 500 lbs.	500 lbs. & over
5/32" x 14"	\$.70	\$.66
3/16" x 14"	.66	.62
1/4" x 18"	.65	.61

Combine Nicro Mang, X-53, Amsco 60, Amsco 40, Amsco Super 20, Thermalloy 4, Superchrome and Tube Chromeface to receive quantity prices.

*AMSCO Nicro Mang X-53, 40 and 60 available in 10 lb. box at .03/lb. extra, except 1/4" and 5/16" which are in 50 lb. boxes only.

X-53**Superior General Purpose Hardfacing Overlay**

Again — weldor appeal with highest deposition efficiency — no slag, good buildup, minimum penetration for good bonding. Use on AC or DC reverse or straight — for speed 1/4" is 18" long. Order with Nicro Mang — benefit from quantity prices.

See S/A 53 (page 5) for semi-automatic welding.

X-53

Tip — White

Coated Only AC-DC

15% Chromium, with carbon and molybdenum.

Deposit Hardness Average: 51-56 Rockwell C — 495-555 Brinell

Standard Package* — 50 lbs.

Type — Extrude Coated Composite

PRICES PER LB.

X-53	50-490 lbs.	500-1990 lbs.	2000 lbs.
5/32" x 14"	\$.88	\$.83	\$.81
3/16" x 14"	.85	.80	.75
1/4" x 18"	.83	.78	.73
5/16" x 18"	.83	.78	.73

AMSCO 40

One of the original Amsco composites, 40 is still popular for its ability to weld edges and out-of-position, still maintaining high efficiency.

Applications: bucket teeth and lips, pulverizer hammers, shredder knives, mixer blades, Muller tires.

AMSCO 40

For Moderate Impact and Abrasion

Tip — Red

Coated Only AC or DC Straight or Reverse

Chrome-Moly High Carbon Iron

Deposit Hardness — Rc 54

Standard Package* — 50 lbs.

Type — Extrude Coated Composite

PRICES PER LB.

AMSCO 40	Under 500 lbs.	500 lbs. & over
5/32" x 14"	\$.94	\$.88
3/16" x 14"	.89	.83
1/4" x 18"	.89	.83

1 May 82

Riverside A/C Pipe
Milling Machine Hood (Boring)
Lathes
Rework Saw
Crusher

ventilation systems
+ noise sources

P. 528 Milling Machine hood
VS-209

P. 539 Cut-off Saw
VS-401

5-2500

5-4000

4-200(A)

4-MSA

- ✓ Velometer ^{performance} / ^{checks of} local exhaust ^{agitation}
- ✓ Sound level meter
- ✓ Sampling pumps ~15
- ✓ MCEP cassettes
- ✓ FWSBT cassettes ~10
- ✓ charcoal tubes
- ✓ Silica gel
- ✓ Florisil tubes

Vacuum out clogged
System routinely
maintain capture
efficiencies.

1 PKG M00003740
cellulose Bands

- Microsonics
- velometer
- my bag
- large Silver
- brown case

RIVERSIDE
HILLSBORO

LATHE HOOD for PVC PIPE FITTINGS & FABRICATIONS
PLANTS.

P. 5-26

VS-207

Plexiglass front cover

$Q = 300 \text{ cfm} / \text{ft}^2$ open area

Duct velocity 3500 fpm minimum

Entry loss = 0.50 VP

Chips transported to pulverizer to make reusable
PVC.

- reduce dust and loss of scrap
- reduce noise level.

Damping material on outside of panels.

plexiglas would also reduce direct noise,
would not transmit as much noise as steel.

- (2) Rework Saws
 (2) Coupling Cut-off Saws

Rework Saw	Branch Dia	CFM	
Hood Under table	4	392	
" Behind Saw	6	884	
Saw Hood	5	614	- 1890

Rework Saw			
Hood Under table	4	392	
Hood Behind Saw	6	884	
Saw Hood	5	614	- 1890

Coupling Cut-off Saw			
Hood at End of Pipe	4	392	
" Behind Saw	6	884	
Saw Hood	5	614	- 1890

Coupling Cut-off Saw			
Hood Behind Saw	6	884	
Saw Hood	5	614	
Hood at end of Pipe	4	392	- 1890

Wheelabrator No. 22.5 R Model 122-D
3-compartment

Standard cotton sateen 8" diameter bag
Gross cloth area 4872 ft²

Shaker mechanism fries bags of dust. Dust drops to a collection hopper below the bag house. Screw conveyor removes dust from hopper through a rotary air lock to a sheet metal sleeve to a dust wet tank below the collector. Airtight system. Dust is wet by water in a sealed tank set beneath ground level. Slurry is pumped to the settling ponds.

Pipe end lathe handles 6" to 12" autoclaved semi-finished stock which is very hard and may be worked on metal working machinery. Each end of the pipe is turned down simultaneously. Pipe passes to a flextester (bending strength) and then to a hydrotester (pressure test)

Coupling vertical boring mills. Use of metal working tools the rubber ring grooves are formed.

	Branch Dia	CFM
Coupling Horiz. Boring Mill -		
Tool hood	5	614
Bottom hood	5	614 - 1228

Coupling O.D. Lathe

Tool Post	6 1/2	1035
Coupling Vertical Boring Mill		
Tool hood	6 1/2	1035
"	"	"
"	"	"

Pipe End Finishing

Tool Post	6 1/2	1035
Lathe - Line #1		

Hood under end	5	614
Tool Post	6 1/2	1035
Hood Under end	5	614 32

CROCIDOLITE
CHRYSOTILE

AFALCA (BLUE)
CANADA

83 people

1. WAREHOUSE - FORK LIFT OPERATOR SAMPLE
UNLOADING FROM TRUCK

2. MIXER OPERATOR (AUTO)

3. PAY LOADING BUILDING

4. MAINTENANCE

5. 8 auto claws
7 trailloads

6. 1° & 2° crusher

7. 3 lathe lines

3-6"
6-14"
14-24"

8. Quarter line

9. Packaging lines

10. Boring Mills
Auto " "

6-10"
6-24"

11. Silica samples

- MIXING

- Finishing lathes

Cutoff Saw

Coupling Saw

Boring Mills

- Manufacturing list for week
- Personnel list for week
- Saturday is cleanup of Plant
Should get levels for cleanup.

79-80-66 End of bag opener. Not running.
" length of bag opener "

Hearing Conservation - >90 dB mandatory hearing protection, condition of employment

85-90 dB as to the law

Dr. Kanter to provide audiometric exams
Nurse to perform tests - school
proper room? or booth? S.C. PEX Pipe
acoustic & exhaustive calibration performed by
whom?
Signs to be posted where applicable.

Future survey

- maintenance men going in bag house
- cleaning on Saturday - sampling for everyone

J. Moscarello - ventilation Design Specs.

RIVERSIDE

- Respirator Program ✓ Qualitative Fit testing? for 8210
- fiber surveillance program - more frequent ✓ twice/year.
- sampling of Line #3 Tester Operator & Crusher Operator
- Hearing Conservation Program
- SDS delivered throughout plant
- Signs posted at area 230
 - Rework saw
 - Crushers
 - Pipe Machine
 - Finishing lathe
 - boring mills
 - coupling tester
- Improvement of dust collecting system at finishing lathe
- leak at the Secondary Crusher

CTD022955

Followup of past Recommendations. Meet objectives for this year which are outstanding since the beginning. Surveyed every plant.

- Past Recommendations

Discuss with D. Hall

- ✓ Asbestos - 50

✓ Silica - 7

✓ Metal fumes - welding - 2

✓ Noise - Areas of the plant, machines

Ventilation checks - systems in Finishing and bag opener.

✓ Respiratory Protection -

Tuesday 25 May 82

Same positions as Monday
just for the morning - 7-10.00

ASBESTOS
✓ Mechanic ~~Fouclift~~ Area
✓ Electrician Mixer
✓ Machinist } 8
Boiler
Maint. Supervisor
✓ Boiler Operator
Q.C. Engineer

Silica ? Fitters
4 Silica Total lathe ✓ 3 respirable
1 Silica resp. X # cutoff saw X 4 Total
42" mill
X coupling Saw
X Fin lathe
X boring Mill

Wednesday asbestos
crusher

lathe operator
Hydro tester
pipe handler
1/4 Tester Operator
Cutoff Saw
Boring Mill
42" Mill
Coupling Saw
Fin lathe

lathe - R

Stone Hinge Drill

Thursday

Ventilation
Noise (audio ?)
left over sampling

Boring Mill - R

Metal Fume

Welder - metal
Ni Cr Manganese

CTD022957

Ventilation in Maintenance Shop
Metal fume Sampling - Paul

Dr. Kanters Office
Room for audiometric Testing

25 May 82
1100 - 1115

A weighted Lin
27-40 dB 48-51

31.5	63	125	250	500	1K	2K	4K	8K	16K
42-49	36-39	31-34	27-32	18-24	28-38	20-32	13	13	14

Audiometric Booth transferred
from Social Circle PVC pipe to
Riverside (Dr. KANTER OFFICE)

- Car noise
- Talking in waiting room
(3 people outside)

Respirators 3M F70

Wilson 1200, 1210

Lower pack

R10
Filter

Maintenance - bag house, Mills

Pre-filter?

Pool storage cleaning, issued individually

Fit-tested - ? 3M

Beards!!

CRUSHER

25 May 82

161K 65-70

81C 78

4K 83

2K 92

112 95

500 97

250 102

125 97-102

63 95-106

31.5 85

- Survey on Saturday for cleaning and Maintenance
- Survey when maintenance enters bug house to determine the type of respiratory to be used.

Tony Silva
Crusher Operator

27 May 82

6105 NS17 1725 - 313

Forklift operator - outside

Crusher 2 sides exposed

1° (2° crusher) sometimes if problems

Boiler room 85-86 dBA
Work bench

31.5 - 250 Hz 82 - 90 dBS
↓ Higher frequencies

Mix
Site

Cleaning out ventilation hoods on an ^{routine} ~~intermittent~~ basis.
Maintain capturing efficiency of system.

Saturday clean and maintenance restricted to just the
manufacturing side of the plant.

Thursday

ASBESTOS

- ✓ - Inspector lathes
- ✓ - Supervisor lathes
- NO - mechanic
- ✓ - Boring Mill
- NO - 42' mill
- NO - Coupling Cut off ?
- ✓ - coupling Tester
- ✓ - Crusher Operator.
- 3 Area.

Silica

- ~~Area Resp - For lathe.~~

SAE .24

Respirable - too low

049.
Boring
mill

$$Y = \frac{.823}{1.0} = .823$$

Total
Dust

$$LCL = .823 - .24 = .583$$

$$UCL = .823 + .24 = 1.063$$

Possible overexposure

052

$$Y = \frac{1.25}{1.3} = 0.961$$

$$LCL = 0.961 - .24 = 0.721$$

$$UCL = 0.961 + .24 = 1.20$$

Possible
overexposure.

048

R - .229

$\frac{10 \text{ mg}}{\% \text{SiO}_2 + 2}$

$$.449 - .24$$

28
21
3.9

17.6 %

.51 mg/m³

$$LCL = .209$$

$$UCL = .689$$

OK

.650

$$y = \frac{.763}{.51} = .516$$

OK

$$LCL = .516 - .24 = .275$$

$$UCL = .516 + .24 = .756$$

051

$$y = \frac{.171}{.51} = .335$$

$$LCL = .335 - .24 = 0.095$$

$$UCL = .335 + .24 = 0.575$$

OK

053

$$y = \frac{.494}{\cancel{.51} \atop .53} = \cancel{0.969} \atop 0.32$$

OK

$$LCL = .969 - .24 = 0.728 \quad .08$$

$$UCL = .969 + .24 = 1.208 \quad .56$$

- Bag Opener -
entrance, port holes, negative pressure, at a velocity of at least 200-250 fpm.
- Coupling Cutoff



face
7500 fpm

Top length
500-600 fpm

Bottom length
400-500 fpm

Top of
flange negligible
face of duct 2500 fpm

400 fpm face Top

- 42" mill
1200-1300 fpm at periphery of mill
and on top

Smaller tubes show good air flow patterns

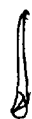
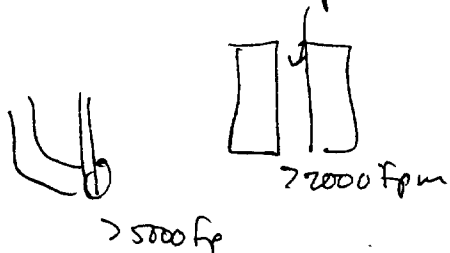
Boring mill #1

Grated holders - < 100 at top
face velocity at duct entrance ≥ 5000 fpm
H₂ at base of holder

#2 Saw

Saw exhaust hood > 2500 fpm

face open



Not flush with
end of pipe

> 2500 fpm at face

1, 2, 3

Lathe noise -

- Banging of pipes onto metal railings
- lining pipe up for lathe (pipe & metal noise)
- lathe cutting noise impulsive
- compressed air noise
- pipe rolling down railing to other pipe
metal + pipe, pipe + pipe noise
- packaging, pipe shipment - hammering
- Echo from other machines across plant

Echos thru out plant from metal building and cement floors.

Saw 1 + 2

- pipe on metal railing noise
- saw noise on pipe impulsive

Fitting Glue

Epoxy glue + hardener + silica sand
hand mixed.

Exposure to silica? Not hardly
8 oz. cup at a time

Poxyhesive by Permanganate Plastics Inc.

Recommendations

Barriers between each line - not accessible.
Forklift access & personnel

Overhead barriers - absorption Foam
foam on walls - reverberates thru-out.

Noise from one area spills over into other areas.
Large lathes throughout the whole plant,
especially depending on type of pipe being lathed.

Serpentines throughout the plant - Guide Rails

plastic or rubber buffers.

Impulsive & impact type noise maintenance should be excellent.

Intermittent up to 140 dB
3" - 6" 6" - 10" 14" 24" 10' - 12' 14' - 16' 24' - 36'

all guards, isolated & guarded

dependent on size of pipe, dryness of pipe, railing to pipe, dryness of pipe, intermittent lather cutting sound on top of the

Enclosure 44 lexan 4-5 dBA

Large area of noise in warehouse

Putting pipes in wooden racks hanging in hampers.

lathe Asst. putting pipes on conveyor system - hoist

Other noise and sound floors.

Sound pressure level range - from 97-102 dB, actual dose of exposure to be 94.7 The lathe area should be considered a high noise area and signs should be posted to acknowledge this.

Material Handling impacts - Crest factor ↑ Time in motion - shaded

Pipe cuttings or shavings on metal parts where pipe hits.

inaccurate readings can result. impulse pressure meter

Hanging Acoustic barriers from ceiling, around walls
Acoustic coefficients
low frequency

Reverberates throughout the whole plant, adding to the daily noise dose of employees not working on that machine or equipment.

Noise abatement system designs would typically include tool redesign, vibration damping or absorption systems, pneumatic silencers, acoustic shields, and partial or total enclosures.

In the end, then, compliance control is required ~~after implementation~~ of ^{because of} nontreatability of controls and/or cost effectiveness of controls. Nonengineering controls will ^{administrative, personal protection, etc.} then be ~~attained~~ in accordance with the OSHA standard on Noise and Hearing Conservation dependent to the 100 study.

Saw blade damping
~~noise~~ ~~absorption~~ } Cutoff saw
noise absorption
Saw blade/workpiece alignment

Panels of sound foam hung over cutoff saw
Panels behind and sides
Damping material on metal guards around saw blade
Rubber absorbers on pipe railings - cut down on impact noise.

Cutliff

Saw 1 & 2

pipe banging on metal railings, impulsive
intermittent noise generated from saw blade.

Noise range of 83-93 dBA, impulsive type noise.

Coring Mills

impulsive pipe clogging on top of ventilated
impulsive type noise
noise range

FM noise

impulsive pipe on metal railing
impulsive noise from lathings 90-94 dBA

Recommendation - contacting an ~~acoustic~~ Acoustic, noise
specialist to evaluate your problem areas to
see whether engineering controls are feasible
and cost effective.

This type of dampening can be installed on key areas along the pipe conveyor system to ultimately decrease the employees total daily noise dose.

Personnel working in the manufacturing area are advised and encouraged to wear personal hearing protection, and be placed in a hearing conservation program.

Finishing Department are the biggest offenders and

The 3 major lathe lines produce noise levels which echo throughout the whole plant. The intensity of the noise is dependent on the size and type of pipe being lathed. Vibrating and other machines or job positions are affected by the lathes.

(1st) Virtually all the finishing machines in this area of the plant produce noise which echo throughout the ~~plant~~ ^{finishing department} and contribute to every employees total daily noise dose. Because of the design of the plant and nature of the manufactured product, ~~total segregation~~ ^{and segregation} of each machine is not practical. the Forklift trucks also add to this problem. (later.)

~~Another problem~~

CTD022971

Impact (impulse) noise is also a contributing ~~and source~~ to the problem. The banging of pipe against pipe and pipe against metal ~~pipe~~ conveyor system.

Gardner-Denver
Triplex Plunger Pump

- 91 dB

500 Hz ↑
250 Hz

PETER NORRIS

WORKING SCHEDULE - WEEK STARTING MONDAY, May 24, 1982
(5 Day Work Week - Monday thru Friday)

7:00 AM to 3:00 PM *

Supervisor: Bixler

156 Horton

154 Renfro

240 Contreras-Ann.Phys. 1:30 P.M.
5/24

153 Peterson

153 Casas (T-Bid)

123 Soncrant

140 Cole

135 Ledford

MANUFACTURING DEPARTMENT

3:00 PM to 11:00 PM

Supervisor: Voightlander

105 Morales

104 Cantrell-Pers.Med.Lv.

171 Marron (T-Bid)

187 Richardson

129 Hastings

259 Reyes

194 Saniga

345 Plaza

358 Bryant (T)

11:00 PM to 7:00 AM

Supervisor: Garcia

122 Windsor

108 Aeschliman

170 Morgan

333 Brady (T-Bid)

348 Eaves

352 Gilleland

233 Chavez

344 Martinez

Day Shift to Report at 6:00 A.M. 5/24

BOILER OPERATORS (Maint.)

130 VanderWeel

362 Bolter

SHIFT MECHANICS (Maint.)

255 Heuton

339 Bastiaans

342 Jenny

363 King

FINISHING DEPARTMENT

7:00 AM to 3:30 PM

Supervisor: Schielke

155 Hamton

159 Stanfield

158 Pasillas

253 Bey

332 Amaro

337 Butts-Medical Leave

346 Suarez

350 Avery (T-Bid)

360 Palomera

7:00 AM to 3:30 PM

Supervisor: Price

107 Sanders

115 Silva

118 Gil

131 Cooley

132 Hamilton

161 James

162 Taylor

212 Boyd

289 Bivens

295 Dobbs, P.

323 Dobbs, J.

3:30 PM to 12:00 PM

Supervisor: Herrera

114 Calvin

282 Evans-Vac. 5/24

286 Cooper

288 Steward

307 Thompson

322 Aske

324 Allen-Vac. 5/24 & 31

334 Clauson

351 Villalpando (T)

354 Hagerman (T)

QUALITY CONTROL DEPARTMENT

116 Wilson

126 Garcia

Supervisor: Deeson

8:00 AM to 4:30 PM

109 Granillo

138 Goodwin

MAINTENANCE DEPARTMENT

8:00 AM to 4:30 PM

Supervisor: Driskill

111 Perry

112 McFann

121 Steen

166 Swank

174 Chute

20 Caron

247 Mojeske

277 Darnell

280 McGregor

306 George

309 Wittaker

364 Baray

GENERAL HELPERS

8:00 AM to 4:30 PM

Supervisor: Shockley

361 Feaster *

* Report to Manufacturing

SHIPPING/RECEIVING DEPT.

8:00 AM to 4:30 PM

Supervisor: Glover

106 Wall

135 Corral

167 Fonseca

180 Atencio - Vac. 5/24

CTD022974

SIZE & CLASS		NO. PCS. MFR'D	COMMENTS	B	2ND SHIFT						
15 ⁴ 000-d		8	PIPE	Look Good							
15 ³ 000-d		30									
8"150		545									
		583									
			Scrap = 0								
TONS PER	SHIFT	HOUR	GROSS TIME: DOWN TIME: NET TIME:	8 0 8	<table border="1"><tr><th>FELT NO</th><th>HOURS</th></tr><tr><td>TOP 77318</td><td>134³/₄</td></tr><tr><td>BOT. 31496</td><td>134³/₄</td></tr></table>	FELT NO	HOURS	TOP 77318	134 ³ / ₄	BOT. 31496	134 ³ / ₄
	FELT NO	HOURS									
TOP 77318	134 ³ / ₄										
BOT. 31496	134 ³ / ₄										
115.18 % Yield			FOREMAN C.W. Wright								

11/17/19 10/11/18 5.
FLT/Top-13.71 OLD-1277.57
15/BOT-1293.22

MACHINE NO. 01

DATE MAY 24, 1982

MOR

WD-10

Fines 97F 93F 91F

97 8	93 9	91 5-2
---------	---------	-----------

-0-

RAW MATERIAL USAGE

FORMULA NO.	TOTAL USAGE (LBS)			DAILY TOTAL	UNIT STANDARD CCST	EXTENDED STANDARD COST	ACCUMULATED USAGE TO DATE
	1ST SHIFT	2ND SHIFT	3RD SHIFT				
AK	7200	8100	6700	22000			
AT	4000	4500	3300	11800			
AZ	5600	6300	4700	16600			
MILK	1769	1984	1984	5732			
HS	2646	2976	2094	7716			
Totals	21210	23860	18778	63848			
TAPE	22310	20385	19545	62240			
CEMENT	60632	55420	52990	168992			
SILICA	40244	36792	35098	112134			
FINES	13410	12186	11594	37190			
DAILY TOTAL BROUGHT FORWARD	135496	128258	118411	382164			
ACCUM.				5989830			
				5871994			

CTD022975

	NO. PCS. MFD	TOTAL FEET	TOTAL WEIGHT	TOTAL EXTD. STANDARD COST
DAILY TOTALS	1860	24180	444052	
BROUGHT FORWARD	17497	226811	6332258	
ACCUMULATED TOTALS	19357	250991	6776310	

TOTAL FIBER BLENDS	DAILY	62240	ACCUM.	989416
TOTAL FIBER BATCHES		63848		1008302

115.40% 1174 +1608 +18886

DAILY YIELD	DAILY VARIATION	ACCUMULATED VARIATION		
116.19%	\$	\$		
	GROSS HOURS	NET HOURS	TONS	TONS HR
DAILY	24.00	23.75	222.03	9.33
ACCUM.	396.00	376.00	3388.17	9.01

Total Belongs 24 Total samples - 131 weekly - 222.03

DATE 29 May 82

PRODUCTION RECAP

86.91%

CTD022976

05 6.43 Total 05 137.46

Totals 24 Total Sales - 113 Weekly - 425.00

DATE 25 May 82

FINISHING DEPARTMENT

PRODUCTION RECAP

WG. TONS 203.17 3591.34

FIN. TONS 283.21 3227.85

DIFF. $\pm$ +80.04 -363.49

89.88%

Peter Morris

[illegible]

TOTAL TONS 283.2 / SHIFT #1 123.79 SHIFT #2 150.30 FITTINGS 9.12

05 5.16 Total 05 142.62

19471 10 00 15

SIZE & CLASS	NO. PCS. MFR'D	COMMENTS "C" 1ST SHIFT
21"FT30 70		PIPE LOOK GOOD
24"FT30 99		
DOWN 11 MINUTES		
8:13AM TO 8:24AM		
CYL. CHANGE		
CLEAN PUMP &		
WET'G SCREW		
(OPEN IN PRESS)		
SCRAP (3) 24"FT30		
SHIFT	HOUR	GROSS TIME
7:38	9:08	1:30
NET TIME: 73/4		
110.97% Yield		

DOWN 7 min 11
10:25AM TO 10:36
CHECK PRESS
DOUGS FOR POS.
STABLE BUILD UP

169

FORMER

TOP 77319 32 1/4
BOT 31496 30 1/2

PIPE MACHINE REPORT

MACHINE NO 01 DATE MAY 26, 1982

FINES 93F 93F 94F -0

FORMULA NO. 30 30 70/24

RAW MATERIAL USAGE

RAW MATERIALS	1ST SHIFT	2ND SHIFT	3RD SHIFT	DAILY TOTAL	UNIT STANDARD COST	EXTENDED STANDARD COST	ACCUMULATED USAGE TO DATE
C & G 3							
C & G 4							
C & G 5							
AK	7200	7600	8500	23300			
4T	4200	4000	4300	12500			
H2	6400	6400	6600	19400			
ML6	1764	1764	1984	5512			
HS	2646	2646	3197	8489			
Tota	23010	23010	24581	68601			
TAPE	21957	21955	22482	66394			
CEMENT	55304	55310	56593	167207			
SILICA	36733	36739	37622	111094			
FINES	12806	12995	13306	39107			
DAILY TOTAL	126333	127354	136101	389788			
BROUGHT FORWARD				6270609			
ACCUM.				6606617			

SIZE & CLASS	NO. PCS. MFR'D	COMMENTS B 2ND SHIFT
24"FT-30	103	PIPE LOOK GOOD
21"FT-30	73	
SCRAP = 0		
SHIFT	HOUR	GROSS TIME
7:39	9:16	1:37
NET TIME: 8		
115.61% Yield		

FORMER

TOP 77319 40 1/4
BOT 31497 38 1/2

FOREMAN CW Wright

SIZE & CLASS	NO. PCS. MFR'D	COMMENTS A 3RD SHIFT
24"FT30	117	PIPE LOOK GOOD
21"FT30	49	(24" SINE LONG ENDS 21" LOOK GOOD)
SCRAP = 0		
SHIFT	HOUR	GROSS TIME
7:24	8:51	1:27
NET TIME: 8		
107.86% Yield		

FORMER

TOP 77319 48 1/4
BOT 31497 46 1/2

FOREMAN E. J. Duran

	NO PCS MFR'D	TOTAL FEET	TOTAL WEIGHT	TOTAL EXT'D. STANDARD COST
DAILY TOTALS	511	6643	927851	
BROUGHT FORWARD	19608	254904	7183651	
ACCUMULATED TOTALS	20119	261547	7612482	

TOTAL FIBER BLENDS	DAILY	66394	ACCUM.	1120515
TOTAL FIBER BATCHES	DAILY	68601	ACCUM.	1145165

115.23 %MY +2207 +22650

DAILY YIELD	DAILY VARIATION		ACCUMULATED VARIATION	
111.35%	\$		\$	
	GROSS HOURS	NET HOURS	TONS	TONS HR
DAILY	24.00	23.75	214.91	9.05
ACCUM.	444.00	423.75	3806.35	9.00

AUG 04/12
TONS
211.46

117 TOP - 43119
115 BOT - 71604

Tota - 25
500 PCS - 130
Total - 640.11

WEG. TONS 214.91 3806.25

FIN. TONS 356,68 3584,53

DIFF. $\pm$ +191,77 -221,72

Peter Norriss

94.17%

SIZE AND CLASS	SHIFT # 1 FOREMAN	SHIFT # 2 FOREMAN	CPG. & FTGS. FOREMAN	TOTAL
DESCRIPTION	Schielke	Herrera	Priole	
24100P PB		132 1716		132 1716
6150P 1/9 FM			150/487.5	487.5
8150P PB8'	1404 18252	837 10881		2241 29133
8150P Poly (75% Range)			525	525
10150P PB9' Rdms	24 299			24 299
10150P 1/2 MEU	18/117			117'
11200P PB9'	13 169			13 169
8 FT 40 1/2 MEU			5/32.5	32.5'
8 FT 40 1/9 FM			4/13	13'
243000D SD PE Rdms		3/37		37'
10x92000D SD WYE			5	5
10x6 " "			2	2
8x8 " "			3	3
12x12 " "			1	1
15x6 " "			2	2
82000D SD 45° EL			4	4
122000D SD 45° EL			1	1

CTD022980

TOTAL TONS 356.68 SHIFT #1 167.21 SHIFT #2 182.24 FITTINGS 7.23

05 4.85 Total 05 147.47

SIZE & CLASS	NO. PCS. MFR'D	COMMENTS	1ST SHIFT
--------------	----------------	----------	-----------

12"150 192 PIPE LOOK GOOD
12"200 52

DOWN 15 MINUTES

12"150 521 8:08 AM TO 8:23 AM

CYL. CHANGE

CLEAN PUMP

WET'G SCREW.

265

SCRAP - 0

SHIFT	HOUR	GROSS TIME DOWN	NET TIME	TOP	BOT	HOURS
7:49	9:26	1/4	73/4	77319	31497	78 3/4
115.38%	4.00					

FOREMAN *George Xipell*

SIZE & CLASS	NO. PCS. MFR'D	COMMENTS	2ND SHIFT
--------------	----------------	----------	-----------

12"200 6 Pipe Look Good

12"150 282

12"150 16

304

Scrap = 0

SHIFT	HOUR	GROSS TIME DOWN	NET TIME	TOP	BOT	HOURS
7:42	9:65	8	8	77319	31497	87 3/4
120.62%	9.00					86

FOREMAN *C.W. Voughtlander*

SIZE & CLASS	NO. PCS. MFR'D	COMMENTS	3RD SHIFT
--------------	----------------	----------	-----------

12"150 156 PIPE LOOK GOOD

2:57 A.M. - SHUT DOWN

P.M.

156

SCRAP - 12"150

SHIFT	HOUR	GROSS TIME DOWN	NET TIME	TOP	BOT	HOURS
38:02	9:51	8	4	77319	31497	91 3/4
123.06%	9.00					90

FOREMAN *Ernest J. Davis*

11/100 - 846.50
11/100 - 837.05

PIPE MACHINE REPORT

MACHINE NO 01 DATE MAY 28, 1982 FRI
Fines 41% 44% 21% -0.1

RAW MATERIAL USAGE

FORMULA NO.	TOTAL USAGE (LBS.)			DAILY TOTAL	UNIT STANDARD COST	EXTENDED STANDARD COST	ACCUMULATED USAGE TO DATE
	1ST SHIFT	2ND SHIFT	3RD SHIFT				
C & G 3							
C & G 4							
C & G 5							
AK	9900	8800	4400	23100			
1T	3600	3300	1600	8400			
A2	4500	4200	2000	10500			
AK6	1984	1764	882	4630			
HS	3255	2527	1264	6959			
Total	23952	21291	10646	55889			
TIME	21587	22837	10591	55117			
CEMENT	53602	56324	26828	135774			
SILICA	35040	37633	17936	90598			
FINES	12370	13152	6340	31877			
DAILY TOTAL	12324	12639	6179	31142			
BROUGHT FORWARD				699576			
ACCUM.				1307178			

	NO. PCS. MFR'D	TOTAL FEET	TOTAL WEIGHT	TOTAL EXT. STANDARD COST
DAILY TOTALS	725	9425	3.23866	
BROUGHT FORWARD	20949	272331	8062656	
ACCUMULATED TOTALS	21674	281762	8492522	

TOTAL FIBER BLENDS	DAILY	ACCUM.
TOTAL FIBER BATCHES	55117	1243747
	55889	1265588

115540/114 +772 = 218.79

DAILY YIELD		DAILY VARIATION		ACCUMULATED VARIATION	
119.02%		\$		\$	
	GROSS HOURS	NET HOURS	TONS		TONS HR
DAILY	24.00	19.75	186.93		4.16
ACCUM.	492.00	466.25	4221.26		9.05

21 Ton/100 - 106 Weekly - 1055.12
21 Ton/100 - 106

CONTROL NO. 82-103

FINISHING DEPARTMENT

MFG. TONS 186.93 4231.20

DATE 25 May 82

IN. TONS 237.40 . 4121.00

PRODUCTION RECAP

DIFF. $\pm$ +50.47 -100.21

97.62%

[illegible]

TOTAL TONS 237.40 SHIFT #1 109.53 SHIFT #2 112.76 FITTINGS 15.11

05 3.22 Total 05 152.85

CertainTeed Industrial Hygiene
PUMP CALIBRATION

Pre calibration: Riverside Survey date: 27 May 82 Post calibration: Riverside
 Location: Riverside Date: 27 May 82 Time: 1500 Time: 1400 - 1500
 Stop watch used: 608cc Stop watch used: 608cc
RJR PRN

(Signatures)

(Signatures)

Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate	Time to Displace Bubble		Flow Rate		Sampling Rate
			Pre	Post	Pre	Post		Pre	Post	Pre	Post	
	D-4973											
MCEF	D-4974	500	16.9	17.0	1.78	1.76						
MCEF	D-4976	500	14.6	14.6	2.05	2.05						
MCEF	D-4978	500	15.1	15.6	1.91	1.88	1.8975					
MCEF	D-4979	500	16.0	17.6	1.65	1.70	1.69					
	D-5554		17.9	17.7	1.68	1.69						
	D-5807	500	15.0	14.8	2.00	2.03	2.0175					
	D-5828		15.0	14.7	2.00	2.04						
MCEF	D-5851	500	19.2	19.2	1.56	1.56	1.56					
MCEF	D-6595	500	17.0	17.0	1.76	1.76	1.76					
	BDX-44		17.0	17.0	1.76	1.76						
	M-0236											
	M-0237											
	M-1851											
	M-1866											

CTD022983

CertainTeed Industrial Hygiene
PUMP CALIBRATION

TUESDAY

Precalibration _____
 Location: RIVERSIDE
 Date: 24 MAY 82 Time: 1500
 Stopwatch used: 60 SEC
 Survey date: 25 MAY 82
 Postcalibration _____
 Location: RIVERSIDE
 Date: 25 MAY 82 Time: 1500
 Stopwatch used: 60 SEC

 P/N

(Signatures)

(Signatures)

Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate	Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate
			Pre	Post	Pre	Post					Pre	Post	Pre	Post	
	D-4973								M-2330						
MCEF	D-4974	500	275	17.0	1.82	1.76	1.79		M-3712						
MCEF	D-4976	500	14.4	14.7	2.08	2.04	2.052		M-5554						
MCEF	D-4978	500	15.5	15.8	1.94	1.90	1.918		M-5791						
MCEF	D-4979	500	13.0	17.4	1.67	1.72	1.6875	MCEF	P-4155	500	14.3	14.8	2.1	2.03	2.052
	D-5554							MCEF	P-6105	500	15.9	16.0	1.89	1.88	1.885
MCEF	D-5807	500	14.8	15.0	2.03	2.00	2.02	MCEF	P-6121	500	15.0	15.3	2.00	1.96	1.987
	D-5828							MCEF	P-6133	500	15.8	15.8	2.00	1.90	1.95
MCEF	D-5851	500	18.8	18.7	1.6	1.6	1.6	MCEF	P-6519	500	15	15	2.00	2.00	2.0
MCEF	D-6595	500	16.8	17.0	1.79	1.76	1.775	MCEF	P-7036	500	16.5	16.8	1.82	1.79	1.815
	BDX-44								P-331						
	M-0236								P-332						
	M-0237								P-334						
	M-1851								P-335						
	M-1866								P-336						

CTD022984

CertainTeed Industrial Hygiene
PUMP CALIBRATION

Wed.

Pre calibration
Location: Riverside
Date: 25 May Time: 1500
Stopwatch used: 60 sec
PJN

Post calibration
Location: Riverside
Date: 26 May 82 Time: 1500 - 1600
Stopwatch used: 60 sec
PJN

(Signatures)

(Signatures)

Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate	Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate
			Pre	Post	Pre	Post					Pre	Post	Pre	Post	
	D-4973								M-2330						
MCEF	D-4974	500	17.0	16.1	1.76	1.78	1.765		M-3712						
			17.0	17.0	1.76	1.76									
MCEF	D-4976	500	14.7	14.6	2.04	2.05	2.045		M-5554						
			14.7	14.6	2.04	2.05									
MCEF	D-4978	500	15.8	15.7	1.89	1.91	1.895		M-5791						
			15.8	15.7	1.89	1.88									
MCEF	D-4979	500	17.4	17.8	1.72	1.69	1.695		P-4155	500	14.8	15	2.03	2.00	2.02
			17.7	17.9	1.69	1.68					14.9	15	2.01	2.00	
	D-5554								P-6105	500	16.0	16.0	1.88	1.88	1.88
											16.0	16.0	1.88	1.88	
MCEF	D-5807	500	15.0	15.0	2.00	2.00	2.00		P-6121	500	15.3	15	1.96	2.0	1.98
			15.0	15.0	2.00	2.00					15.3	15	1.96	2.0	
	D-5828								P-6133	500	15.8	15.8	1.90	1.90	1.9
											15.8	15.8	1.90	1.90	
MCEF	D-5851	500	18.7	18.2	1.6	1.56	1.58		P-6519	500	15	15	2.00	2.00	2.0
			18.7	18.2	1.6	1.56					15	15	2.00	2.00	
MCEF	D-6595	500	17.0	17.0	1.76	1.76	1.76		P-7036	500	16.8	16.6	1.79	1.81	1.805
			17.0	17.0	1.76	1.76					16.5	16.7	1.82	1.80	
	BDX-44								P-331						
	M-0236								P-332						
	M-0237								P-334						
	M-1851								P-335						
	M-1866								P-336						

CTD022985

CertainTeed Industrial Hygiene
PUMP CALIBRATION

MONDAY

Pre calibration

Location: Valley Forge
Date: 5/20/82 Time: 12:00pm
Stopwatch used: Muglan 100

Survey date:

Riverside sk

Post calibration

Location: RIVERSIDE
Date: 24 MAY 82 Time: 1500
Stopwatch used: 60866

(Signatures)

(Signatures)

Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate	Collection Medium	Device ID No.	Disp. (cc)/Flow	Time to Displace Bubble		Flow Rate		Sampling Rate
			Pre	Post	Pre	Post					Pre	Post	Pre	Post	
	D-4973								M-2330						
	D-4974	500	.275		1.82				M-3712						
			.275		1.82										
	D-4976	500	.26	14.4	2.0	2.08	2.043		M5554						
			.25	14.6	2.0	2.05									
	D-4978	500	.25	15.5	2.0	1.94	1.97		M-5791						
			.25	15.5	2.0	1.94									
	D-4979	500	.20		1.67				P-331						
			.20		1.67										
	D-5554								P-332						
	D-5807	500	.24	14.8	2.08	2.03	2.053		P-334						
			.24	14.6	2.08	2.05									
	D-5828								P-335						
	D-5851	500	.31	18.8	1.61	1.60	1.605		P-336						
			.31	18.7	1.61	1.60									
	D-6595	500	.27	16.8	1.85	1.79	1.82		P-4155	500	.25	14.3	2.0	2.1	2.06
			.27	16.8	1.85	1.79					.25	14.5	2.0	2.07	
	BDX-44								P-6105	500	15.9	15.9	1.87	1.87	1.885
											16.0	15.9	1.88	1.87	
	M-0236								P-6121	500	.25	15.8	2.0	2.00	2.015
											.25	14.8	2.0	2.03	
	M-0237	500	.24		2.08				P-6133	500	15	15	2.0	2.0	2.0
			.24		2.08						15	15	2.0	2.0	
	M-1851	500	.33		1.52				P-6519	500	15	15	2.0	2.0	2.0
			.33		1.52						15	15	2.0	2.0	
	M-1866	500	.24		1.92				P-7036	500	16.7	16.5	1.8	1.82	1.823
			.24		1.92						16.2	16.2	1.85	1.85	

CTD022986

15 June 82

#427 $\frac{5}{100} = 0.05$

$$\frac{(0.05 - .036)(855)}{(0.013)(832.41)(1000)} = \frac{11.97}{10821.33} = 0.001 f/cc$$

#514 $\frac{27.5}{102} = 0.27$

$$\frac{(0.27 - 0.036)(855)}{(0.013)(355.3)(1000)} = \frac{200.07}{4618.9} = 0.043 f/cc$$

#350 $\frac{71}{101} = .703$

$$\frac{(.703 - .036) 855}{(0.013)(794)(1000)} = \frac{570.285}{10322} = 0.055 f/cc$$

#527 $\frac{88}{104} = .846$

$$\frac{(.846 - .036) 855}{(0.013)(875.9)(1000)} = \frac{692.55}{11386.7} = 0.061 f/cc$$

#444 $\frac{32}{100} = .32$

$$\frac{(.32 - .036) 855}{(0.013)(691.56)(1000)} = \frac{242.82}{8990.28} = 0.027 f/cc$$

#425 $\frac{12.5}{100} = .125$

$$\frac{(.125 - .036) 855}{(0.013)(484)(1000)} = \frac{26.095}{6292} = 0.012 f/cc$$

#363 $\frac{27.5}{100} = .275$

$$\frac{(.275 - .036) 855}{(0.013)(902)(1000)} = \frac{204.345}{11726} = 0.0174 f/cc$$

#529 $\frac{37.5}{100} = .375$

$$\frac{(.375 - .036) (855)}{(0.013)(323.0)(1000)} = \frac{289.845}{4199} = 0.069 f/cc$$

#421 $\frac{100.5}{56} = 1.79$

$$\frac{(1.79 - .036) (855)}{(0.013)(850.08)(1000)} = \frac{1499.67}{11051.04} = 0.136 f/cc$$

CTD022987

$$\frac{0.148 \cdot 210}{2.31 + 3.05} = \frac{.35845}{5.36}$$

16 June 82

17 June 82

$$\#519 \quad \frac{102}{70} = 1.46$$

$$\frac{(1.46 - .036)(855)}{(.013)(692.64)(1000)} = \frac{1217.52}{9004.32} = 0.135 \text{ f/cc}$$

$$\#439 \quad \frac{27.5}{100} = .275$$

$$\frac{(.275 - .036) 855}{(.013)(245.34)(1000)} = \frac{204.345}{3189.42} = 0.064 \text{ f/cc}$$

$$\#437 \quad \frac{33.5}{100} = .335$$

$$\frac{(.335 - .036) 855}{(.013)(741.91)(1000)} = \frac{255.645}{9644.83} = 0.0265 \text{ f/cc}$$

$$\#515 \quad \frac{63}{102} = .618$$

$$\frac{(.618 - .036) 855}{(.013)(247.24)(1000)} = \frac{497.61}{3214.77} = 0.155 \text{ f/cc}$$

$$\#429 \quad \frac{1}{100} = 0.01$$

$$\frac{(.01 - .036) 855}{(.013)(708.8)(1000)} = \frac{22.23}{9214.4} = 0.0024 \text{ f/cc}$$

$$\#422 \quad \frac{102}{90} = 1.13$$

$$\frac{(1.13 - .036) 855}{(.013)(523.45)(1000)} = \frac{935.37}{6804.85} = 0.137 \text{ f/cc}$$

$$\#402 \quad \frac{100}{29} = 3.44$$

$$\frac{(3.44 - .036) 855}{(.013)(886)(1000)} = \frac{2910.42}{11518} = 0.253 \text{ f/cc}$$

$$\#517 \quad \frac{101}{88} = 1.15$$

$$\frac{(1.15 - .036) 855}{(.013)(303.66)(1000)} = \frac{952.47}{3947.58} = 0.241 \text{ f/cc}$$

14 June 82

#523

$$\frac{160}{21} = 4.76 \text{ f/f}$$

$$\frac{(\text{fibers/field} - \text{blank}) 855}{(0.013)(\text{Volume})(1000)}$$

$$\frac{(4.76 - 0.036) 855}{(0.013)(170.88)(1000)} = 0.403 \text{ f/cc}$$

#432

$$\frac{70}{100} = 0.7 \text{ f/f}$$

$$\frac{(0.7 - 0.036) 855}{(0.013)(456.17)(1000)} = 0.09 \text{ f/cc}$$

#415

$$\frac{74}{100} = .74 \text{ f/f}$$

$$\frac{(0.7 - 0.036) 855}{(0.013)(323.42)(1000)} = \frac{29.07}{4204.46} = 0.007 \text{ f/cc}$$

#436

$$\frac{2}{100} = 0.02 \text{ f/f}$$

$$\frac{(0.02 - 0.036) 855}{(0.013)(982.14)(1000)} = \frac{30.78}{11475.62} = 0.0027 \text{ f/cc}$$

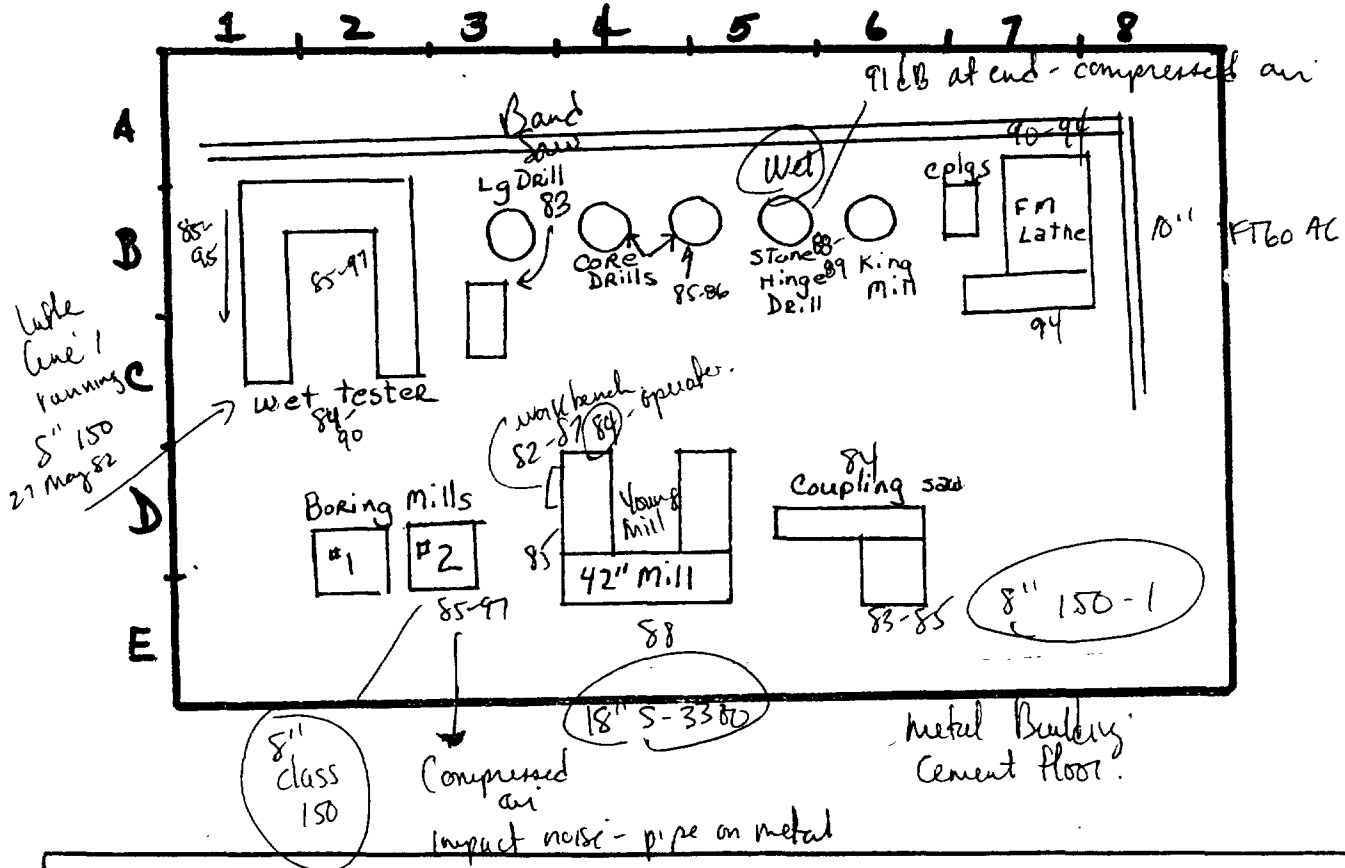
#392

$$\frac{8}{100} = 0.08 \text{ f/f}$$

$$\frac{(0.08 - 0.036) 855}{(0.013)(782.27)(1000)} = \frac{37.62}{10169.51} = 0.0037 \text{ f/cc}$$

CTD022989

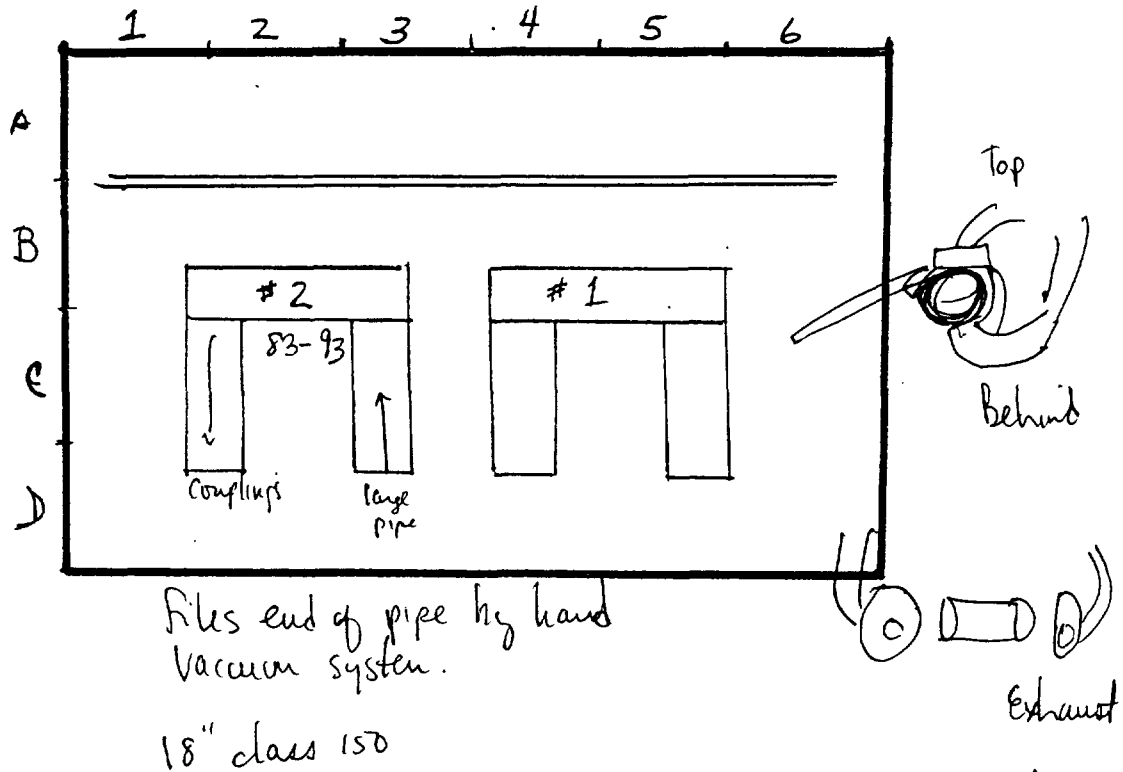
RIVERSIDE A/C PIPE PLANT
FITTINGS AREA



POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
✓ Coupling Tester (1)	A-C 1-2	~~84-97~~ ~~85-85~~				91.4	
S: Boring Mill Operator #1	D-E 1-2	Not running				90.9	3 Coupling/Boring Mill Operators
No report Boring Mill Operator #2	D-E 2-3	85-97		93.8			
✓ 42" Mill Operator	D-E 4-5	82-88				89.5	
S: Coupling Cut Off Saw Operator (1)	D-E 5-7	83-85				82.8	
✓ Fittings Maker (1)	B-C 3-6	83-89				82.4	
✓ Fittings Gluer (1)	A-C 3	83-85	<85				
✓ F. M. Lathe Operator	A-C 6-8	90-94				89.2	

CTD022990

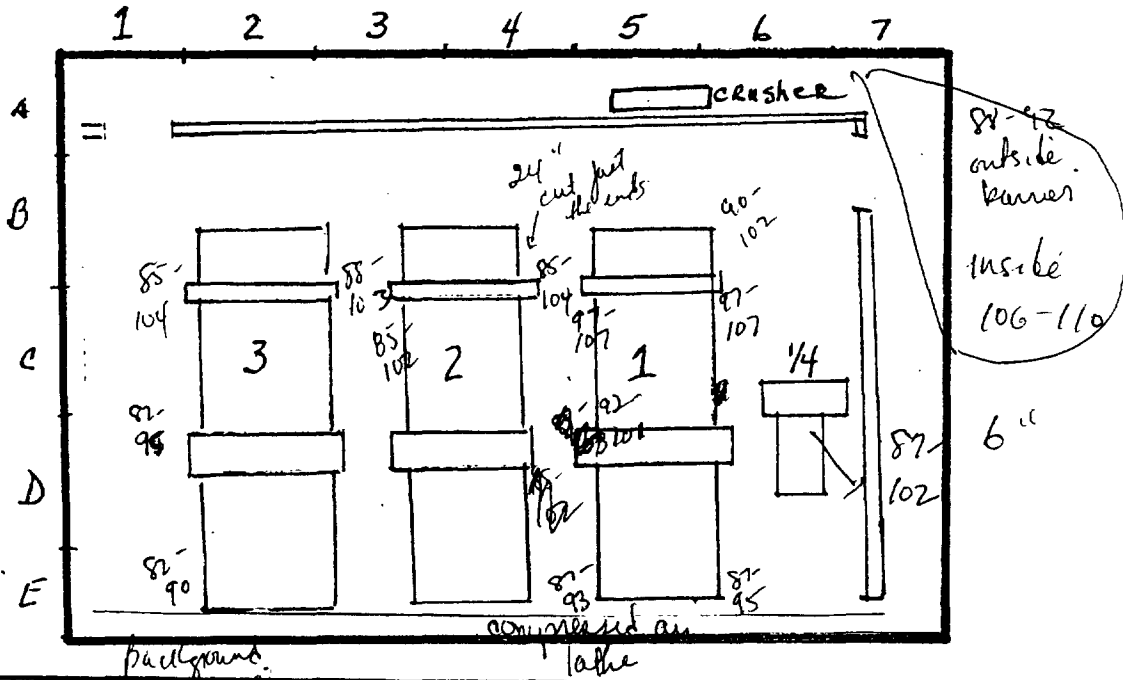
RIVERSIDE A/C PIPE PLANT
CUT OFF SAWS



POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Saw Operator #1 (1)	B-D 4-6	83-93				90.1	Saw Operators Rotate From #1 to #2
Saw Operator #2 (1)	B-D 1-3	83-93		89.2			

CTD022991

DIVERSIDE A/C PIPE PLANT
FINISHING LINES



POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Lathe Operator Line #1	A-B 5-6	90-102				94.7	3 Lathe Operators Rotate Between Lines
✓ Lathe Operator Line #2	A-B 3-5	85-102	>90				
Lathe Operator Line #3	A-B 2-3	85-104				94.3	
Lathe Assistant Line #1	A-B 2-3	90-102				89.7	3 Inspectors Rotate Between Lines
Inspector Line #1	B-E 5-6		>90				
Inspector Line #2	B-E 3-5		>90				
Inspector Line #3	B-E 2-3					88.1	3 Hydrotester Operators Rotate Between Lines
✓ Hydrotester Operator Line #1	C-D 5-6	92-101				94.5	
Hydrotester Operator Line #2	C-D 3-5		>90				
Hydrotester Operator Line #3	C-D 2-3	82-95				91.8	6 Pipe Handlers Rotate Between Lines
✓ Pipe Handler Line #1	D-E 5-6	87-95	85-90				
Pipe Handler Line #2	D-E 3-5		85-90				
Pipe Handler Line #3	D-E 2-3	82-90		90.3			6 Pipe Handlers Rotate Between Lines
✓ 1/2 Tester Operator	C-D 6-7	87-102				91.6	
General Helper	A-E 1-7		85-90				
✓ Truck Driver (4)	A-E 1-7	Variable		94.2			
Crusher Operator (1)	A 5-7	106-110		99.0			

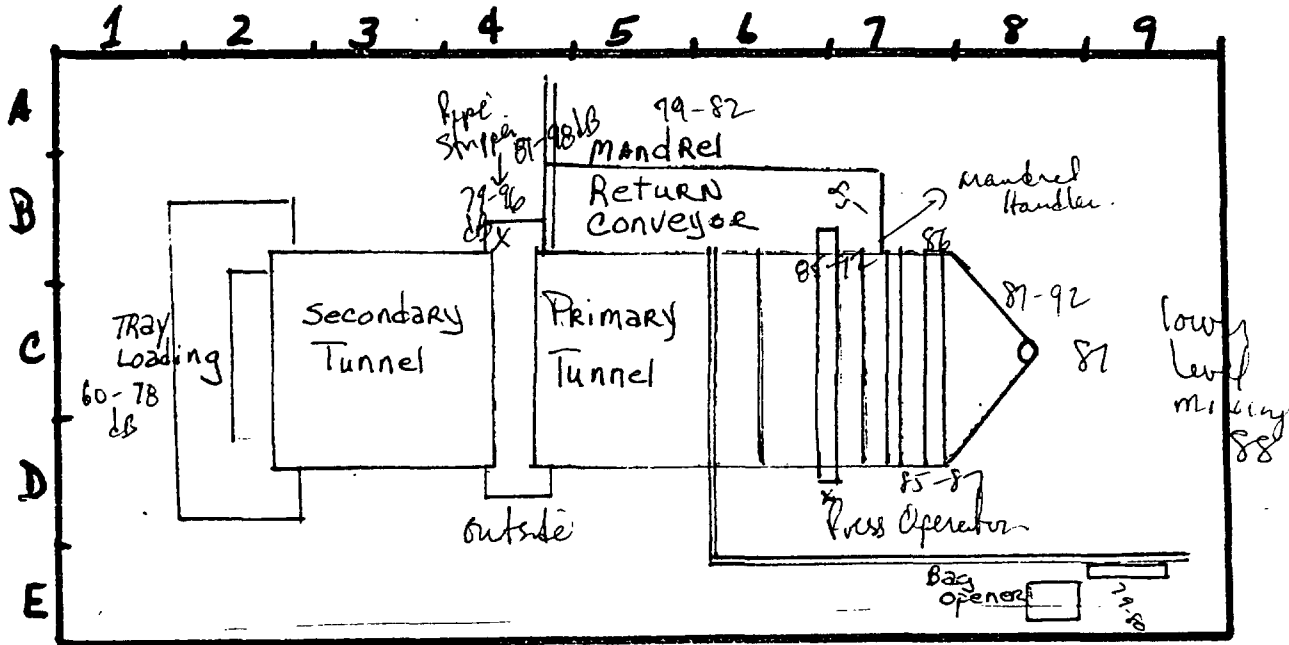
CTD022992

RIVERSIDE A/C PIPE PLANT
ISCELLANEOUS JOB POSITIONS

POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Loader (1)	Shipping		<85				
Truck Operator (2)	Shipping			85.0			
Shipping Clerk (1)	Shipping		<85				
Shipping Supervisor (1)	Shipping		<85				
Storekeeper (1)	Shipping		<85				
Lab Inspector (1)	Lab		<85				
Q. C. Engineer (1)	Plt.General		<85				
✓ Boiler Operator	Boiler Rm.					87.8	
✓ Mechanic (10)	Maintenance		<85				
✓ Electrician (2)	Maintenance		<85				
✓ Machinist (1)	Maintenance			86.9			
Oiler (1)	Plt.General					82.8	
Maintenance Supervisor (1)	Plt.General		<85				
Industrial/Safety Engineer	Plt.General		<85				

CTD022993

RIVERSIDE A/C PIPE PLANT
PIPE MACHINE



9

POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
X Mixer Operator (3)	E 7-9	79-80				78.7	
X Machine Tender (3)	B-D 6-9	81				90.4	
X Press Operator (3)	D 6-7	84-90				84.1	
X Mandrel Handler (3)	B 6	85-92				87.5	
X Pipe Stripper (3)	A-E 4	79-96				88.2	
X Tray loader (3)	A-E 2	60-78				61.7	
X Relief Operator (3)	A-E 4-9	variable				89.6	
X Truck Operator (2)	A-E 1-4	variable		84.2			
X Manufacturing Supervisor (4)	A-E 1-9	variable		86.9			
Mandrel maintenance - 85							

CTD022994

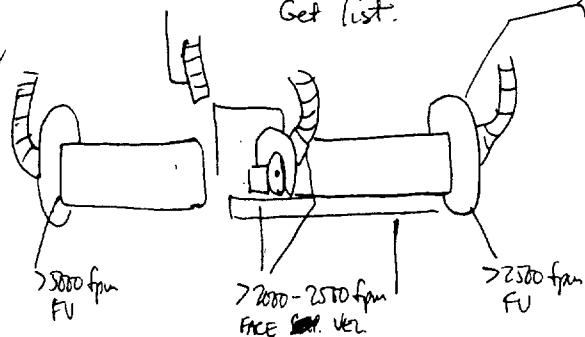
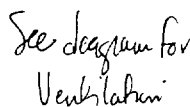
T

COMMENTS/SKETCHES

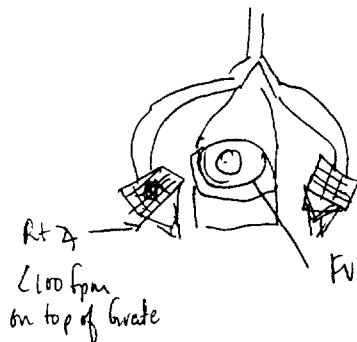
24" = #2 1 at the

$10^v - \#$

{ Not Flush with
end of pipe
Exhaust
Ventilation
on each end
2 exhaust
ducts around
Saw blade



PLANT NAME Riverside		LOC. NO.	SAMP. TAKEN BY P. NORRIS	DATE OF TEST 25 May 82					
EMPLOYEE NAME Phil Dobbs		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION Boring Mill #2		MANUFACTURING PRODUCT Finishing 8" class 150T							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☐ ASBESTOS ☒ TOTAL DUST ☒ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☐ OPEN FACE ☒ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☐ 0.8µ MCEF, MILLIPORE FILTER ☒ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP 70 °F	WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY						
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
1149	4979	T	B339	0715 1450	455	1.6875	767.81	0.632 mg	0.923 mg/m ³
						28% SiO ₂	OSHA limit - 1.0 mg/m ³		
DID EMPLOYEE WEAR RESPIRATOR?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL		
☐ YES ☒ NO ☐ SOMETIMES									
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	SHR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN					IF SOMETIMES WHEN?		MAKE & MODEL		
☐ YES ☒ NO ☐ SOMETIMES									



Remained on machine all day.
Broke for 30 minute lunch in lunch room.

Bored inside of coupling
~ 15 seconds/ piece

FV at Duct entrance > 5000 fpm

PLANT NAME Phil Dobbs Riverside		LOG NO.	SAMPLE TAKEN BY P Norris	DATE OF TEST 26 May 82					
EMPLOYEE NAME Phil Dobbs		DEPARTMENT/LINE Furnishing							
JOB TITLE/ENVIRONMENTAL LOCATION Boring Mill #2		MANUFACTURING PRODUCT 8" class 150T							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS		☐ OPEN FACE		☐ 0.8μ MCEF, MILLIPORE FILTER					
☐ ASBESTOS		☐ CLOSED FACE		☐ 5μ PVC FILTER					
☐ TOTAL DUST		☒ CYCLONE		☐ GLASS FIBER-SILVER MEM FILTER					
☒ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL					
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE					
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL					
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE					
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER					
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba					
☐ NOISE		☐ AUDIO DOSIMETER							
EQUIPMENT									
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP 65 °F		WIND DIRECTION	WIND VELOCITY NEH	☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
	6595	R	B354	0743	1050	1.26	329.12	0.0865mg	0.263 μg/m ³
		R	B355	1150	1453	1.26	322.08	0.055mg	0.171 μg/m ³
									0.217 μg/m ³
% SiO ₂ not performed									
DID EMPLOYEE WEAR RESPIRATORY?		IF SOMETIMES WHEN?			RESPIRATOR MAKE & MODEL				
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?			MAKE & MODEL				
☐ YES ☐ NO ☐ SOMETIMES									

Lunch 11:00 Take off Plant

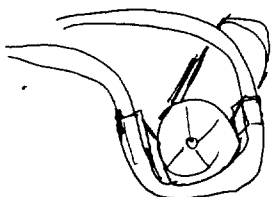
Vacuuming up loose debris.

0.1415
651.2

INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOC NO.		SAMPLE TAKEN BY <i>P Norris</i>		DATE OF TEST <i>25 May 82</i>			
EMPLOYEE NAME <i>Larry Gil</i>				DEPARTMENT/LINE					
JOB TITLE/ENVIRONMENTAL LOCATION <i>Large FM lathe</i>				MANUFACTURING PRODUCT <i>18" Sewer</i>					
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☐ ASBESTOS ☐ TOTAL DUST ☒ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE ☐		☐ OPEN FACE ☒ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☐ 0.8μ MCEF, MILLIPORE FILTER ☒ 5μ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☐ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP		☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER							
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>70</i> °F		WIND DIRECTION		WIND VELOCITY MPH		☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY			
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
	<i>16133</i>		<i>B344</i>	<i>0722</i> <i>1452</i>	<i>450</i>	<i>1.95</i>	<i>877.5</i>	<i>0.4335 mg</i>	<i>0.494 mg/l</i>
DID EMPLOYEE WEAR RESPIRATOR?			IF SOMETIMES WHEN?			RESPIRATOR MAKE & MODEL			
☒ YES ☒ NO ☐ SOMETIMES						<i>3M 8710</i>			
CNTRL NO	DOS SERIAL	CELL	START	(TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECT?			IF SOMETIMES WHEN?			MAKE & MODEL			
☒ YES ☐ NO ☐ SOMETIMES						<i>Suske France</i>			

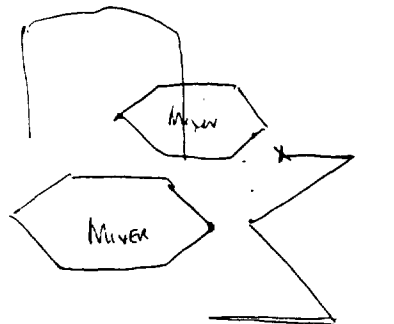
COMMENTS/SKETCHES



Ventilation System.
Gravissed top bubble (flange)
 400-500 fpm capture velocity

INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P Norris</i>	DATE OF TEST <i>25 May 82</i>					
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE <i>Manufacturing</i>							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Mixing Area</i> <i>2nd level</i>		MANUFACTURING PRODUCT <i>See list</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS	☐ OPEN FACE	☐ 0.8μ MCEF, MILLIPORE FILTER							
☐ ASBESTOS	☒ CLOSED FACE	☒ 5μ PVC FILTER							
☐ TOTAL DUST	☐ CYCLONE								
☒ SILICA DUST	☐ CLOSED FACE	☐ GLASS FIBER-SILVER MEM FILTER							
☐ ASPHALT FUMES	☐ CHARCOAL TUBE	☐ 150 mg. CHARCOAL							
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES	☐ SODIUM BISULFITE							
☐ FORMALDEHYDE	☐ SILICAL GEL	☐ 300 mg. SILICA GEL							
☐ PHENOL	☐ FLORISIL TUBE	☐ 150 mg. SKC FLORISIL TUBE							
☐ PCB	☐ CLOSED FACE	☐ GLASS FIBER FILTER							
☐	☐ AUDIO DOSIMETER	☐ 80dba ☐ 85dba ☐ 90dba							
☐ NOISE									
☐									
☐									
EQUIPMENT									
☐ DUPONT P4000 PUMP	☒ DUPONT P2500 PUMP	☐ DUPONT P200A PUMP	☐ MSA PUMP	☐ DUPONT D376 DOSIMETER					
☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>70</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T _r	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>54</i>	<i>U155</i>	<i>1</i>	<i>B 378</i>	<i>0801 1513</i>	<i>432</i>	<i>2.052</i>	<i>886.68</i>	<i>1.22 ug</i>	<i>1.376 ug/m³</i>
DID EMPLOYEE WEAR RESPIRATOR?			IF SOMETIMES WHEN?			RESPIRATOR MAKE & MODEL			
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START	(TIME)	STOP	TOTAL MIN	READ OUT RESULT	BHR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN			IF SOMETIMES WHEN?			MAKE & MODEL			
☐ YES ☐ NO ☐ SOMETIMES									



2nd level

PLANT NAME <i>Riverside A/C</i>		LOC. NO.	SAMPLE TAKEN BY <i>P. Morris</i>	DATE OF TEST <i>24 May 82</i>
EMPLOYEE NAME <i>Joe Contreras</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Mixer Operator / Forklift Warehouse</i>		MANUFACTURING PRODUCT <i>Manuf.</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☒ FIBERGLASS		☒ OPEN FACE		☒ 0.8μ MCEF, MILLIPORE FILTER
☒ ASBESTOS		☐ CLOSED FACE		☐ 5μ PVC FILTER
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER-SILVER MEM FILTER
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba
☐ NOISE		☐ AUDIO DOSIMETER		
EQUIPMENT				
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>75-80 °F</i>		WIND DIRECTION	WIND VELOCITY	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS
001	4155		N415	1028 1305 157
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN		RESPIRATOR MAKE & MODEL
☒ YES ☒ NO ☐ SOMETIMES		<i>when placing bales on conveyor for bale opener.</i>		<i>8710 3M</i>
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP TOTAL MIN READ OUT RESULT
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN		MAKE & MODEL
☐ YES ☒ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

Leaving at 1:15

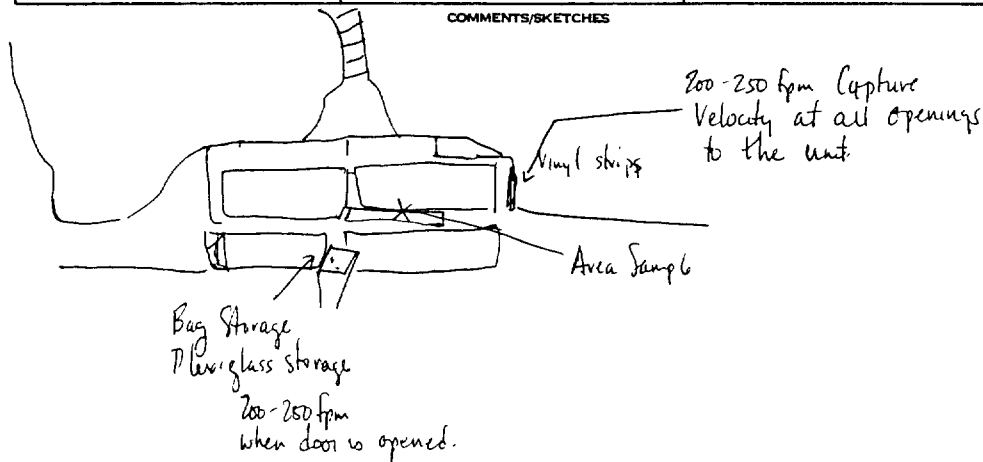
Employees eat in work area

- work divided up between*
- Forklift operator - bringing bales of asbestos to unload ramp to be placed on conveyor.*
- Tennant Floor cleaner machine operator of warehouse 11:30*
- placing bales on conveyor.*
- operating bale opener. - Slits bales at end before it goes into bag opener*
- 8:00 every morning - change cylinders ~ 15 minutes. Not on this sample*

01-16-0056 12/81

CTD023001

PLANT NAME <i>Riverside</i>		LOC NO.	SAMP. TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>25 May 82</i>
EMPLOYEE NAME <i>Joc. Contreras</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Mixer</i>		MANUFACTURING PRODUCT <i>Manuf.</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>72</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS <i>002</i> <i>6579</i> <i>MU28</i> <i>805</i> <i>1454</i> <i>411</i>
				LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION <i>2.0</i> <i>822</i> <i>171769.5</i> <i>0.2089 f/cc</i>
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL
☒ YES ☐ NO ☐ SOMETIMES				<i>8710 3M</i>
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL
☐ YES ☒ NO ☐ SOMETIMES				



CertainTeed

INDUSTRIAL HYGIENE MONITORING DATA SHEET

M

PLANT NAME <i>Riverside A/C</i>		LOC NO.	SAMPLE TAKEN BY <i>PJ Norris</i>	DATE OF TEST <i>24 May 82</i>					
EMPLOYEE NAME <i>Albert Horton</i>		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Machine Tender</i>		MANUFACTURING PRODUCT <i>8" 150</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS		☒ OPEN FACE		☐ 0.8μ MCEF, MILLIPORE FILTER					
☒ ASBESTOS									
☐ TOTAL DUST		☐ CLOSED FACE		☐ 5μ PVC FILTER					
☐ SILICA DUST		☐ CYCLONE							
☐ ASPHALT FUMES		☐ CLOSED FACE		☐ GLASS FIBER SILVER MEM FILTER					
☐ VINYL CHLORIDE (MONOMER)		☐ CHARCOAL TUBE		☐ 150 mg. CHARCOAL					
☐ FORMALDEHYDE		☐ IMPINGERS, TWO IN SERIES		☐ SODIUM BISULFITE					
☐ PHENOL		☐ SILICAL GEL		☐ 300 mg. SILICA GEL					
☐ PCB		☐ FLORISIL TUBE		☐ 150 mg. SKC FLORISIL TUBE					
☐ NOISE		☐ CLOSED FACE		☐ GLASS FIBER FILTER					
		☐ AUDIO DOSIMETER		☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY <i>Wind from plant door coming in</i>									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>75-80 °F</i>		WIND DIRECTION	WIND VELOCITY <i>NRH</i>	☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>003</i>	<i>6121</i>		<i>438</i>	<i>1039 1435</i>	<i>236</i>	<i>2.015</i>	<i>475.54</i>	<i>83211.2</i>	<i>0.175 f/cc</i>
DID EMPLOYEE WEAR RESPIRATOR?									
☐ YES ☒ NO ☐ SOMETIMES									
IF SOMETIMES WHEN?									
RESPIRATOR MAKE & MODEL									
CNTRL NO	DOS SERIAL	CELL	START	(TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN									
☐ YES ☒ NO ☐ SOMETIMES									
IF SOMETIMES WHEN?									
MAKE & MODEL									

COMMENTS/SKETCHES

Stays on left side of manufacturing area
from open door to beginning of mixing Area.
Performs a little bit of everything. Makes sure system is
going smoothly. At wet end of pipe manufacture.

Proper flow
Sprays are clean
correct time on pipe (tonage)

lunch 30 minutes

2

Stationary position
regulates the ~~to~~ thickness of the pipe manufacture. After pipe is completed, jumps up and measures diameter at both ends.

Noisy, impact noise from pipe banging against metal railings and conveyor

PLANT NAME <i>Riverside</i>		LOC. NO.	SAMPLE TAKEN BY <i>R. Nomo</i>	DATE OF TEST <i>24 May 82</i>
EMPLOYEE NAME <i>John Casas</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Machine Tender</i> <i>Mandrel Operator Handler</i>		MANUFACTURING PRODUCT <i>8" ISO</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>75-80</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS <i>1032 1434 242</i>
<i>005</i>	<i>6105</i>		<i>N432</i>	LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION <i>1.885 456.17 43670.77 6.09 f/cc</i> <i>f/f</i>
DID EMPLOYEE WEAR RESPIRATOR? IF SOMETIMES WHEN? RESPIRATOR MAKE & MODEL ☐ YES ☒ NO ☐ SOMETIMES				
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN? IF SOMETIMES WHEN? MAKE & MODEL ☐ YES ☒ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

Fan behind worker at knee level.

Unit 1055-1115

Stationary position

pipe turns - use of compressed air 5 lbs of air
broke pipe from metal mandrel

Noisy - impact noise from metal mandrels on guard rail and hitting other pipes.

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INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>Et. Norris</i>	DATE OF TEST <i>24 May 82</i>
EMPLOYEE NAME <i>George Bixler</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Supervisor</i>		MANUFACTURING PRODUCT <i>8" 150</i>		

CONTAMINANT	SAMPLING METHOD	SAMPLING MEDIA
☐ FIBERGLASS	☒ OPEN FACE	☒ 0.8μ MCEF, MILLIPORE FILTER
☒ ASBESTOS	☐ CLOSED FACE	☐ 5μ PVC FILTER
☐ TOTAL DUST	☐ CYCLONE	☐ GLASS FIBER-SILVER MEM FILTER
☐ SILICA DUST	☐ CLOSED FACE	☐ 150 mg. CHARCOAL
☐ ASPHALT FUMES	☐ CHARCOAL TUBE	☐ SODIUM BISULFITE
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES	☐ 300 mg. SILICA GEL
☐ FORMALDEHYDE	☐ SILICAL GEL	☐ 150 mg. SKC FLORISIL TUBE
☐ PHENOL	☐ FLORISIL TUBE	☐ GLASS FIBER FILTER
☐ PCB	☐ CLOSED FACE	☐ 80dba ☐ 85dba ☐ 90dba
☐ NOISE	☐ AUDIO DOSIMETER	

EQUIPMENT					
☐ DUPONT P4000 PUMP	☒ DUPONT P2500 PUMP	☐ DUPONT P200A PUMP	☐ MSA PUMP	☐ DUPONT D376 DOSIMETER	☐ DUPONT D381 DOSIMETER

EXHAUST SYSTEMS/REMARKS	
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS									
OUTSIDE TEMP °F		WIND DIRECTION		WIND VELOCITY MPH		☐ SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY			

CNTRL NO.	PUMP SERIAL NO.	T _h	SAMPLE NO.	MILITARY TIME		TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
006	7036		N447	1043	1436	233	1.823	424.76	681435	0.16 f/cc

DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES					

CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	SHR CORR %	CONVERTED DBA LEVEL

DID EMPLOYEE WEAR HEARING PROTECT?		IF SOMETIMES WHEN?		MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES					

COMMENTS/SKETCHES

*Variable
rooms throughout plant.*

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>PJ Novus</i>	DATE OF TEST <i>24 May 82</i>
EMPLOYEE NAME <i>Glen Soncrant</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Pipe Stripper</i>		MANUFACTURING PRODUCT		
		<i>8" 150</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS	☒ OPEN FACE	☒ 0.8µ MCEF, MILLIPORE FILTER		
☒ ASBESTOS	☐ CLOSED FACE	☐ 5µ PVC FILTER		
☐ TOTAL DUST	☐ CYCLONE	☐ GLASS FIBER SILVER MEM FILTER		
☐ SILICA DUST	☐ CLOSED FACE	☐ 150 mg. CHARCOAL		
☐ ASPHALT FUMES	☐ CHARCOAL TUBE	☐ SODIUM BISULFITE		
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES	☐ 300 mg. SILICA GEL		
☐ FORMALDEHYDE	☐ SILICAL GEL	☐ 150 mg. SKC FLORISIL TUBE		
☐ PHENOL	☐ FLORISIL TUBE	☐ GLASS FIBER FILTER		
☐ PCB	☐ CLOSED FACE	☐ 80dba ☐ 85dba ☐ 90dba		
☐ NOISE	☐ AUDIO DOSIMETER			
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY <i>Fan on</i>				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>75-80 °F</i>		WIND DIRECTION	WIND VELOCITY <i>MPH</i>	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION
<i>007</i>	<i>4920</i>		<i>N443</i>	<i>1055 1448 233 1.97 459.61 6840.0 0.0149/ft</i>
DID EMPLOYEE WEAR RESPIRATOR?				
☐ YES ☐ NO ☐ SOMETIMES		IF SOMETIMES WHEN?		
RESPIRATOR MAKE & MODEL				
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN?				
☐ YES ☐ NO ☐ SOMETIMES		IF SOMETIMES WHEN?		
MAKE & MODEL				

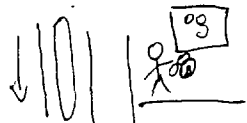
COMMENTS/SKETCHES

*Fan Blowing towards man From behind
Head height.*

Lunch 1030-1050

79-96

*Compressed air
noise also.*



*metal
chain*

conveyor

noise

from chain

against metal guide.

*Drop of pipe
onto metal guide*

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>PJ Norris</i>	DATE OF TEST <i>24 May 82</i>																																																																
EMPLOYEE NAME <i>Joe Ladford</i>		DEPARTMENT/LINE																																																																		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Tray loader</i>		MANUFACTURING PRODUCT <i>8" 150</i>																																																																		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA																																																																
☐ FIBERGLASS		☒ OPEN FACE		☒ 0.8μ MCEF, MILLIPORE FILTER																																																																
☒ ASBESTOS		☐ CLOSED FACE		☐ 5μ PVC FILTER																																																																
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER/SILVER MEM FILTER																																																																
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL																																																																
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE																																																																
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL																																																																
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE																																																																
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER																																																																
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba																																																																
☐ NOISE		☐ AUDIO DOSIMETER																																																																		
EQUIPMENT																																																																				
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☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY																																																																				
WEATHER CONDITIONS																																																																				
OUTSIDE TEMP <i>75-80 °F</i>		WIND DIRECTION	WIND VELOCITY <i>MPH</i>	☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PFLY. CLOUDY																																																																
CNTRL NO.	PUMP SERIAL NO.	T	SAMPLE NO.	<table border="1"> <thead> <tr> <th colspan="2">MILITARY TIME</th> <th rowspan="2">TOTAL MINS</th> <th rowspan="2">LPM/CC</th> <th rowspan="2">VOLUME LITERS</th> <th rowspan="2">ANALYSIS RESULT</th> <th rowspan="2">AIRBORNE CONCENTRATION</th> </tr> <tr> <th>START</th> <th>STOP</th> </tr> </thead> <tbody> <tr> <td><i>008</i></td> <td><i>5807</i></td> <td></td> <td><i>N1431</i></td> <td><i>1049</i></td> <td><i>1448</i></td> <td><i>231</i></td> <td><i>2.053</i></td> <td><i>474.32</i></td> <td><i>420.92</i></td> <td><i>0.0008/lcc</i></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	MILITARY TIME		TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION	START	STOP	<i>008</i>	<i>5807</i>		<i>N1431</i>	<i>1049</i>	<i>1448</i>	<i>231</i>	<i>2.053</i>	<i>474.32</i>	<i>420.92</i>	<i>0.0008/lcc</i>																																												
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DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL																																																																
☐ YES ☒ NO ☐ SOMETIMES																																																																				

COMMENTS/SKETCHES

1140-1215 lunch.

60-78 dB

Tray loader only job
since sample began

Monday mornings
before shift begins
cleanup under mixer

Metal building
Cement floor

~~Some~~ slabs of silica
bags against wall,
Some broken

n

Time split between tray loading
and autoclave loading of trays

m

COMMENTS/SKETCHES

01-16-0056 12/81

CTD023010

4

COMMENTS/SKETCHES



INDUSTRIAL HYGIENE MONITORING DATA SHEET

60

PLANT NAME Riverside		LOC NO.	SAMPLE TAKEN BY P.J. Norris	DATE OF TEST 26 May 82				
EMPLOYEE NAME George ~~Bates~~ Bey		DEPARTMENT/LINE Furnishing Lathe #1						
JOB TITLE/ENVIRONMENTAL LOCATION Hydrotester / Lathe Assistant		MANUFACTURING PRODUCT 8" 150 Type II						
CONTAMINANT Hydrotester / Lathe Assistant		SAMPLING METHOD Truck operator		SAMPLING MEDIA Line #1				
☐ FIBERGLASS	☐ OPEN FACE	☐ 0.8μ MCEF, MILLIPORE FILTER						
☐ ASBESTOS	☐ CLOSED FACE	☐ 5μ PVC FILTER						
☐ TOTAL DUST	☐ CYCLONE	☐ GLASS FIBER-SILVER MEM FILTER						
☐ SILICA DUST	☐ CLOSED FACE	☐ 150 mg. CHARCOAL						
☐ ASPHALT FUMES	☐ CHARCOAL TUBE	☐ SODIUM BISULFITE						
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES	☐ 300 mg. SILICA GEL						
☐ FORMALDEHYDE	☐ SILICAL GEL	☐ 150 mg. SKC FLORISIL TUBE						
☐ PHENOL	☐ FLORISIL TUBE	☐ GLASS FIBER FILTER						
☐ PCB	☐ CLOSED FACE	☐ 80dba ☐ 85dba ☐ 90dba						
☐ NOISE	☐ AUDIO DOSIMETER							
EQUIPMENT								
☐ DUPONT P4000 PUMP	☐ DUPONT P2500 PUMP	☐ DUPONT P200A PUMP	☐ MSA PUMP	☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS								
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY								
WEATHER CONDITIONS								
OUTSIDE TEMP 65 °F	WIND DIRECTION	WIND VELOCITY	☐ SUNNY ☐ CLOUDY ☒ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
012	4499		N444	0818 1506 408	1.695	691.56	5990.7 F f/6 ltr	0.027 f/cc
DID EMPLOYEE WEAR RESPIRATOR?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES								
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN					IF SOMETIMES WHEN?		MAKE & MODEL	
☒ YES ☐ NO ☐ SOMETIMES							Sound Sentry Wilson	

COMMENTS/SKETCHES

Lathe Assistant - 815 -
Hydrotester
Forklift Driver when assistant
Supplying pipe to lathe enhance

PLANT NAME Riverside		LOG NO.	SAMP. TAKEN BY P. J. Norris	DATE OF TEST 26 May 82
EMPLOYEE NAME Avery Albert		DEPARTMENT/LINE Furnishing Lathe Line #1		
JOB TITLE/ENVIRONMENTAL LOCATION Hydro Tester / Pipe handler		MANUFACTURING PRODUCT 8" 150 Type II		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS		☐ OPEN FACE		☐ 0.8µ MCEF, MILLIPORE FILTER
☐ ASBESTOS		☐ CLOSED FACE		☐ 5µ PVC FILTER
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER-SILVER MEM FILTER
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba
☐ NOISE		☐ AUDIO DOSIMETER		
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP 65 °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS
013	0928		N350	0802 1501 419
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL
☐ YES ☒ NO ☐ SOMETIMES				
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP TOTAL MIN READ OUT RESULT SHR CORR % CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL
☒ YES ☒ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

Hydrotester for 20 minutes.
 Switched to line as pipe helper.
 Crating finished pipe.

Impact noise for
 hammering

PLANT NAME <i>Buieside</i>		LOG NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>26 May 82</i>					
EMPLOYEE NAME <i>Richard Amaro</i>		DEPARTMENT/LINE <i>Finishing Line #1</i>							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Pipe Handler</i>		MANUFACTURING PRODUCT <i>8" 150 Type II</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>65</i> °F	WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY						
CNTRL NO.	PUMP SERIAL NO.	T _h	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
014	6121		N383	0805 1500	415	1.98	821.7	31391.65	0.038/CC
DID EMPLOYEE WEAR RESPIRATORY? IF SOMETIMES WHEN? RESPIRATOR MAKE & MODEL									
☐ YES ☒ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN IF SOMETIMES WHEN? MAKE & MODEL									
☐ YES ☒ NO ☐ SOMETIMES									

COMMENTS/SKETCHES

Crated finished Pipe
 No visible dust Much impact noise from hammering crates together. Reverb / carry over of noise from lathes into this area.

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P Norris</i>	DATE OF TEST <i>27 May 82</i>
EMPLOYEE NAME <i>Benny Granillo</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Inspector</i>		MANUFACTURING PRODUCT <i>Finnishing Line 1 & 1</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION
<i>015</i>	<i>6519</i>		<i>N363</i>	<i>0729 1500 451 2.00 902 15718.85 0.0174 f/cc</i> <i>f16Hr</i>
DID EMPLOYEE WEAR RESPIRATOR?				
☐ YES ☒ NO ☐ SOMETIMES		IF SOMETIMES WHEN?		
RESPIRATOR MAKE & MODEL				
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN				
☐ YES ☒ NO ☐ SOMETIMES		IF SOMETIMES WHEN?		
MAKE & MODEL				

COMMENTS/SKETCHES

Not normally the inspector
 Roams around the finishing lathes. - 90% of time
 General plant. 10%

PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P. J. Norio</i>		DATE OF TEST <i>27 May 82</i>	
EMPLOYEE NAME <i>Rosen Schreike</i>		DEPARTMENT/LINE				
JOB TITLE/ENVIRONMENTAL LOCATION <i>Supervisor</i>		MANUFACTURING PRODUCT <i>Furniture lathe #1</i>				
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA		
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba		
EQUIPMENT						
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER						
EXHAUST SYSTEMS/REMARKS						
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY						
WEATHER CONDITIONS						
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION		WIND VELOCITY		
				☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY		
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	
<i>016</i>	<i>6121</i>		<i>N533</i>	<i>725 1580</i>	<i>455</i>	
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL		
☐ YES ☒ NO ☐ SOMETIMES						
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL		
☐ YES ☒ NO ☐ SOMETIMES						

COMMENTS/SKETCHES

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>		DATE OF TEST <i>26 May 82</i>				
EMPLOYEE NAME <i>Jeff Dobbs</i>		DEPARTMENT/LINE <i>Furnishing 1/4 Tester</i>							
JOB TITLE/ENVIRONMENTAL LOCATION <i>1/4 Tester, lathe</i>		MANUFACTURING PRODUCT <i>6"</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☐ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>65</i> °F		WIND DIRECTION		WIND VELOCITY					
				☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MIN	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>217</i>	<i>5851</i>		<i>N446</i>	<i>0812 1503</i>	<i>411</i>	<i>1.58</i>	<i>649.38</i>	<i>90801.0</i>	<i>0.1398/lec</i>
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL					
☐ YES ☒ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEV	
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL					
☒ YES ☐ NO ☐ SOMETIMES				<i>Ear muffs</i>					

COMMENTS/SKETCHES

Lathe #1, closest to 1/4 Tester - 92-102 dB at station

INDUSTRIAL HYGIENE MONITORING DATA SHEET 777

PLANT NAME Riverside						LOC NO.		SAMPLE TAKEN BY P.J. Norris		DATE OF TEST 27 May 82	
EMPLOYEE NAME Phil Dobbs						DEPARTMENT/LINE					
JOB TITLE/ENVIRONMENTAL LOCATION Boeing mill # 2						MANUFACTURING PRODUCT Finishing 8" class 150 T					
CONTAMINANT			SAMPLING METHOD			SAMPLING MEDIA					
☐ FIBERGLASS			☒ OPEN FACE			☒ 0.8μ MCEF, MILLIPORE FILTER					
☒ ASBESTOS											
☐ TOTAL DUST			☐ CLOSED FACE			☐ 5μ PVC FILTER					
☐ SILICA DUST			☐ CYCLONE								
☐ ASPHALT FUMES			☐ CLOSED FACE			☐ GLASS FIBER-SILVER MEM FILTER					
☐ VINYL CHLORIDE (MONOMER)			☐ CHARCOAL TUBE			☐ 150 mg. CHARCOAL					
☐ FORMALDEHYDE			☐ IMPINGERS, TWO IN SERIES			☐ SODIUM BISULFITE					
☐ PHENOL			☐ SILICAL GEL			☐ 300 mg. SILICA GEL					
☐ PCB			☐ FLORISIL TUBE			☐ 150 mg. SKC FLORISIL TUBE					
			☐ CLOSED FACE			☐ GLASS FIBER FILTER					
☐ NOISE			☐ AUDIO DOSIMETER			☐ 80dba ☐ 85dba ☐ 90dba					
☐											
☐											
EQUIPMENT											
☐ DUPONT P4000 PUMP		☒ DUPONT P2500 PUMP		☐ DUPONT P200A PUMP		☐ MBA PUMP		☐ DUPONT D376 DOSIMETER		☐ DUPONT D381 DOSIMETER	
EXHAUST SYSTEMS/REMARKS											
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY											
WEATHER CONDITIONS											
OUTSIDE TEMP		WIND DIRECTION		WIND VELOCITY		☐ SUNNY		☒ CLOUDY		☒ HUMID	
60 °F						☒ FOG		☐ SHOWERS		☐ SNOW	
										☐ RAIN	
										☐ PTLY. CLOUDY	
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME		TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION	
				START	STOP						
018	6133		N527	0720	1801	461	1.90	875.9	53273.08	0.061 f/cc	
									f/filter		
DID EMPLOYEE WEAR RESPIRATOR?			IF SOMETIMES WHEN?				RESPIRATOR MAKE & MODEL				
☐ YES ☒ NO ☐ SOMETIMES											
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL			
DID EMPLOYEE WEAR HEARING PROTECTN			IF SOMETIMES WHEN?				MAKE & MODEL				
☐ YES ☒ NO ☐ SOMETIMES											
COMMENTS/SKETCHES											

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P.J. Morris</i>	DATE OF TEST <i>26 May 82</i>
EMPLOYEE NAME <i>Greg Palomara</i>		DEPARTMENT/LINE <i>Finnishing</i>		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Saw #2</i> <i>#1</i>		MANUFACTURING PRODUCT <i>8" 150 type II</i> <i>10" 200 type II</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS		☒ OPEN FACE		☒ 0.8µ MCEF, MILLIPORE FILTER
☒ ASBESTOS		☐ CLOSED FACE		☐ 5µ PVC FILTER
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER/SILVER MEM FILTER
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba
☐ NOISE		☐ AUDIO DOSIMETER		
EQUIPMENT				
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>65</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☒ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PFLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS
019	6133		N398	0732 1048 196
020			N514	1145 1452 187
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN		RESPIRATOR MAKE & MODEL
☒ YES ☐ NO ☐ SOMETIMES				<i>3M 8710</i>
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP TOTAL MIN READ OUT RESULT 8HR CORR % CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN		MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

Lunch at 11:00
Left plant
1145 - No 2 lathe
Pipe keeper
1245
Returned to #2 Saw the
rest of the afternoon.

Drives automatic
floor cleaner.

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P Norris</i>	DATE OF TEST <i>26 May 82</i>
EMPLOYEE NAME <i>Larry Gil</i>		DEPARTMENT/LINE <i>Finnishing</i>		
JOB TITLE/ENVIRONMENTAL LOCATION <i>FM LATHE</i>		MANUFACTURING PRODUCT		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS		☐ OPEN FACE		☐ 0.8μ MCEF, MILLIPORE FILTER
☒ ASBESTOS		☐ CLOSED FACE		☐ 5μ PVC FILTER
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER SILVER MEM FILTER
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba
☐ NOISE		☐ AUDIO DOSIMETER		
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>65</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☒ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS
<i>021</i>	<i>4155</i>		<i>N306</i>	<i>0745 1455 430</i>
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL
☒ YES ☐ NO ☐ SOMETIMES				<i>3M 8710</i>
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP TOTAL MIN READ OUT RESULT 8HR CORR % CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL
☒ YES ☐ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

CertainTeed

INDUSTRIAL HYGIENE MONITORING DATA SHEET

W

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P J Norris</i>	DATE OF TEST <i>26 May 82</i>					
EMPLOYEE NAME <i>Brian Taylor</i>		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Fitting Glue</i>		MANUFACTURING PRODUCT <i>Finishing Core Drill Stone Hinge Drill</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORESIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>65</i> °F	WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☒ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY						
CNTRL NO.	PUMP SERIAL NO.	T. R.	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>022</i>	<i>6108</i>		<i>N413</i>	<i>0750</i> <i>1155</i>	<i>245</i>	<i>1.88</i>	<i>460.6</i>	<i>23611.15</i>	<i>0.0512 f/cc</i>
<i>023</i>			<i>N309</i>	<i>1155</i> <i>1457</i>	<i>182</i>	<i>1.88</i>	<i>342.16</i>	<i>12410.69</i>	<i>0.036 f/cc</i>
DID EMPLOYEE WEAR RESPIRATORY?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL		
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN					IF SOMETIMES WHEN?		MAKE & MODEL		
☐ YES ☐ NO ☐ SOMETIMES									
COMMENTS/SKETCHES									

PLANT NAME Riverside		LOC NO.	SAMPLE TAKEN BY P Norris	DATE OF TEST 26 May 82
EMPLOYEE NAME Chris Hamilton		DEPARTMENT/LINE Furnishing		
JOB TITLE/ENVIRONMENTAL LOCATION Fittings Maker		MANUFACTURING PRODUCT Various, See sheet for the day.		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☐ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP		WIND DIRECTION	WIND VELOCITY	☐ SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _h	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION
024	4944		N439	6829 1048 139 1.765 245.34 15718.95 0.064 f/cc
025			N529	1155 1458 183 1.765 322.00 22295.76 0.069 f/cc
				f/Filter
DID EMPLOYEE WEAR RESPIRATOR? IF SOMETIMES WHEN? RESPIRATOR MAKE & MODEL				
☐ YES ☐ NO ☐ SOMETIMES				
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP TOTAL MIN READ OUT RESULT 8HR CORR % CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN IF SOMETIMES WHEN? MAKE & MODEL				
☐ YES ☐ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

Lunch 11:00

Core Drill
Key Mill
Stone Hinge Drill

CertainTeed
INDUSTRIAL HYGIENE MONITORING DATA SHEET

W

PLANT NAME <i>Riverside</i>		LOC. NO.	SAMPLE TAKEN BY <i>P. J. Morris</i>	DATE OF TEST <i>26 May 82</i>				
EMPLOYEE NAME <i>Janet Bibbens</i>		DEPARTMENT/LINE						
JOB TITLE/ENVIRONMENTAL LOCATION <i>Coupling Tester Loader</i>		MANUFACTURING PRODUCT <i>Finishing</i>						
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA				
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE ☐ ☐		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba				
EQUIPMENT								
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER								
EXHAUST SYSTEMS/REMARKS								
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY								
WEATHER CONDITIONS								
OUTSIDE TEMP <i>65</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☐ HUMID ☒ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY				
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
024	P7036		N422	0757 1247 290	1.805	523.45	76951.5	0.137 flcc
027			N515	1247 1504 137	1.805	247.29	38277.19	0.155 flcc
							<i>fl/cc</i>	
DID EMPLOYEE WEAR RESPIRATOR?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES								
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN					IF SOMETIMES WHEN?		MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES								

COMMENTS/SKETCHES

 loader 9:30 -
outside

 1147 - No 2 lathe
Coupling glue to end of 10" 200

 .66217 + .3527
 .413 + 2.253
 1.01601667

PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>27 May 82</i>					
EMPLOYEE NAME <i>Janet Bivens</i>		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Coupling Tester</i>		MANUFACTURING PRODUCT <i>Finnishing 8" class 150 T</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
028	4155		4155	0735 1458	443	2.00	886	223878.46	0.253 f/cc
			N 402					f/616	
DID EMPLOYEE WEAR RESPIRATOR?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL		
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN					IF SOMETIMES WHEN?		MAKE & MODEL		
☐ YES ☐ NO ☐ SOMETIMES									

COMMENTS/SKETCHES

LOADER 9:30 - 10:15
 outside
 10:15 -
 Back to C.T.

PLANT NAME <i>Rivside</i>		LOC NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>26 May 82</i>					
EMPLOYEE NAME <i>Andy Sanders</i>		DEPARTMENT/LINE <i>Finishing</i>							
JOB TITLE/ENVIRONMENTAL LOCATION <i>forklift operator Finishing</i>		MANUFACTURING PRODUCT <i>All products for the day.</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS		☐ OPEN FACE		☐ 0.8μ MCF, MILLIPORE FILTER					
☒ ASBESTOS		☐ CLOSED FACE		☐ 5μ PVC FILTER					
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER-SILVER MEM FILTER					
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL					
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE					
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL					
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE					
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER					
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba					
☐ NOISE		☐ AUDIO DOSIMETER							
EQUIPMENT									
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>65</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☒ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION	
<i>029</i>	<i>6519</i>		<i>N414</i>	<i>0738 1152 252</i>	<i>2.0</i>	<i>504</i>	<i>3880.38</i>	<i>0.0076/cc</i>	
<i>030</i>			<i>N508</i>	<i>1152 1458 184</i>	<i>2.0</i>	<i>368</i>	<i>5445.69</i>	<i>0.0147/cc</i>	
DID EMPLOYEE WEAR RESPIRATOR?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL		
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	HEAD OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN					IF SOMETIMES WHEN?		MAKE & MODEL		
☐ YES ☐ NO ☐ SOMETIMES									

COMMENTS/SKETCHES

All over plant



INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>PJ NORRIS</i>	DATE OF TEST <i>22 May 82</i>				
EMPLOYEE NAME <i>Tony Silva</i>		DEPARTMENT/LINE						
JOB TITLE/ENVIRONMENTAL LOCATION <i>Crusher Operator</i>		MANUFACTURING PRODUCT						
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA				
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba				
EQUIPMENT								
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER								
EXHAUST SYSTEMS/REMARKS								
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY								
WEATHER CONDITIONS								
OUTSIDE TEMP <i>65-70</i> °F		WIND DIRECTION	WIND VELOCITY NMH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY				
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>031</i>	<i>6105</i>		<i>NS17</i>	<i>1225 1513 168</i>	<i>1.8075</i>	<i>303.66</i>	<i>73266.92</i> <i>4 filter</i>	<i>0.241 fl/cc</i>
DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☐ NO ☐ SOMETIMES IF SOMETIMES WHEN? RESPIRATOR MAKE & MODEL								
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN? ☐ YES ☐ NO ☐ SOMETIMES IF SOMETIMES WHEN? MAKE & MODEL								
COMMENTS/SKETCHES <i>6" pipe</i>								

CertainTeed
INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P. J. Norris</i>	DATE OF TEST <i>25 May 82</i>				
EMPLOYEE NAME <i>Ken Suwak</i>		DEPARTMENT/LINE						
JOB TITLE/ENVIRONMENTAL LOCATION <i>Electrician</i>		MANUFACTURING PRODUCT						
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA				
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8μ MCEF, MILLIPORE FILTER ☐ 5μ PVC FILTER ☐ GLASS FIBER SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba				
EQUIPMENT								
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER								
EXHAUST SYSTEMS/REMARKS								
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY								
WEATHER CONDITIONS								
OUTSIDE TEMP <i>70</i> °F		WIND DIRECTION	WIND VELOCITY	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY				
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>032</i>	<i>6105</i>		<i>N426</i>	<i>0740 1300 440</i>	<i>1.885</i>	<i>829.4</i>	<i>8155.38</i>	<i>0.0098/lcc</i>
DID EMPLOYEE WEAR RESPIRATOR?					IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES								
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	SHR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN?					IF SOMETIMES WHEN?		MAKE & MODEL	
☐ YES ☒ NO ☐ SOMETIMES								

COMMENTS/SKETCHES

Everywhere in plant and outside.

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>PJ Norris</i>	DATE OF TEST <i>25 May 82</i>																																																																
EMPLOYEE NAME <i>Joe Mc Fann</i>		DEPARTMENT/LINE																																																																		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Machinist</i>		MANUFACTURING PRODUCT <i>Maintenance</i>																																																																		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA																																																																
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8μ MCEF, MILLIPORE FILTER ☐ 5μ PVC FILTER ☐ GLASS FIBER SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba																																																																
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EXHAUST SYSTEMS/REMARKS																																																																				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY																																																																				
WEATHER CONDITIONS																																																																				
OUTSIDE TEMP <i>70</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY																																																																
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	<table border="1"> <thead> <tr> <th colspan="2">MILITARY TIME</th> <th rowspan="2">TOTAL MINS</th> <th rowspan="2">LPM/CC</th> <th rowspan="2">VOLUME LITERS</th> <th rowspan="2">ANALYSIS RESULT</th> <th rowspan="2">AIRBORNE CONCENTRATION</th> </tr> <tr> <th>START</th> <th>STOP</th> </tr> </thead> <tbody> <tr> <td><i>033</i></td> <td><i>6121</i></td> <td></td> <td><i>N430</i></td> <td><i>0730</i></td> <td><i>1501</i></td> <td><i>451</i></td> <td><i>1.987</i></td> <td><i>896.14</i></td> <td><i>5064.23</i></td> <td><i>0.0056/cc</i></td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	MILITARY TIME		TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION	START	STOP	<i>033</i>	<i>6121</i>		<i>N430</i>	<i>0730</i>	<i>1501</i>	<i>451</i>	<i>1.987</i>	<i>896.14</i>	<i>5064.23</i>	<i>0.0056/cc</i>																																												
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☐ YES ☒ NO ☐ SOMETIMES																																																																				

COMMENTS/SKETCHES

A30

Remains in shop

CertainTeed
INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P J Norris</i>	DATE OF TEST <i>25 May 82</i>
EMPLOYEE NAME <i>Don Heaton</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Boiler Operator</i>		MANUFACTURING PRODUCT		
CONTAMINANT	SAMPLING METHOD		SAMPLING MEDIA	
☐ FIBERGLASS	☒ OPEN FACE		☐ 0.8μ MCEF, MILLIPORE FILTER	
☒ ASBESTOS	☐ CLOSED FACE		☐ 5μ PVC FILTER	
☐ TOTAL DUST	☐ CYCLONE		☐ GLASS FIBER/SILVER MEM FILTER	
☐ SILICA DUST	☐ CLOSED FACE		☐ 150 mg. CHARCOAL	
☐ ASPHALT FUMES	☐ CHARCOAL TUBE		☐ SODIUM BISULFITE	
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL	
☐ FORMALDEHYDE	☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE	
☐ PHENOL	☐ FLORISIL TUBE		☐ GLASS FIBER FILTER	
☐ PCB	☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba	
☐ NOISE	☐ AUDIO DOSIMETER			
EQUIPMENT				
☐ DUPONT P4000 PUMP ☒ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>70</i> °F		WIND DIRECTION	WIND VELOCITY	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME
				START STOP TOTAL MINS
<i>034</i>	<i>7038</i>		<i>N392</i>	<i>0735 1446 431</i>
				<i>1.815 782.27 2893.85 0.0037 f/cc</i>
DID EMPLOYEE WEAR RESPIRATOR? IF SOMETIMES WHEN? RESPIRATOR MAKE & MODEL				
☐ YES ☒ NO ☐ SOMETIMES				
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN? IF SOMETIMES WHEN? MAKE & MODEL				
☐ YES ☒ NO ☐ SOMETIMES				

336
Boiler Room Shop
Andover

COMMENTS/SKETCHES

PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P. J. MORRIS</i>	DATE OF TEST <i>27 May 82</i>
EMPLOYEE NAME		DEPARTMENT/LINE		
Area <i>Warehouse</i>		MANUFACTURING PRODUCT		
JOB TITLE/ENVIRONMENTAL LOCATION <i>asbestos bag storage</i>				
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>60 °F</i>		WIND DIRECTION	WIND VELOCITY <i>MPH</i>	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS <i>0755 1428 448</i>
<i>035</i>	<i>4978</i>		<i>N421</i>	LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION <i>1,8975 850.08 115359.2 0.136 f/cc</i> <i>f/bite</i>
DID EMPLOYEE WEAR RESPIRATOR?				
☐ YES ☐ NO ☐ SOMETIMES				
IF SOMETIMES WHEN?				
RESPIRATOR MAKE & MODEL				
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN?				
☐ YES ☐ NO ☐ SOMETIMES				
IF SOMETIMES WHEN?				
MAKE & MODEL				

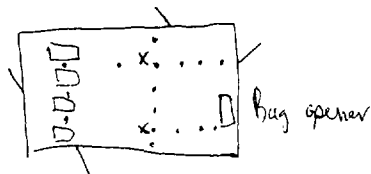
COMMENTS/SKETCHES

Center of Space

5 feet off plant floor.

General background fiber level in warehouse.

4 garage door size openings



PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>27 May 82</i>																																																																
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE																																																																		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Asbestos Bag Storage Apple House</i>		MANUFACTURING PRODUCT																																																																		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA																																																																
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba																																																																
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OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY																																																																
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☐ YES ☐ NO ☐ SOMETIMES																																																																				
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☐ YES ☐ NO ☐ SOMETIMES																																																																				

COMMENTS/SKETCHES

Far end is bag oper.
Middle of space
General background fiber level in warehouse.

2

COMMENTS/SKETCHES

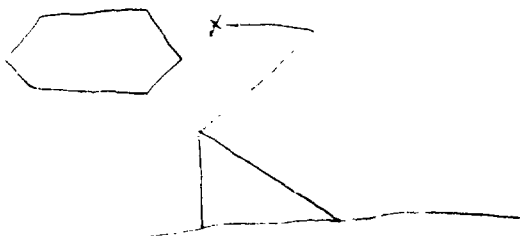


CertainTeed

INDUSTRIAL HYGIENE MONITORING DATA SHEET

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PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>24 May 82</i>
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Mixing 2nd level new to store</i>		MANUFACTURING PRODUCT		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS	☒ ASBESTOS	☒ OPEN FACE	☐ 0.8μ MCEF, MILLIPORE FILTER	
☐ TOTAL DUST	☐ SILICA DUST	☐ CLOSED FACE	☐ 5μ PVC FILTER	
☐ ASPHALT FUMES	☐ VINYL CHLORIDE (MONOMER)	☐ CYCLONE	☐ GLASS FIBER/SILVER MEM FILTER	
☐ FORMALDEHYDE	☐ PHENOL	☐ CLOSED FACE	☐ 150 mg. CHARCOAL	
☐ PCB	☐ NOISE	☐ CHARCOAL TUBE	☐ SODIUM BISULFITE	
		☐ IMPINGERS, TWO IN SERIES	☐ 300 mg. SILICA GEL	
		☐ SILICAL GEL	☐ 150 mg. SKC FLORISIL TUBE	
		☐ FLORISIL TUBE	☐ GLASS FIBER FILTER	
		☐ CLOSED FACE	☐ 80dba ☐ 85dba ☐ 90dba	
		☐ AUDIO DOSIMETER		
EQUIPMENT				
☐ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>75° 80°</i>		WIND DIRECTION	WIND VELOCITY	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/F	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS
<i>039</i>	<i>6595</i>		<i>N435</i>	<i>1120 1449 209</i>
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP TOTAL MIN READ OUT RESULT
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				
COMMENTS/SKETCHES				



CertainTeed
INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>17 May 82</i>					
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Wet area</i>		MANUFACTURING PRODUCT <i>Area where Machine Tender rooms</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☐ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY <i>Garage door open 2 hours in morning. Closed 9:30</i>									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T. #	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
	<i>6595</i>		<i>1523</i>	<i>0712 1430</i>	<i>438</i>	<i>1.76</i>	<i>710.88</i>	<i>310693.8</i> <i>f/Filter</i>	<i>0.403 f/cc</i>
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL					
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL					
☐ YES ☐ NO ☐ SOMETIMES									

COMMENTS/SKETCHES

Hanging 5 feet off floor opposite spreader tray.
 Characterize levels in the wet manufacturing area.
 General background.
 See lot of materials manufactured for that day.
 (f amount)

CertainTeed

INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P. J. Norris</i>	DATE OF TEST <i>27 May 82</i>					
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Net area Mandrel pipe return</i>		MANUFACTURING PRODUCT <i>Manufacture</i>							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba					
EQUIPMENT									
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION		WIND VELOCITY MPH					
				☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
<i>1</i>	<i>5807</i>		<i>N510</i>	<i>0710 1432</i>	<i>442</i>	<i>2.0175</i>	<i>891.735</i>	<i>15718.84</i>	<i>0.0176 office</i>
DID EMPLOYEE WEAR RESPIRATOR?			IF SOMETIMES WHEN?			RESPIRATOR MAKE & MODEL			
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	SHR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECTN			IF SOMETIMES WHEN?			MAKE & MODEL			
☐ YES ☐ NO ☐ SOMETIMES									

COMMENTS/SKETCHES

*Hanging 5 ft off plant floor underneath pipe return.
Nearest Safety office.*

INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME Riverside		LOC. NO.	SAMP. TAKEN BY P. J. Nomo	DATE OF TEST 22 May 82					
EMPLOYEE NAME		DEPARTMENT/LINE							
Area Filings Silver		MANUFACTURING PRODUCT Finnishburg							
JOB TITLE/ENVIRONMENTAL LOCATION Top of cabinet		Variable products							
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA					
☐ FIBERGLASS	☒ OPEN FACE	☒ 0.8μ MCEF, MILLIPORE FILTER							
☒ ASBESTOS	☐ CLOSED FACE	☐ 5μ PVC FILTER							
☐ TOTAL DUST	☐ CYCLONE								
☐ SILICA DUST	☐ CLOSED FACE	☐ GLASS FIBER-SILVER MEM FILTER							
☐ ASPHALT FUMES	☐ CHARCOAL TUBE	☐ 150 mg. CHARCOAL							
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES	☐ SODIUM BISULFITE							
☐ FORMALDEHYDE	☐ SILICAL GEL	☐ 300 mg. SILICA GEL							
☐ PHENOL	☐ FLORISIL TUBE	☐ 150 mg. SKC FLORISIL TUBE							
☐ PCB	☐ CLOSED FACE	☐ GLASS FIBER FILTER							
☐ NOISE	☐ AUDIO DOSIMETER	☐ 80dba ☐ 85dba ☐ 90dba							
☐									
☐									
EQUIPMENT									
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP 60 °F		WIND DIRECTION		WIND VELOCITY NW 11					
		☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN		☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME START STOP	TOTAL MIN	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
11	4974		N437	0738 1457	1124	1.64	711.91	19665	0.0265 f/c
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?			RESPIRATOR MAKE & MODEL				
☐ YES ☐ NO ☐ SOMETIMES									
CNTRL NO	DOS SERIAL	CELL	START	(TIME)	STOP	TOTAL MIN	READ OUT RESULT	8HR CORR %	CONVERTED DBA LEVEL
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?			MAKE & MODEL				
☐ YES ☐ NO ☐ SOMETIMES									

COMMENTS/SKETCHES

Glue table
silica sand
x

table

Oven-Dryer

Coupling Tester

Drill

Core Drills

Background levels of asbestos

The sketches include a 'Glue table' with a 'silica sand' container and a small 'x' mark, a 'table' with an 'Oven-Dryer' unit, a 'Coupling Tester' device, a 'Drill' with a crosshair, and 'Core Drills' represented by two circles. A note on the right mentions 'Background levels of asbestos'.

PLANT NAME <i>Riverside</i>		LOC. NO.	SAMPLE TAKEN BY <i>PJ Norris</i>	DATE OF TEST <i>27 May 82</i>
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION <i>Top of Soda machine</i>		MANUFACTURING PRODUCT <i>Finnishing Area</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8µ MCEF, MILLIPORE FILTER ☐ 5µ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS <i>6716 1434 438</i>
<i>1-1</i>	<i>4979</i>		<i>N 537</i>	LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION <i>1.69 740.22 6938.65 0.0093/ke</i>
DID EMPLOYEE WEAR RESPIRATOR? IF SOMETIMES WHEN? RESPIRATOR MAKE & MODEL ☐ YES ☐ NO ☐ SOMETIMES				
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN IF SOMETIMES WHEN? MAKE & MODEL ☐ YES ☐ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

General background level in finishing plant.
 #2 Saw not running directly in front of machine (soda)

CertainTeed
INDUSTRIAL HYGIENE MONITORING DATA SHEET

TH

PLANT NAME <i>Riverside</i>		LOC NO.	SAMPLE TAKEN BY <i>P.J. Norris</i>	DATE OF TEST <i>22 May 82</i>
EMPLOYEE NAME <i>Area</i>		DEPARTMENT/LINE <i>Furnishing</i>		
JOB TITLE/ENVIRONMENTAL LOCATION		MANUFACTURING PRODUCT <i>Center of 1, 2, 3 lathes #1 lathe running</i>		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS ☒ ASBESTOS ☐ TOTAL DUST ☐ SILICA DUST ☐ ASPHALT FUMES ☐ VINYL CHLORIDE (MONOMER) ☐ FORMALDEHYDE ☐ PHENOL ☐ PCB ☐ NOISE ☐ ☐		☒ OPEN FACE ☐ CLOSED FACE ☐ CYCLONE ☐ CLOSED FACE ☐ CHARCOAL TUBE ☐ IMPINGERS, TWO IN SERIES ☐ SILICAL GEL ☐ FLORISIL TUBE ☐ CLOSED FACE ☐ AUDIO DOSIMETER		☒ 0.8μ MCEF, MILLIPORE FILTER ☐ 5μ PVC FILTER ☐ GLASS FIBER-SILVER MEM FILTER ☐ 150 mg. CHARCOAL ☐ SODIUM BISULFITE ☐ 300 mg. SILICA GEL ☐ 150 mg. SKC FLORISIL TUBE ☐ GLASS FIBER FILTER ☐ 80dba ☐ 85dba ☐ 90dba
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP <i>60</i> °F		WIND DIRECTION	WIND VELOCITY MPH	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T _h	SAMPLE NO.	MILITARY TIME START STOP TOTAL MINS <i>0740 1455 4.35</i> LPM/CC VOLUME LITERS ANALYSIS RESULT AIRBORNE CONCENTRATION <i>577454 0.0064/fiber</i>
	<i>4476</i>		<i>N 001</i> <i>401</i>	
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

General background levels for asbestos.
5 feet between 2+3 lathes. #1 lathe running

CertainTeed
INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME <i>Riverside</i>		LOG NO.	SAMPLE TAKEN BY <i>P NORRIS</i>	DATE OF TEST <i>25 May 82</i>					
EMPLOYEE NAME		DEPARTMENT/LINE							
JOB TITLE/ENVIRONMENTAL LOCATION <i>Area Maintenance Machine Shop</i>		MANUFACTURING PRODUCT							
CONTAMINANT	SAMPLING METHOD		SAMPLING MEDIA						
☐ FIBERGLASS	☐ OPEN FACE		☐ 0.8μ MCEF, MILLIPORE FILTER						
☒ ASBESTOS	☐ CLOSED FACE		☐ 5μ PVC FILTER						
☐ TOTAL DUST	☐ CYCLONE		☐ GLASS FIBER-SILVER MEM FILTER						
☐ SILICA DUST	☐ CLOSED FACE		☐ 150 mg. CHARCOAL						
☐ ASPHALT FUMES	☐ CHARCOAL TUBE		☐ SODIUM BISULFITE						
☐ VINYL CHLORIDE (MONOMER)	☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL						
☐ FORMALDEHYDE	☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE						
☐ PHENOL	☐ FLORISIL TUBE		☐ GLASS FIBER FILTER						
☐ PCB	☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba						
☐ NOISE	☐ AUDIO DOSIMETER								
EQUIPMENT									
☐ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER									
EXHAUST SYSTEMS/REMARKS									
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY									
WEATHER CONDITIONS									
OUTSIDE TEMP <i>70</i> °F		WIND DIRECTION	WIND VELOCITY <i>NEH</i>	☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY					
CNTRL NO.	PUMP SERIAL NO.	T _R	SAMPLE NO.	MILITARY TIME	TOTAL MINS	LPM/CC	VOLUME LITERS	ANALYSIS RESULT	AIRBORNE CONCENTRATION
	<i>4976</i>		<i>N 429</i>	<i>0735</i>	<i>1459</i>	<i>444</i>	<i>2.052</i>	<i>911.09</i>	<i>1710</i>
	<i>5851</i>		<i>N 412</i>	<i>0735</i>	<i>1458</i>	<i>443</i>	<i>1.6</i>	<i>208.8</i>	<i>VOID - TOO DUSTY</i>
DID EMPLOYEE WEAR RESPIRATOR?									
☐ YES ☐ NO ☐ SOMETIMES									
IF SOMETIMES WHEN?									
RESPIRATOR MAKE & MODEL									
CNTRL NO	DOS SERIAL	CELL	START (TIME)	STOP	TOTAL MIN	READ OUT RESULT	SHR CORR %	CONVERTED DBA LEVEL	
DID EMPLOYEE WEAR HEARING PROTECT?									
☐ YES ☐ NO ☐ SOMETIMES									
IF SOMETIMES WHEN?									
MAKE & MODEL									

COMMENTS/SKETCHES

5851 Side of Tool issue cage - center of Machine Shop.

A976 - Side of Machine Shop

INDUSTRIAL HYGIENE MONITORING DATA SHEET

PLANT NAME Riverside		LOC. NO.	SAMPLE TAKEN BY P. Norris	DATE OF TEST 25 May 82
EMPLOYEE NAME		DEPARTMENT/LINE		
JOB TITLE/ENVIRONMENTAL LOCATION Area Forklift Maintenance Area		MANUFACTURING PRODUCT		
CONTAMINANT		SAMPLING METHOD		SAMPLING MEDIA
☐ FIBERGLASS		☒ OPEN FACE		☒ 0.8µ MCEF, MILLIPORE FILTER
☒ ASBESTOS		☐ CLOSED FACE		☐ 5µ PVC FILTER
☐ TOTAL DUST		☐ CYCLONE		☐ GLASS FIBER-SILVER MEM FILTER
☐ SILICA DUST		☐ CLOSED FACE		☐ 150 mg. CHARCOAL
☐ ASPHALT FUMES		☐ CHARCOAL TUBE		☐ SODIUM BISULFITE
☐ VINYL CHLORIDE (MONOMER)		☐ IMPINGERS, TWO IN SERIES		☐ 300 mg. SILICA GEL
☐ FORMALDEHYDE		☐ SILICAL GEL		☐ 150 mg. SKC FLORISIL TUBE
☐ PHENOL		☐ FLORISIL TUBE		☐ GLASS FIBER FILTER
☐ PCB		☐ CLOSED FACE		☐ 80dba ☐ 85dba ☐ 90dba
☐ NOISE		☐ AUDIO DOSIMETER		
EQUIPMENT				
☒ DUPONT P4000 PUMP ☐ DUPONT P2500 PUMP ☐ DUPONT P200A PUMP ☐ MSA PUMP ☐ DUPONT D376 DOSIMETER ☐ DUPONT D381 DOSIMETER				
EXHAUST SYSTEMS/REMARKS				
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY				
WEATHER CONDITIONS				
OUTSIDE TEMP 70 °F		WIND DIRECTION		WIND VELOCITY
				☐ SUNNY ☒ CLOUDY ☒ HUMID ☐ RAIN ☒ FOG ☐ SHOWERS ☐ SNOW ☐ PTLY. CLOUDY
CNTRL NO.	PUMP SERIAL NO.	T/R	SAMPLE NO.	MILITARY TIME
				START STOP TOTAL MINS
140	5807		N436	0752 1509 437
	4478		N427	0755 " 434
DID EMPLOYEE WEAR RESPIRATOR?		IF SOMETIMES WHEN?		RESPIRATOR MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				
CNTRL NO.	DOS SERIAL	CELL	START (TIME)	STOP
DID EMPLOYEE WEAR HEARING PROTECTN		IF SOMETIMES WHEN?		MAKE & MODEL
☐ YES ☐ NO ☐ SOMETIMES				

COMMENTS/SKETCHES

No Fire escape
 Door is welded shut
 Fire at hydra area (Electrical doors)
 No way to get out if fire by fuse box

5801 Over
 workbench
 4478 opposite
 side
 by door welded
 shut.

82PT03 Riverside Asbestos

82PT03 Riverside

Seq T Name COOPER, HOMER L. Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
 0006 P Soc Sec 568-13-3118 TWA 0.150000 F/CC
 Date 05/06/1982 Pel/Exp Limit OSHA PEL = 2 F/CC
 Shift 1ST 8 HOUR Product 12" 150 PIPE

Equp Samp Start Stop Min LPM Analysis-f/CC Conc-f/CC ST Exp Limit Respirator Comments
 1. 0668 08:14 14:28 374 0.0000 0.1480/ 0.0 0.1500 S DISPOSABLE SINGLE USE RUNNING LATHE ON 12" 150 PIPE

Seq T Name PERRY, DALE C. Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
 0007 P Soc Sec 550-52-1674 TWA 0.110000 F/CC
 Date 04/21/1982 Pel/Exp Limit OSHA PEL = 2 F/CC
 Shift 1ST 8 HOUR Product

Equp Samp Start Stop Min LPM Analysis-f/CC Conc-f/CC ST Exp Limit Respirator Comments
 1. 0667 08:21 15:09 408 0.0300 0.1130/ 0.0 0.1100 N OIL & LUBE MACHINERY THRU-OUT PLANT

Seq T Name GEORGE, ALAN L. Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
 0008 P Soc Sec 561-90-0168 TWA 0.043000 F/CC
 Date 04/21/1982 Pel/Exp Limit OSHA PEL = 2 F/CC
 Shift 1ST 8 HOUR Product

Equp Samp Start Stop Min LPM Analysis-f/CC Conc-f/CC ST Exp Limit Respirator Comments
 1. 0666 08:15 14:49 394 0.0000 0.0430/ 0.0 0.0430 N GENERAL MAINTENANCE & SOME WELDING

Seq T Name SUAREZ, ANDRES L. Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
 0009 P Soc Sec 560-68-8273 TWA 0.130000 F/CC
 Date 04/20/1982 Pel/Exp Limit OSHA PEL = 2 F/CC
 Shift 1ST 8 HOUR Product 8" 150 PIPE

Equp Samp Start Stop Min LPM Analysis-f/CC Conc-f/CC ST Exp Limit Respirator Comments
 1. 0665 08:22 14:46 384 0.0000 0.1300/ 0.0 0.1300 N UNITIZED PIPE; MAKE DUNNAGE FOR UNITS

Seq T Name BOLTER, RICHARD W. Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
 0010 P Soc Sec 568-27-1510 TWA 0.120000 F/CC
 Date 04/20/1982 Pel/Exp Limit OSHA PEL = 2 F/CC
 Shift 2ND 8 HOUR Product

Equp Samp Start Stop Min LPM Analysis-f/CC Conc-f/CC ST Exp Limit Respirator Comments
 1. 0664 08:18 14:00 342 0.0000 0.1200/ 0.0 0.1200 N ROUTINE BOILER OPERATION

CTD022874

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=====
Seq T Name      KING, CARL D.
0011 P Soc Sec 232-40-4986
Date 04/20/1982
Shift 1ST      8 HOUR
=====
Dept PRODUCTION
Locn GENERAL
Proc
Job MECHANIC
=====
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.150000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
=====
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=====
1. Equip Smp 0663 Start Stop Min LPM Analysis-F/CC Conc-F/CC ST Exp Limit Respirator Comments
    08:39 14:30 351 0.0000 0.1460/ 0.0 0.1500 S DISPOSABLE SINGLE USE SHIFT MECHANIC-WORKE D AROUND CRUSHER
    APPROX 1 HR
=====
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=====
Seq T Name      BRYANT, BIRK
0012 P Soc Sec 266-82-7813
Date 04/20/1982
Shift 1ST      8 HOUR
=====
Dept PRODUCTION
Locn GENERAL
Proc
Job LABORER
=====
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.140000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
=====
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=====
1. Equip Smp 0662 Start Stop Min LPM Analysis-F/CC Conc-F/CC ST Exp Limit Respirator Comments
    08:26 14:32 366 0.0000 0.1430/ 0.0 0.1400 S DISPOSABLE SINGLE USE GEN CLEANUP; OPERATE D SWEEPER APPROX 1.5
    HOURS
=====
```

```
=====
Seq T Name      PETERSON, JOHN A.
0013 P Soc Sec 520-56-8597
Date 04/19/1982
Shift 1ST      8 HOUR
=====
Dept PRODUCTION
Locn PRESS
Proc
Job OPERATOR
=====
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.090000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150
=====
```

```
=====
1. Equip Smp 0661 Start Stop Min LPM Analysis-F/CC Conc-F/CC ST Exp Limit Respirator Comments
    08:17 14:35 378 0.0000 0.0900/ 0.0 0.0900 OPERATED PRESS/PIPE MACHINE
=====
```

```
=====
Seq T Name      TAYLOR, BRIAN L.
0014 P Soc Sec 569-80-5194
Date 04/19/1982
Shift 1ST      8 HOUR
=====
Dept PRODUCTION
Locn CRUSHER
Proc
Job OPERATOR
=====
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.290000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product
=====
```

```
=====
1. Equip Smp 0660 Start Stop Min LPM Analysis-F/CC Conc-F/CC ST Exp Limit Respirator Comments
    08:19 11:54 215 0.0000 0.2990/ 0.0 0.3000 S DISPOSABLE SINGLE USE OPERATOR OF PRIMARY CRUSHER & DRIVING
2. 06608 11:54 14:41 167 0.0000 0.2860/ 0.0 0.2900 S DISPOSABLE SINGLE USE LIFT TRUCK TO SUPPLY CRUSHER W SCRAP PIPE
=====
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Seq T Name	SILVA, TONY G.	Dept PRODUCTION	Contaminant Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0015 P Soc Sec	573-24-9440	Locn CRUSHER	TWA 0.150000 F/CC	0.1500		/P&CAM 239 R=A
Date	04/19/1982	Proc	Pel/Exp Limit OSHA PEL = 2 F/CC			
Shift	1ST	Job OPERATOR	Product			
Shift	8 HOUR					
Equip	Samp 0659	LPM 0.0000	Analysis-F/CC 0.1480/	Conc-F/CC 0.0	ST Exp Limit 0.1500	S DISPOSABLE SINGLE USE OPERATED LIFT TRUCK TRANSPORT SCRAP TO CRUSHER
1.						
Seq T Name	COLE, HARRISON	Dept PRODUCTION	Contaminant Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0016 P Soc Sec	425-68-7424	Locn TRAY LOADING	TWA 0.130000 F/CC	0.1300		/P&CAM 239 R=A
Date	04/16/1982	Proc	Pel/Exp Limit OSHA PEL = 2 F/CC			
Shift	2ND	Job OPERATOR	Product 12" 150			
Shift	8 HOUR					
Equip	Samp 0658	LPM 0.0000	Analysis-F/CC 0.1320/	Conc-F/CC 0.0	ST Exp Limit 0.1300	GEN TRAYLOADING DUTIES & LOADING TRAYS ONTO BOGIES & PUSHING BOGIES INTO AUTOCL
1.						
Seq T Name	LEDFOORD, JOE D.	Dept PRODUCTION	Contaminant Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0018 P Soc Sec	440-34-0878	Locn TRAY LOADING	TWA 0.120000 F/CC	0.1200		/P&CAM 239 R=A
Date	04/16/1982	Proc	Pel/Exp Limit OSHA PEL = 2 F/CC			
Shift	2ND	Job OPERATOR	Product 12" 150 PIPE			
Shift	8 HOUR					
Equip	Samp 657	LPM 0.0000	Analysis-F/CC 0.1190/	Conc-F/CC 0.0	ST Exp Limit 0.1200	GENERAL TRAYLOADING DUTIES
1.						
Seq T Name	BRADY, SR, JEFFERY L.	Dept PRODUCTION	Contaminant Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0019 P Soc Sec	551-02-9474	Locn MANDREL	TWA 0.098000 F/CC	0.0980		/P&CAM 239 R=A
Date	04/15/1982	Proc	Pel/Exp Limit OSHA PEL = 2 F/CC			
Shift	2ND	Job OPERATOR	Product 12" 150			
Shift	8 HOUR					
Equip	Samp 656	LPM 0.0000	Analysis-F/CC 0.0980/	Conc-F/CC 0.0	ST Exp Limit 0.0980	HANDLES MANDRELS/PIP E AT MANDREL STATION
1.						
Seq T Name	HORTON, ALBERT M.	Dept PRODUCTION	Contaminant Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0020 P Soc Sec	267-86-0043	Locn PIPE MACHINE	TWA 0.086000 F/CC	0.0860		/P&CAM 239 R=A
Date	04/15/1982	Proc	Pel/Exp Limit OSHA PEL = 2 F/CC			
Shift	2ND	Job TENDER	Product 12" 150			
Shift	8 HOUR					
Equip	Samp 655	LPM 0.0000	Analysis-F/CC 0.0860/	Conc-F/CC 0.0	ST Exp Limit 0.0860	GENERAL DUTIES TENDING PIPE MACHINE
1.						

0021 P Soc Sec 553-54-5445

Date 04/15/1982

Shift 1ST 8 HOUR

Dept PRODUCTION
Locn MANUFACTURING
Proc
Job RELIEF

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.110000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 12" 150

1. Equip Samp 654 Start 08:15 14:48 393 LPM 0.0000 Analysis-F/CC 0.0 Conc-F/CC 0.1100 ST Exp Limit Respirator Comments
S DISPOSABLE SINGLE USE GENERAL DUTIES-RELIEF VING OTHER EMPLOYEES DURING BREAKS

Seq T Name STEWARD, RAYMOND L.

0022 P Soc Sec 570-56-5483

Date 04/14/1982

Shift 1ST 8 HOUR

Dept PRODUCTION
Locn HYDROTASTER
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.094000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 24" 150 PIPE

1. Equip Samp 653 Start 08:17 14:41 384 LPM 0.0000 Analysis-F/CC 0.0 Conc-F/CC 0.0940 ST Exp Limit Respirator Comments
OPERATING SAMPLING

Seq T Name ASKEV, WILLIAM E.

0023 P Soc Sec 561-90-4679

Date 04/14/1982

Shift 2ND 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc
Job HANDLER

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.110000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 24" 150 PIPE

1. Equip Samp 652 Start 08:21 14:43 382 LPM 0.0000 Analysis-F/CC 0.0 Conc-F/CC 0.1100 ST Exp Limit Respirator Comments
N

Seq T Name PASILLAS, DAVID

0024 P Soc Sec 562-74-5496

Date 04/14/1982

Shift 1ST 8 HOUR

Dept PRODUCTION
Locn LATHE LINE
Proc LINE 3
Job OPERATOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.110000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 24" 150 PIPE

1. Equip Samp 651 Start 08:19 14:42 383 LPM 0.0000 Analysis-F/CC 0.0 Conc-F/CC 0.1100 ST Exp Limit Respirator Comments
N

Seq T Name MARTINEZ, PETE G.

0025 P Soc Sec 562-38-6937

Date 04/14/1982

Shift 1ST 8 HOUR

Dept PRODUCTION
Locn TRAY LOADING
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.045000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 12" 150 PIPE

1. Equip Samp 650 Start 08:14 14:47 393 LPM 0.0000 Analysis-F/CC 0.0 Conc-F/CC 0.0450 ST Exp Limit Respirator Comments
MARK & LOAD PIPE FROM #2 CURE TUNNEL INTO TRAYS

CTD0022877

=====

Seq T Name THOMPSON, E
0026 P Soc Sec 999-99-3020
Date 04/07/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn LATHE LINE
Proc LINE 1
Job OPERATOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.08000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product 8" 150

ST Exp Limit

Analysis-F/CC 0.0860/ 0.0 0.0860

LPM 0.0000

Start Stop Min 07:50 15:06 436

Samp 647

Equip 1.

Comments
BRING IN TRAYLOADS O F PIPE RETURN MT
TRAYS TO YARD

=====

Seq T Name VANDERTMEEL, RICHARD M.
0027 P Soc Sec 092-30-9537
Date 04/07/1982
Shift 1ST 8 HOUR

Dept MAINTENANCE
Locn BOILER
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.072000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit

Analysis-F/CC 0.0720/ 0.0 0.0720

LPM 0.0000

Start Stop Min 08:09 15:00 411

Samp 649

Equip 1.

Comments
OPERATION OF BOILER; OPENING AND CLOSING
AUTOCLAVES.

=====

Seq T Name GALVIN, DENNIS W.
0028 P Soc Sec 560-48-6590
Date 04/07/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn GENERAL
Proc
Job FORKLIFT OPERATOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.130000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit

Analysis-F/CC 0.1290/ 0.0 0.1300

LPM 0.0000

Start Stop Min 08:00 14:57 417

Samp 648

Equip 1.

Comments
TRUCKED PIPE FROM FI WISHING TO STORAGE
YARD; STACKED PIPE IN YARD

=====

Seq T Name GARCIA, MONTY A.
0029 P Soc Sec 527-50-6060
Date 04/02/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn FITTINGS
Proc
Job INSPECTOR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.110000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit

Analysis-F/CC 0.1080/ 0.0 0.1100

LPM 0.0000

Start Stop Min 07:55 14:34 399

Samp 646

Equip 1.

Comments
ROUTINE "ROUND-THE-W ALL" INSPECTIONS

=====

CTD022878

Seq T Name	EAVES, RONALD E.	Dept	PRODUCTION	Contaminant	Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0030 P Soc Sec	463-96-1555	Locn	PIPE MACHINE	TWA	0.150000 F/CC		N	OPERATES STRIPPER ME CHANISM
Date	04/02/1982	Proc		Pel/Exp Limit	OSHA PEL = 2 F/CC			
Shift	1ST	Job	STRIPPER	Product				
Shift	8 HOUR							
Equp	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	
1.	645	07:46	14:29	403	0.0000	0.1520/	0.0	0.1500
Seq T Name	CRUZ, ROBERT G.	Dept	PRODUCTION	Contaminant	Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0031 P Soc Sec	562-82-6748	Locn	GENERAL	TWA	0.081000 F/CC		N	OPERATES STRIPPER ME CHANISM
Date	03/31/1982	Proc		Pel/Exp Limit	OSHA PEL = 2 F/CC			
Shift	1ST	Job	OPERATOR	Product				
Shift	8 HOUR							
Equp	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	
1.	644	08:27	15:16	409	0.0000	0.0810/	0.0	0.0810
Seq T Name	BARAY, ROBERT R.	Dept	MAINTENANCE	Contaminant	Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0032 P Soc Sec	568-40-9899	Locn	GENERAL	TWA	0.035000 F/CC		N	GENERAL CLEAN-UP ASS IGMENTS IN MFG DEPT
Date	03/31/1982	Proc		Pel/Exp Limit	OSHA PEL = 2 F/CC			
Shift	1ST	Job	MECHANIC	Product				
Shift	8 HOUR							
Equp	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	
1.	643	08:11	15:23	432	0.0000	0.0350/	0.0	0.0350
Seq T Name	VILLALPANDO, ANDRES R.	Dept	PRODUCTION	Contaminant	Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0033 P Soc Sec	568-42-8810	Locn	PIPE MACHINE	TWA	0.110000 F/CC		N	ROUTINE MAINTENANCE SOME WELDING AT CRUSHER AREA
Date	03/31/1982	Proc	LINE 2	Pel/Exp Limit	OSHA PEL = 2 F/CC			
Shift	1ST	Job	HANDLER	Product	12" 150 PIPE			
Shift	8 HOUR							
Equp	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	
1.	642	07:53	14:22	389	0.0000	0.1130/	0.0	0.1100
Seq T Name	FEASTER, WAYNE L.	Dept	PRODUCTION	Contaminant	Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0034 P Soc Sec	572-13-7404	Locn	LATHE LINE	TWA	0.059000 F/CC		N	ROUTINE DUTIES AS PI PE HANDLER ON PCKG
Date	03/30/1982	Proc		Pel/Exp Limit	OSHA PEL = 2 F/CC			
Shift	1ST	Job	HANDLER	Product				
Shift	8 HOUR							
Equp	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	
1.	641	08:18	16:20	482	0.0000	0.0590/	0.0	0.0590
Seq T Name		Dept		Contaminant	Asbestos / CEF 37mm .8u	ST Exp Limit	Respirator	Comments
0035 P Soc Sec		Locn		TWA	0.059000 F/CC		N	S DISPOSABLE SINGLE USE GENERAL CLEANUP/MFG DEPT
Date		Proc		Pel/Exp Limit	OSHA PEL = 2 F/CC			
Shift		Job		Product				
Shift								

CTD022879

Seq T Name CHAVEZ, ANTHONY J.
0035 P Soc Sec 556-13-5705
Date 03/30/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn TRAY LOADING
Proc
Job OPERATOR

Contaminant Asbestos / CEF 37mm .8u
TUA 0.120000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit
Conc-F/CC 0.1200
Analysis-F/CC 0.1210/ 0.0

LPM 0.0000
Start Stop Min 08:09 14:52 403
Samp 640

Equipment 1.
Comments TRUCK OPERATOR & TRAY LOADING

Seq T Name WINDSOR, FREDERICK E.
0036 P Soc Sec 568-52-1743
Date 03/29/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn PIPE MACHINE
Proc
Job TENDER

Contaminant Asbestos / CEF 37mm .8u
TUA 0.073000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit
Conc-F/CC 0.0730
Analysis-F/CC 0.0730/ 0.0

LPM 0.0000
Start Stop Min 08:10 14:36 386
Samp 639

Equipment 1.
Comments GENERAL DUTIES OF MACHINE TENDER

Seq T Name HAGERMAN, DAVID T.
0037 P Soc Sec 566-17-7817
Date 03/29/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn GENERAL
Proc
Job LABORER

Contaminant Asbestos / CEF 37mm .8u
TUA 0.093000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit
Conc-F/CC 0.0930
Analysis-F/CC 0.0930/ 0.0

LPM 0.0000
Start Stop Min 08:29 14:43 374
Samp 638

Equipment 1.
Comments WORKED OUTSIDE CLEANING LUMBER

Seq T Name ATENCIO, SR, STEVEN A.
0038 P Soc Sec 553-88-1692
Date 03/29/1982
Shift 1ST 8 HOUR

Dept PRODUCTION
Locn GENERAL
Proc
Job LOADER

Contaminant Asbestos / CEF 37mm .8u
TUA 0.063000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit
Conc-F/CC 0.0630
Analysis-F/CC 0.0630/ 0.0

LPM 0.0000
Start Stop Min 08:24 15:12 408
Samp 637

Equipment 1.
Comments DRIVING LIFT TRUCK; BANDING PIPE UNITS TO TRUCK

Seq T Name STEEN, THEODORE C.
0039 P Soc Sec 107-32-3415
Date 03/26/1982
Shift 1ST 8 HOUR

Dept MAINTENANCE
Locn GENERAL
Proc
Job MECHANIC

Contaminant Asbestos / CEF 37mm .8u
TUA 0.064000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

ST Exp Limit
Conc-F/CC 0.0640/ 0.0

LPM 0.0000
Start Stop Min 08:03 14:35 392
Samp 636

Equipment 1.
Comments ROUTINE MAINTENANCE ACTIVITIES

Seq T Name MCFANN, JOSEPH R.
0040 P Soc Sec 567-46-5755
Date 03/26/1982
Shift 1ST 8 HOUR

Dept MAINTENANCE
Locn GENERAL
Proc
Job MACHINIST
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TUA 0.013000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Seq	T Name	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	JENNY, ROBERT F.	635	08:07	14:35	388	0.0000	0.0130/	0.0	0.0130	N		LATHE WORK IN MAINT. SHOP & MISC TRIPS TO STOREROOM.

Seq T Name JENNY, ROBERT F.
0041 P Soc Sec 567-94-1191
Date 03/26/1982
Shift 1ST 8 HOUR

Dept MAINTENANCE
Locn GENERAL
Proc
Job MECHANIC
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TUA 0.043000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Seq	T Name	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	WHITTAKER, WOODROW	634	08:03	14:22	379	0.0000	0.0430/	0.0	0.0430	N		ROUTINE MAINTENANCE WITH SOME WELDING

Seq T Name WHITTAKER, WOODROW
0042 P Soc Sec 294-40-4086
Date 03/25/1982
Shift 1ST 8 HOUR

Dept MAINTENANCE
Locn GENERAL
Proc
Job MECHANIC
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TUA 0.086000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Seq	T Name	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	DARNELL, WILLIAM C.	633	08:03	14:30	367	0.0000	0.0860/	0.0	0.0860	N		GENERAL MAINT WORK; 1/3 TIME SPENT IN MAINT SHOP

Seq T Name DARNELL, WILLIAM C.
0043 P Soc Sec 568-54-6818
Date 03/25/1982
Shift 1ST 8 HOUR

Dept MAINTENANCE
Locn GENERAL
Proc
Job MECHANIC
Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TUA 0.033000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Seq	T Name	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.		632	08:00	14:26	366	0.0000	0.0330/	0.0	0.0330	N		GENERAL MAINTENANCE WORK

Seq T Name SWANK, KENNETH M.
0044 P Soc Sec 540-22-6531
Date 03/25/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.044000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	631	07:48	14:04	376	0.0000	0.0440/	0.0	0.0440		N	GENERAL MAINTENANCE DUTIES

Seq T Name CARON, ALFRED J.
0045 P Soc Sec 002-22-0623
Date 03/24/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.000000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	630	08:00	14:19	379	0.0000	0.0000/	0.0	0.0000		N	WORKED ON STRUCTURE AT PR CRUSHER-SOME WELDING

Seq T Name HEUTON, DONALD R.
0046 P Soc Sec 482-30-7194
Date 03/24/1982
Shift 2ND 8 HOUR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.083000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	629	07:50	14:20	390	0.0000	0.0830/	0.0	0.0830		N	16 WALK TRIPS TO AUT OCLAVE

Seq T Name BASTIAANS, HENRY J.
0047 P Soc Sec 557-56-8797
Date 03/24/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.033000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	628	07:44	14:19	395	0.0000	0.0330/	0.0	0.0330		N	ROUTINE MAINTENANCE; SOME WELDING

Seq T Name MEGARGEE, LARRY
0048 P Soc Sec 546-14-7297
Date 01/13/1982
Shift 1ST 8 HOUR

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A
TWA 0.035000 F/CC
Pel/Exp Limit OSHA PEL = 2 F/CC
Product

Equip	Samp	Start	Stop	Min	LPM	Analysis-F/CC	Conc-F/CC	ST	Exp Limit	Respirator	Comments
1.	627	08:45	14:55	370	0.0000	0.0350/	0.0	0.0350		N	MONITOR PIPE MACHINE OPERATION. WALK-AROUND INSPECTION OF PLANT & STG YARDS

CTD022882

Seq T Name MARRON, DOUGLAS J.

Contaminant Asbestos / CEF 37mm .8u /P&CAM 239 R=A

Dept PRODUCTION

0049 P Soc Sec 550-78-8997

TWA 0.087000 F/CC

Locn PIPE MACHINE

Date 01/13/1982

Pel/Exp Limit OSHA PEL = 2 F/CC

Proc

Shift 1ST

Product 12" 150

Job TENDER

8 HOUR

Comments

Respirator

ST Exp Limit

Conc-F/CC

Analysis-F/CC

LPM

Start Stop Min

Samp

Equip

OPERATED PIPE MACHIN E PRESS SECTION

N

0.0870

0.0

0.0870/

0.0000

08:45 14:50 365

626

1.

*** End Of Report *** DREXLESL

CTD022883

PLANT RIVERSIDE 260		PLANT 460	DATE OF TEST 7/16/82
EMPLOYEE NAME K HESCHKINIAN	PAYROLL NUMBER 108	JOB TITLE RELIEF OPERATOR	
PUMP MANUFACTURER 1154	SERIAL NUMBER 03155	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
478	840	244	GEN. ROUTINE - RELIEVES OTHER PERSONNEL DURING BREAK PERIODS	
			2-10 MIN. BREAKS	
			1-20 MIN LUNCH BREAK	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) 14.50, 10.50	CODE
--	------

EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
--	---------

WEATHER CONDITIONS (AVERAGE) OUTSIDE TEMPERATURE °F 67	WIND DIRECTION ☒	WIND VELOCITY ☒	SUNNY ☐ CLOUDY ☒ HUMID ☐ RAIN ☐
			PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐

BLANK FIBER COUNT FIBERS IN _____ FIELDS = fff	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm²	CONSTANT K = 855 FIELD AREA x 1000 = 140
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED fff + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
473	43	100	.43		724	fff x K = .083	362	30.09
TOTALS							362	30.09

TIME WEIGHTED AVERAGE	
TOTAL f/cc x MIN	TOTAL MIN.
1083	fff

SIGNATURE OF SAMPLER <i>J. Meza</i>	SIGNATURE OF ANALYST <i>J. Meza</i>
--	--

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT <i>RIVERSIDE</i>										PLANT <i>260</i>		DATE OF TEST <i>7/16/82</i>	
EMPLOYEE NAME <i>J. MORGAN</i>					PAYROLL NUMBER <i>03153</i>					JOB TITLE <i>MIXERMAN</i>		CODE	
PUMP MANUFACTURER <i>USA</i>					SERIAL NUMBER <i>03153</i>					FLOW RATE (lpm) <i>2.0</i>			

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>0072</i>	<i>824</i>	<i>234</i>	<i>SET UP FIBER BATCHES; OPERATED</i>	
			<i>BAG OPENING</i>	
			<i>2-10 MIN. BREAKS</i>	
			<i>1-20 ✓ LUNCH BREAK</i>	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☒ YES ☐ NO ☐ SOMETIMES	<i>3M 8710</i>	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
<i>14" 50; 16" 50</i>	

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	<i>70</i>	☒ PARTLY CLOUDY	☒ FOG	☐ SHOWERS	☐ SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <i>fff</i>	<i>B-L</i>	<i>.0061 mm²</i>	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED fff + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
<i>0072</i>	<i>60</i>	<i>100</i>		<i>-</i>	<i>740</i>	$\frac{fff}{\text{LITERS}} \times K = \frac{1113}{1} \times 140 = 155820$	<i>370</i>	<i>41.9</i>
TOTALS							<i>370</i>	<i>41.9</i>

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN = TWA
TOTAL MIN.
<i>1113 f/cc</i>

SIGNATURE OF SAMPLER <i>J. Morgan</i>	SIGNATURE OF ANALYST <i>J. Morgan</i>
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ASBESTOS MONITORING DATA SHEET

NO. 82-122

PLANT RIVERSIDE										PLANT		DATE OF TEST 260 6/25/82	
EMPLOYEE NAME A HASTINGS					PAYROLL NUMBER 129			JOB TITLE STRIPPER			CODE		
PUMP MANUFACTURER 1154					SERIAL NUMBER 03155			FLOW RATE (lpm) 2.0					

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0671	810	245	OPERATED THE STRIPPING STATION -	
			2-10 MIN. BREAKS	
			1-20 ✓ LUNCH ✓	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
12"-150 PIPE	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	72	WIND DIRECTION	NE	WIND VELOCITY	07
		PARTLY CLOUDY	☐ FOG	☐ SHOWERS	☐ SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = <u>sf</u>	B-L	0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 146$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED sf + VOLUME x K = sfcc	TOTAL SAMPLE TIME (MIN)	sfcc x MIN.
0671	25.5	100	.255		790	$\frac{\text{sf} \times K}{\text{LITERS}} = \frac{.255 \times 146}{.045} = 395$	395	17.85
TOTALS								395 17.85

TIME WEIGHTED AVERAGE
TOTAL sfcc x MIN
TOTAL MIN.
TWA
1045 sfcc

SIGNATURE OF SAMPLER <i>L. Megaw</i>	SIGNATURE OF ANALYST <i>L. Megaw</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT										PLANT		DATE OF TEST				
RIVERSIDE										260		5/7/82				
EMPLOYEE NAME					PAYROLL NUMBER					JOB TITLE					CODE	
J. GREGOR					280					MAINT. MECHANIC						
PUMP MANUFACTURER					SERIAL NUMBER					FLOW RATE (lpm)						
MSA					3153					2.0						

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
670	807	240	ON ROOF REPAIRING AIRVELON FINES LINE	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	70	WIND DIRECTION NE	WIND VELOCITY 3	PARTLY CLOUDY	FOG
				SHOWERS	SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>53</u>	B-L	.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
670	53	100	.53		786	$\frac{f/f \times K}{\text{LITERS}} = \frac{.53 \times 140}{.0061} = 121.31$	343	37.09
TOTALS							393	37.09

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN. = TWA
TOTAL MIN.
.094 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
J. Gregor	J. Gregor

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY



Pipe and Plastic Group

ASBESTOS MONITORING DATA SHEET

NO. 82-120

PLANT		PLANT		DATE OF TEST	
RIVERSIDE		260		5/6/82	
EMPLOYEE NAME		PAYROLL NUMBER		JOB TITLE	
E. IVINS		282		LATHE OPERATOR	
PUMP MANUFACTURER		SERIAL NUMBER		FLOW RATE (lpm)	
HSA		3155		2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0649	9:10	2:30	OPERATING PRODUCTION LATHE - LINE 2	
			ALSO MAKES TOOL CHANGES - KEEPS AREA	
			CLEAN + OPERATING 18000 ^{lb} LIFT TRUCK	
			OCCASIONALLY TO BRING PIPE INTO FINISHING	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
12" 150 PIPE ON LINE 2	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	☒ HUMID	RAIN
OUTSIDE TEMPERATURE °F	70	PARTLY CLOUDY	FOG	SHOWERS	SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = $\frac{f}{f}$	B-L	1.0061 mm ²	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 14.0$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED $\frac{f}{f} \times \text{VOLUME} \times K = \frac{f}{f} \times \text{VOLUME} \times K$	TOTAL SAMPLE TIME (MIN)	$\frac{f}{f} \times \text{MIN.}$
0669	79.5	100	.995		760	$\frac{f}{f} \times K = 1.183$	380	69.65
TOTALS							380	69.65

TIME WEIGHTED AVERAGE
$\frac{\text{TOTAL } \frac{f}{f} \times \text{MIN.}}{\text{TOTAL MIN.}} = \text{TWA}$
$\frac{1.183}{1} \times 100$

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
L. Megarjee	L. Megarjee

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022888

PLANT		PLANT		DATE OF TEST	
RIVERSIDE		260		5/16/82	
EMPLOYEE NAME		PAYROLL NUMBER		JOB TITLE	
H COOPER		286		ASST LATHE OPERATOR	
PUMP MANUFACTURER		SERIAL NUMBER		FLOW RATE (lpm)	
NSA		3153		2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0668	8:14	8:28	RUNNING LATHE ON 12" 150 pipe	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710	W/KN CLEANING UP AREA

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
12" 150 pipe	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	☒ HUMID	RAIN
OUTSIDE TEMPERATURE °F	70 F	WIND DIRECTION	NA	WIND VELOCITY	NA
		PARTLY CLOUDY	FOG	SHOWERS	SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>flf</u>	BL	_____ mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED flf + VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
0668	79.0	100	.79		748	$\frac{\text{flf} \times K}{\text{LITERS}} = \frac{.79 \times 140}{.148} = 374$	374	55.297
TOTALS							374	55.297

TIME WEIGHTED AVERAGE
TOTAL flcc x MIN. = TWA
TOTAL MIN.
.148 flcc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
J. Mezger	J. Mezger

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT										RIVERSIDE										PLANT		DATE OF TEST	
EMPLOYEE NAME										PAYROLL NUMBER										JOB TITLE		CODE	
D FERRY										111										OILER			
PUMP MANUFACTURER										SERIAL NUMBER										FLOW RATE (lpm)			
HISA										3153										2.0			

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0667	821	309	OIL + LUBE MACHINERY THRU-OUT PLANT.	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	69	PARTLY CLOUDY	☐ FOG	☐ SHOWERS	☐ SNOW
WIND DIRECTION	NE	WIND VELOCITY	30		

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>fff</u>	B-L	<u>.0061</u> mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED fff + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	fff x MIN.
0667	66	100	.66		816	$\frac{fff \times K}{\text{LITERS}} = \frac{.66 \times 140}{.0061} = 1113$	408	46.19
TOTALS							408	46.19

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN. - TWA
TOTAL MIN.
$\frac{1113}{408} \text{ f/cc}$

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>L. Megarow</i>	<i>L. Megarow</i>

ASBESTOS MONITORING DATA SHEET

NO. 82-117

PLANT RIVERSIDE										PLANT 260		DATE OF TEST 4/21/82	
EMPLOYEE NAME A GEORGE					PAYROLL NUMBER 306			JOB TITLE MAINT. MECHANIC			CODE		
PUMP MANUFACTURER MSA					SERIAL NUMBER 3155			FLOW RATE (lpm) 2.0					

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0066	815	249	GENERAL MAINTENANCE + SOME WELDING	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	69	WIND DIRECTION	NE	WIND VELOCITY	30
		PARTLY CLOUDY	☐ FOG	☐ SHOWERS	☐ SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = fff	B-L	.0061 mm²	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED =	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED fff + VOLUME x K = floc	TOTAL SAMPLE TIME (MIN)	floc x MIN.
0066	24.0	100	.24		758	$\frac{fff}{LITERS} \times K = .043$	394	16.79
TOTALS							394	16.79

TIME WEIGHTED AVERAGE
TOTAL floc x MIN. = TWA
TOTAL MIN.
.043 floc

SIGNATURE OF SAMPLER <i>L. Megar</i>	SIGNATURE OF ANALYST <i>L. Megar</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

ASBESTOS MONITORING DATA SHEET

NO. 82-116

PLANT										PLANT		DATE OF TEST	
RIVERSIDE										260		4/20/82	
EMPLOYEE NAME					PAYROLL NUMBER			JOB TITLE			CODE		
A L SUAREZ					346			PIPE HANDLER					
PUMP MANUFACTURER					SERIAL NUMBER			FLOW RATE (lpm)					
HISA					3155			2.0					

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0665	8:22	246	UNITIZED DUMP: MAKE DUNNAGE FOR UNITS -	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
8.50 PIPE	

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY ☒	CLOUDY ☐	HUMID ☐	RAIN ☐
OUTSIDE TEMPERATURE °F	72	WIND DIRECTION	NE	WIND VELOCITY	20
		PARTLY CLOUDY ☐	FOG ☐	SHOWERS ☐	SNOW ☐

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>flf</u>	B-L	1.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED flf + VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
0665	70.5	100	.705		76.8	$\frac{\text{flf} \times K}{\text{LITERS}} = \frac{70.5 \times 140}{76.8} = 128$	384	4934
TOTALS							384	4934

TIME WEIGHTED AVERAGE
TOTAL flcc x MIN. = TWA
TOTAL MIN.
13 flcc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
L. Meigsen	L. Meigsen

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022892

ASBESTOS MONITORING DATA SHEET

NO. 82-115

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 4/20/87
EMPLOYEE NAME R BOLTER	PAYROLL NUMBER 362	JOB TITLE BOILER OPERATOR	CODE
PUMP MANUFACTURER MSA	SERIAL NUMBER 3744	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0664	8:18	2:00	ROUTINE BOILER OPERATION	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
--	---------

WEATHER CONDITIONS (AVERAGE) OUTSIDE TEMPERATURE °F 71 WIND DIRECTION NE WIND VELOCITY 20	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
---	--

BLANK FIBER COUNT FIBERS IN _____ FIELDS = 115	MICROSCOPE MAKE & MODEL B-L	FIELD AREA 10061 mm²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = \frac{855}{10061000} = 140$
--	---------------------------------------	--------------------------------	--

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/s + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0664	565	100	1565		6.44	$\frac{f/s \times K}{\text{LITERS}} = \frac{115 \times 140}{6.44} = 2500$	342	39.54
TOTALS							342	39.54

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN. = TWA TOTAL MIN. 1.12 f/cc
--

SIGNATURE OF SAMPLER <i>T. Maguire</i>	SIGNATURE OF ANALYST <i>T. Maguire</i>
---	---

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 4/20/92
EMPLOYEE NAME D. KING	PAYROLL NUMBER 363	JOB TITLE MAINT. MECHANIC	CODE
PUMP MANUFACTURER ASA	SERIAL NUMBER 02899	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0663	839	230	SHIFT MECHANIC - WORKED AROUND CRUSHER APPROX. 1 HR.	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☐ NO ☒ SOMETIMES	RESPIRATOR TYPE & MODEL 3M 8710	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
--	---------

WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 72 (AVERAGE)	WIND DIRECTION NE	WIND VELOCITY 20	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐
			PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐

BLANK FIBER COUNT FIBERS IN _____ FIELDS = fff	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
--	---------------------------------------	---	---

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED fff + VOLUME x K = fcc	TOTAL SAMPLE TIME (MIN)	fcc x MIN.
0663	73.5	100	.735		702	$\frac{fff \times K}{\text{LITERS}} = \frac{.735 \times 140}{.0061} = 1686$	351	51.45
TOTALS							351	51.45

TIME WEIGHTED AVERAGE TOTAL fcc x MIN. = TWA TOTAL MIN.
1686 fcc

SIGNATURE OF SAMPLER <i>J. Megargue</i>	SIGNATURE OF ANALYST <i>J. Megargue</i>
--	--

PLANT										PLANT		DATE OF TEST	
RIVERSIDE										260		4/20/82	
EMPLOYEE NAME					PAYROLL NUMBER					JOB TITLE		CODE	
B BRYANT					358					GENERAL HELPER			
PUMP MANUFACTURER					SERIAL NUMBER					FLOW RATE (lpm)			
MSA					3153					2.0			

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0662	824	232	GEN'L CLEAN UP ; OPERATED SWEEPER APPROX. 1.5 HRS.	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	72	WIND DIRECTION	NE	WIND VELOCITY	20
		PARTLY CLOUDY	☐	FOG	☐
		SHOWERS	☐	SNOW	☐

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>flf</u>	B-L	.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED = FIELD	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED flf + VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
0662	75	100	.75		732	$\frac{\text{flf} \times K}{\text{LITERS}} = \frac{75 \times 140}{732} = 14.3$	366	52.49
TOTALS							366	52.49

TIME WEIGHTED AVERAGE
TOTAL flcc x MIN. = TWA
TOTAL MIN.
.143 flcc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>T. Magnuson</i>	<i>T. Magnuson</i>

PLANT RIVERSIDE										PLANT 260		DATE OF TEST 4/19/82	
EMPLOYEE NAME J PETERSON					PAYROLL NUMBER 143			JOB TITLE PRESS OPERATOR			CODE		
PUMP MANUFACTURER USA					SERIAL NUMBER 3744			FLOW RATE (lpm) 2.00					

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0441	8:17	235	OPERATED PRESS PIPE MACHINE	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☐ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
--	-------------------------	---------

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) 8' / 50	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
--	---------

WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 68 WIND DIRECTION SE WIND VELOCITY 10 ☒ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐

BLANK FIBER COUNT FIBERS IN _____ FIELDS = fff	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
--	---------------------------------------	---	---

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED fff - VOLUME x K = floc	TOTAL SAMPLE TIME (MIN)	floc x MIN.
0661	46.5	100	.485		756	$\frac{fff}{LITERS} \times K = .09$	378	34.02
TOTALS							378	34.02

TIME WEIGHTED AVERAGE	
TOTAL floc x MIN.	TWA
.09	floc

SIGNATURE OF SAMPLER <i>L. Megaw</i>	SIGNATURE OF ANALYST <i>MZ Fold</i>
---	--

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY-PLANT COPY

PLANT		PLANT		DATE OF TEST	
RIVERSIDE		260		4/17/82	
EMPLOYEE NAME		PAYROLL NUMBER		JOB TITLE	
E. TAYLOR		162		CRUSHER OPER.	
PUMP MANUFACTURER		SERIAL NUMBER		FLOW RATE (lpm)	
NISA		3155		2.0	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0660	8:19	11:54	OPERATOR OF PUMP CRUSHER + DRIVING	
	11:54	2:41	LIFT TRUCK TO SUPPLY CRUSHER W. SCRAP PIPE	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	70	PARTLY CLOUDY	☐ FOG	☐ SHOWERS	☐ SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = f/f	B-L	.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0660	92	100	.92		430	$\frac{.92}{\text{LITERS}} \times K = .299$	215	64.39
	88	100	.88		430	$\frac{.88}{\text{LITERS}} \times K = .286$	215	61.49
TOTALS							430	125.88

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN. = TWA
TOTAL MIN.
292 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
L. McGuire	L. McGuire

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022897

PLANT										PLANT		DATE OF TEST	
RIVERSIDE										260		4/19/82	
EMPLOYEE NAME					PAYROLL NUMBER			JOB TITLE			CODE		
T G SILVA					115			SCRAP CRUSHER - TRUCK OPERATOR					
PUMP MANUFACTURER					SERIAL NUMBER			FLOW RATE (lpm)					
MSA					3153			2.0					

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0659	825	240	OPERATED LIFT TRUCK - TRANSPORT	
			SCRAP TO CRUSHER	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	68	☒	☐	☐	☐
WIND DIRECTION	WIND VELOCITY	PARTLY CLOUDY	FOG	SHOWERS	SNOW
		☐	☐	☐	☐

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = $\frac{f}{f}$	B-L	10061 mm ²	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $\frac{f}{f} \times \text{VOLUME} \times K = \frac{f}{f} \times \text{VOLUME} \times K$	TOTAL SAMPLE TIME (MIN)	$\frac{f}{f} \times \text{MIN.}$
0659	79.5	100	.795		750	$\frac{f}{f} \times K =$ LITERS .148	375	55.65
TOTALS							375	55.65

TIME WEIGHTED AVERAGE
TOTAL $\frac{f}{f} \times \text{MIN.}$ = TWA
TOTAL MIN.
.148 $\frac{f}{f}$

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>J. Meagher</i>	<i>J. Meagher</i>

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 4/16/82
EMPLOYEE NAME H. COLE	PAYROLL NUMBER 140	JOB TITLE TRAYLOADER - TRUCK OPERATOR	
PUMP MANUFACTURER MSA	SERIAL NUMBER 3744	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0658	826	237	GEN'L TRAYLOADING DUTIES + LOADING TRAYS ONTO BOGIES + PUSHING BOGIES INTO AUTOCLAVES	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) 12150	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 97 WIND DIRECTION SE WIND VELOCITY 1 ☒ SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
--

BLANK FIBER COUNT FIBERS IN _____ FIELDS = 115	MICROSCOPE MAKE & MODEL B-L	FIELD AREA 1.0061 mm²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0658	70.0	100	.70		742	$\frac{f/f \times K}{\text{LITERS}} = \frac{115 \times 140}{1.0061} = 1132$	371	48.99
TOTALS							371	48.99

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN. - TWA TOTAL MIN. 1132 f/cc
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SIGNATURE OF SAMPLER <i>L. Megawee</i>	SIGNATURE OF ANALYST <i>L. Megawee</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT <i>RIVERSIDE</i>										PLANT 260		DATE OF TEST 4/16/82			
EMPLOYEE NAME LEDFORD										PAYROLL NUMBER 235		JOB TITLE TRAYLOADER		CODE	
PUMP MANUFACTURER USA										SERIAL NUMBER 3153		FLOW RATE (lpm) 2.0			

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
057	824	236	GEN'L TRAYLOADING DUTIES	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) <i>12" 150 PIPE</i>	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS (AVERAGE) OUTSIDE TEMPERATURE °F <i>67</i>	WIND DIRECTION <i>SE</i>	WIND VELOCITY <i>11</i>	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = <i>115</i>	MICROSCOPE MAKE & MODEL <i>B-L</i>	FIELD AREA <i>1.006</i> mm ²	CONSTANT K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED = FIELD	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0657	63.5	100	.635		744	$\frac{f/f \times K}{\text{LITERS}} = \frac{115 \times 140}{1.006} = 1119$	372	44.44
TOTALS							371	44.44

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN. = TWA TOTAL MIN. <i>1119 f/cc</i>
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SIGNATURE OF SAMPLER <i>L. Maguire</i>	SIGNATURE OF ANALYST <i>L. Maguire</i>
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ASBESTOS MONITORING DATA SHEET

NO. 82-107

PLANT		PLANT		DATE OF TEST	
RIVERSIDE		260		4/15/82	
EMPLOYEE NAME		PAYROLL NUMBER		JOB TITLE	
J BEADY		333		MANDREL MAN	
PUMP MANUFACTURER		SERIAL NUMBER		FLOW RATE (lpm)	
MSA		3155		2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0656	8:22	2:52	HANDLES MANDRELS/PIPE AT MANDREL STATION	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
12" ISO	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	FOG	SHOWERS	SNOW
WIND DIRECTION		WIND VELOCITY			

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = f/f	B-L	.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0656	54.5	100	.545		780	$\frac{f/f}{LITERS} \times K = .098$	390	38.149
TOTALS							390	38.149

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN. = TWA
TOTAL MIN.
.098 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>P. Mezger</i>	<i>P. Mezger</i>

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT		RIVERSIDE		PLANT	DATE OF TEST
				260	4/15/82
EMPLOYEE NAME		PAYROLL NUMBER	JOB TITLE	CODE	
A HORTON		156	MACHINE TENDER		
PUMP MANUFACTURER		SERIAL NUMBER	FLOW RATE (lpm)		
MSA		3153	2.0		

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0655	8:17	2:47	GEN'L DUTIES TENDING PIPE MACHINE	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
12150	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	☒	FOG	SHOWERS
WIND DIRECTION		WIND VELOCITY		SNOW	

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = _____ f/f	B - L	1.0061 mm ²	K = $\frac{856}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0655	48	100	.48		780	$\frac{\text{f/f} \times \text{K}}{\text{LITERS}} = \frac{.48 \times 140}{1} = 0.86$	390	3360
TOTALS							390	3360

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN. - TWA
TOTAL MIN.
1086 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
J. Magarac	J. Magarac

PLANT		RIVERSIDE		PLANT	DATE OF TEST
EMPLOYEE NAME		PAYROLL NUMBER	JOB TITLE	CODE	
E RENFRO		144	RELIEF OPERATOR		
PUMP MANUFACTURER		SERIAL NUMBER	FLOW RATE (lpm)		
NSA		3744	2.0		

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0654	8:15	248	GENERAL DUTIES - RELIEVING OTHER EMPLOYEES DURING BREAKS	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710 ✓	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
12" ISO	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	FOG	SHOWERS	SNOW
WIND DIRECTION	WIND VELOCITY				

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = f/f	B-L	0.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0654	61.5	100	.615		786	$\frac{f/f \times K}{\text{LITERS}} = \frac{.615 \times 140}{1.009} = 85.5$	393	43.05
TOTALS							393	43.05

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN. = TWA
TOTAL MIN.
.109 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>L. Megarson</i>	<i>L. Megarson</i>

PLANT		RIVERSIDE		PLANT	DATE OF TEST
				260	4/14/82
EMPLOYEE NAME		PAYROLL NUMBER		JOB TITLE	
A STEWARD		288		HYDROTESTER	
PUMP MANUFACTURER		SERIAL NUMBER		FLOW RATE (lpm)	
MSA		3744		2.0	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
1653	8:17	241	OPERATED SAMPLING	
			2 - 10 MINUTE REST BREAKS	
			1 - 30 MINUTE LUNCH PERIOD	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
TEST: 24 ISO PIPE	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	AVERAGE	WIND DIRECTION	WIND VELOCITY	SUNNY	CLOUDY	☒ HUMID	RAIN
OUTSIDE TEMPERATURE °F	65			PARTLY CLOUDY	FOG	SHOWERS	SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = f/f	B-L	0.0061 mm ²	K = 855 = 140 FIELD AREA x 1000

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
1653	51.5	100	.515		768	f/f x K = LITERS 0.094	384	36.04
TOTALS							384	36.04

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN = TWA
0.094 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
T. Maguire	T. Maguire

PLANT										PLANT		DATE OF TEST	
RIVERSIDE										260		4/14/82	
EMPLOYEE NAME					PAYROLL NUMBER			JOB TITLE			CODE		
W ASKEW					322			PIPE HANDLER					
PUMP MANUFACTURER					SERIAL NUMBER			FLOW RATE (lpm)					
MSA					3153			2.0					

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0652	821	243	UNITIZING	
			UNITING 24" 150 PIPE	
			2-10 MINUTE REST BREAKS	
			1-30 MINUTE LUNCH PERIOD	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
24" 150 PIPE	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	☒ HUMID	RAIN
OUTSIDE TEMPERATURE °F	65	PARTLY CLOUDY	FOG	SHOWERS	SNOW
WIND DIRECTION	WIND VELOCITY				

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = f/f	B-L	.0061 mm ²	K = 855 = 140 FIELD AREA x 1000

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0652	595	100	.595		764	f/f x K = LITERS .109	382	41.64
TOTALS							382	41.64

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN
TOTAL MIN
.109 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>R. Meza</i>	<i>R. Meza</i>

Pipe and Plastic Group

NO. 82-102

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022906

PLANT <i>RIVERSIDE</i>										PLANT <i>260</i>		DATE OF TEST <i>4/14/82</i>	
EMPLOYEE NAME <i>P MARTINEZ</i>					PAYROLL NUMBER <i>344</i>		JOB TITLE <i>TRAY LOADER</i>			CODE			
PUMP MANUFACTURER <i>MSA</i>					SERIAL NUMBER <i>02899</i>		FLOW RATE (lpm) <i>2.0</i>						

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>0650</i>	<i>8:14</i>	<i>2:47</i>	<i>MARK & LOAD PIPE FROM #2 CURVE</i>	
			<i>TUNNEL INTO TRAYS</i>	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
<i>12" 150 PIPE</i>	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	☒ HUMID	RAIN
OUTSIDE TEMPERATURE °F <i>67</i>	WIND DIRECTION <i>SE</i>	WIND VELOCITY <i>13</i>	PARTLY CLOUDY	FOG	SHOWERS

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN <i>100</i> FIELDS = <i>11</i> f/f	<i>B-L</i>	<i>.0061 mm²</i>	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
<i>0650</i>	<i>25.5</i>	<i>100</i>	<i>.255</i>		<i>78.6</i>	$\frac{f/f \times K}{\text{LITERS}} = \frac{.255 \times 140}{.045} = 786$	<i>393</i>	<i>17.85</i>
TOTALS								<i>393</i> <i>17.85</i>

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN = TWA
<i>.045 f/cc</i>

SIGNATURE OF SAMPLER <i>L. Magallon</i>	SIGNATURE OF ANALYST <i>L. Magallon</i>
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PLANT <i>RIVERSIDE</i>		PLANT <i>260</i>	DATE OF TEST <i>4/17/82</i>
EMPLOYEE NAME <i>E THOMPSON</i>	PAYROLL NUMBER <i>307</i>	JOB TITLE <i>ASST LATHE OPERATOR</i>	CODE
PUMP MANUFACTURER <i>MSA</i>	SERIAL NUMBER <i>3153</i>	FLOW RATE (lpm) <i>2.0</i>	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>0647</i>	<i>7:50</i>	<i>3:06</i>	<i>OPERATED TRUCK / BRING IN TRAYLOADS OF PIPE</i>	
			<i>RETURN MT TRAYS TO YARD</i>	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) <i>6" 150 8" 150 / LINE #1</i>	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F <i>67</i> (AVERAGE)	WIND DIRECTION <i>SE</i>	WIND VELOCITY <i>10</i>	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = <i>115</i>	MICROSCOPE MAKE & MODEL <i>B-L</i>	FIELD AREA <i>1.0061</i> mm ²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
<i>0647</i>	<i>535</i>	<i>100</i>	<i>.535</i>		<i>872</i>	$\frac{f/f \times K}{\text{LITERS}} = \frac{115 \times 140}{1.0061} = 15858$	<i>436</i>	<i>37.45</i>
TOTALS							<i>436</i>	<i>37.45</i>

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN TOTAL MIN.	TWA
<i>15858</i>	<i>f/cc</i>

SIGNATURE OF SAMPLER <i>T. Meza</i>	SIGNATURE OF ANALYST <i>T. Meza</i>
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PLANT 092-30-9637		RIVERSIDE		PLANT 260	DATE OF TEST 4/7/11
EMPLOYEE NAME D VANDERWHEEL		PAYROLL NUMBER 130	JOB TITLE BOILER OPERATOR	CODE	
PUMP MANUFACTURER ISA		SERIAL NUMBER 3744	FLOW RATE (lpm) 2.0		

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
149	809	300	BOILER OPERATION - ROUTINE	
			DUTIES: OPERATION OF BOILERS; OPENING	
			+ CLOSING AUTOCLAVES	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	66	PARTLY CLOUDY	FOG	SHOWERS	SNOW
WIND DIRECTION		WIND VELOCITY			

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>515</u>	B-L	0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0649	425	100	.425	-	822	$\frac{f/f \times K}{\text{LITERS}} = .072$	411	27.74
TOTALS							411	2774

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN = TWA
TOTAL MIN.
.072 f/cc

SIGNATURE OF SAMPLER <i>J. Miegner</i>	SIGNATURE OF ANALYST <i>J. Miegner</i>
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PLANT 690-26 9537		RIVERSIDE		PLANT 260	DATE OF TEST 4/7/82	
EMPLOYEE NAME GALVIN		PAYROLL NUMBER 114	JOB TITLE TRUCK OPER		CODE	
PUMP MANUFACTURER NICA		SERIAL NUMBER 3155	FLOW RATE (lpm) 1.96			

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0648	800	257	LINE TRUCK OPERATION: TRUCKED	
			PIPE FROM FINISHING TO STORAGE	
			YARD; STACKED PIPE IN YARD	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F <u>67</u> WIND DIRECTION <u>SE</u> WIND VELOCITY <u>SE</u>	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = <u>515</u>	MICROSCOPE MAKE & MODEL <u>B-L</u>	FIELD AREA <u>.0061</u> mm ²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0648	75.5	100	755		817.32	$\frac{755}{817.32} \times 140 = 129$	417	53.93
TOTALS							417	53.93

TIME WEIGHTED AVERAGE $\frac{\text{TOTAL f/cc} \times \text{MIN}}{\text{TOTAL MIN.}} = \text{TWA}$ <u>129</u> f/cc
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SIGNATURE OF SAMPLER <i>L. Meguer</i>	SIGNATURE OF ANALYST <i>L. Meguer</i>
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PLANT <i>RIVERSIDE</i>		PLANT <i>260</i>	DATE OF TEST <i>4/2/82</i>
EMPLOYEE NAME <i>M. GARCIA</i>	PAYROLL NUMBER <i>126</i>	JOB TITLE <i>P.C. INSPECTOR</i>	CODE
PUMP MANUFACTURER <i>MSA</i>	SERIAL NUMBER <i>3153</i>	FLOW RATE (lpm) <i>2.0</i>	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
<i>0646</i>	<i>7:55</i>	<i>2:34</i>	<i>ROUTINE "ROUND-THE-WALL" INSPECTIONS</i>	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) <i>BORING MILLS; WET TESTER; FITTINGS OPER.; CPLG. CUT-OFF; FM LATHE</i>	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F <i>65</i> WIND DIRECTION <i>SE</i> WIND VELOCITY <i>10</i>	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = <i>515</i>	MICROSCOPE MAKE & MODEL <i>B-L</i>	FIELD AREA <i>0061 mm²</i>	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $\text{ffl} \times \text{VOLUME} \times K = \text{flcc}$	TOTAL SAMPLE TIME (MIN)	$\text{flcc} \times \text{MIN.}$
<i>0646</i>	<i>62.0</i>	<i>100</i>	<i>.62</i>	<i>-</i>	<i>798</i>	$\frac{\text{ffl} \times K}{\text{LITERS}} = \frac{.62 \times 140}{1} = 86.8$	<i>399</i>	<i>43.39</i>
TOTALS							<i>399</i>	<i>43.39</i>

TIME WEIGHTED AVERAGE TOTAL $\text{flcc} \times \text{MIN.}$ - TWA TOTAL MIN. <i>1108 flcc</i>

SIGNATURE OF SAMPLER <i>T. Mezger</i>	SIGNATURE OF ANALYST <i>T. Mezger</i>
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PLANT		PLANT	DATE OF TEST
RIVERSIDE		260	4/2/82
EMPLOYEE NAME	PAYROLL NUMBER	JOB TITLE	CODE
REAVES	348	STRIPPER	
PUMP MANUFACTURER	SERIAL NUMBER	FLOW RATE (lpm)	
MSA	3155	1.92	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0645	746	229	OPERATES STRIPPER MECHANISM.	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
MISC.	

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	STEAM FROM OVENS AT STRIP STN.

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	65	PARTLY CLOUDY	☐ FOG	☐ SHOWERS	☐ SNOW
WIND DIRECTION		WIND VELOCITY			

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>slf</u>	B-L	.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED slf + VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
0645	87.5	100	.875		806	$\frac{slf}{LITERS} \times K = 1152$	403	59.24
TOTALS							403	59.24

TIME WEIGHTED AVERAGE
TOTAL flcc x MIN. = TWA
TOTAL MIN.
1152 flcc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
L. Megarson	L. Megarson

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT <i>RIVERLIDE</i>		PLANT <i>260</i>	DATE OF TEST <i>3/31/82</i>
EMPLOYEE NAME <i>C. CRUZ</i>	PAYROLL NUMBER <i>349</i>	JOB TITLE <i>GEN'L HELPER</i>	CODE
PUMP MANUFACTURER <i>MSA</i>	SERIAL NUMBER <i>3153</i>	FLOW RATE (lpm) <i>2.0</i>	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>0644</i>	<i>9:27</i>	<i>3:16</i>	<i>GENERAL CLEAN-UP ASSIGNMENTS IN MANUFACTURING DEPT</i>	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F <i>67</i> (AVERAGE)	WIND DIRECTION <i>SE</i>	WIND VELOCITY <i>10</i>	SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = <i>sf</i>	MICROSCOPE MAKE & MODEL <i>B-L</i>	FIELD AREA <i>.0061</i> mm ²	CONSTANT K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $\text{sf} \times \text{VOLUME} \times K = \text{floc}$	TOTAL SAMPLE TIME (MIN)	$\text{floc} \times \text{MIN.}$
<i>0644</i>	<i>45.5</i>	<i>100</i>	<i>.455</i>	<i>-</i>	<i>778</i>	$\frac{\text{sf} \times K}{\text{LITERS}} = \frac{.455 \times 140}{.0061} = 1081$	<i>389</i>	<i>31.85</i>
TOTALS							<i>389</i>	<i>31.85</i>

TIME WEIGHTED AVERAGE	
TOTAL $\text{floc} \times \text{MIN.}$	TOTAL MIN.
<i>1081</i>	<i>31.85</i>
TWA	

SIGNATURE OF SAMPLER <i>L. Megaw</i>	SIGNATURE OF ANALYST <i>L. Megaw</i>
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PLANT RIVERSIDE		PLANT 260	DATE OF TEST 3/31/82
EMPLOYEE NAME R. BARAY	PAYROLL NUMBER 364	JOB TITLE MAINT MECH	CODE
PUMP MANUFACTURER MSA	SERIAL NUMBER 2899	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0643	811	323	ROUTINE MAINT. SOME WELDING AT CRUSHER AREA	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 67 WIND DIRECTION ☒ WIND VELOCITY ☒	SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = 515	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm²	CONSTANT K = 856 FIELD AREA x 1000
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS ÷ COUNTED = FIELD	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f ÷ VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0643	21.5	100	.215		864	$\frac{f/f \times K}{LITERS} = .035$	432	15.05
TOTALS							432	15.05

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN. = TWA TOTAL MIN.
035 f/cc

SIGNATURE OF SAMPLER <i>L. Mezger</i>	SIGNATURE OF ANALYST <i>L. Mezger</i>
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PLANT <i>RIO FISCIDE</i>		PLANT <i>260</i>	DATE OF TEST <i>3/31/82</i>
EMPLOYEE NAME <i>A VILLALBA</i>	PAYROLL NUMBER <i>351</i>	JOB TITLE <i>PIPE HANDLER</i>	CODE
PUMP MANUFACTURER <i>LISA</i>	SERIAL NUMBER <i>3155</i>	FLOW RATE (lpm) <i>2.0</i>	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>1642</i>	<i>753</i>	<i>222</i>	<i>ROUTINE DUTIES AS PIPE HANDLER</i>	
			<i>ON PACKING END - LINE 2</i>	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) <i>12" 50 PIPE</i>	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F <i>67</i> WIND DIRECTION <i>SE</i> WIND VELOCITY <i>SE</i>	SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = <i>sf</i>	MICROSCOPE MAKE & MODEL <i>B-L</i>	FIELD AREA <i>.0061 mm²</i>	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED $\text{sf} \times \text{VOLUME} \times K = \text{floc}$	TOTAL SAMPLE TIME (MIN)	$\text{floc} \times \text{MIN.}$
<i>0642</i>	<i>63</i>	<i>100</i>	<i>.63</i>	<i>-</i>	<i>778</i>	<i>1113</i>	<i>389</i>	<i>44.09</i>
TOTALS							<i>389</i>	<i>44.09</i>

TIME WEIGHTED AVERAGE TOTAL $\text{floc} \times \text{MIN.} = \text{TWA}$ TOTAL MIN. <i>.113 floc</i>
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SIGNATURE OF SAMPLER <i>T. Meza</i>	SIGNATURE OF ANALYST <i>T. Meza</i>
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PLANT		PLANT		DATE OF TEST	
RIVERSIDE		260	3/30/82		
EMPLOYEE NAME		PAYROLL NUMBER		JOB TITLE	
V FEASTER		361		GEN'L HELPER	
PUMP MANUFACTURER		SERIAL NUMBER		FLOW RATE (lpm)	
MSA		3155		2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0641	8:18	4:20	GEN'L CLEAN-UP / MFG. DEPT.	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☒ SOMETIMES	3M 8710	

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	☐ FOG	☐ SHOWERS	☐ SNOW
WIND DIRECTION		WIND VELOCITY			

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>fff</u>	B-L	.0061 mm ²	K = $\frac{856}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED fff + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0641	41	100	.41		962	$\frac{fff}{LITERS} \times K = 059$	482	28.69
TOTALS							482	28.69

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN = TWA
TOTAL MIN.
059 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>L. Meza</i>	<i>L. Meza</i>

ASBESTOS MONITORING DATA SHEET

NO. 82-91

PLANT <i>RIVERSIDE</i>		PLANT 260	DATE OF TEST 3/30/81
EMPLOYEE NAME CHANEZ	PAYROLL NUMBER 233	JOB TITLE TRUCK OPER / TRAY LOADER	
PUMP MANUFACTURER MSA	SERIAL NUMBER 3153	FLOW RATE (lpm) 1.96	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
640	8:09	2:52	TRUCK OPERATOR + TRAY LOADING	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☐ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	FOG	SHOWERS	SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <i>sf</i>	<i>B-L</i>	<i>0061</i> mm ²	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED <i>sf</i> + VOLUME x K = <i>sfcc</i>	TOTAL SAMPLE TIME (MIN)	<i>sfcc</i> x MIN.
640	68.5	100	.685		789.8	$\frac{sf}{LITERS} \times K = .121$	403	48.927
TOTALS							403	48.927

TIME WEIGHTED AVERAGE
TOTAL <i>sfcc</i> x MIN. = TWA
TOTAL MIN.
.121 <i>sfcc</i>

SIGNATURE OF SAMPLER <i>L. Megarick</i>	SIGNATURE OF ANALYST <i>L. Megarick</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT		PLANT	DATE OF TEST
RIVERSIDE		260	3/29/83
EMPLOYEE NAME	PAYROLL NUMBER	JOB TITLE	CODE
A WINDSOR	122	MACHINE TENDER	
PUMP MANUFACTURER	SERIAL NUMBER	FLOW RATE (lpm)	
NISA	3155	2.0	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0639	810	236	GENERAL DUTIES OF MACHINE TENDER	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	FOG	SHOWERS	SNOW

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = $\overline{fif}$	B-L	.0061 mm ²	K = $\frac{856}{\text{FIELD AREA} \times 1000}$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $\overline{fif} \times \text{VOLUME} \times K = \text{floc}$	TOTAL SAMPLE TIME (MIN)	floc x MIN.
0639	40.0	100	.40		772	$\overline{fif} \times K = \text{LITERS}$.073	386	27.99
TOTALS							386	27.99

TIME WEIGHTED AVERAGE
TOTAL floc x MIN. / TOTAL MIN. = TWA
.073 floc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
L. Maguire	L. Maguire

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022918

ASBESTOS MONITORING DATA SHEET

NO. 82-89

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 3/29/82
EMPLOYEE NAME D. H. GERMAN	PAYROLL NUMBER 354	JOB TITLE GEN'L HELPER	CODE
PUMP MANUFACTURER MSA	SERIAL NUMBER 3744	FLOW RATE (lpm) 1.96	

SAMPLE NUMBER	TIME START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0638	8:29	2:43	WORKED OUTSIDE CLEANING LUMBER (SEPARATOR + STACKING BOARDS)	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 67 WIND DIRECTION SE WIND VELOCITY 10	SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = 5/f	MICROSCOPE MAKE & MODEL B-L	FIELD AREA 1.0061 mm ²	CONSTANT K = $\frac{856}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0638	49.0	100	.49	-	733	$\frac{f/f \times K}{\text{LITERS}} = .093$	374	34.78
TOTALS							374	34.78

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN. = TWA TOTAL MIN. .093 f/cc
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SIGNATURE OF SAMPLER <i>L. Mezger</i>	SIGNATURE OF ANALYST <i>L. Mezger</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 3/29/82
EMPLOYEE NAME 5 ATENCIO	PAYROLL NUMBER 180	JOB TITLE LOADER	CODE
PUMP MANUFACTURER MSA	SERIAL NUMBER 2899	FLOW RATE (lpm) 1.92	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0637	8:24	3:12	DRIVING LIFT TRUCK; BANDING PIPE UNITS TO TRUCK	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 67 WIND DIRECTION SE WIND VELOCITY 10 SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐

BLANK FIBER COUNT FIBERS IN _____ FIELDS = <u>fff</u>	MICROSCOPE MAKE & MODEL B-L	FIELD AREA 0061 mm ²	CONSTANT K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED fff + VOLUME x K = floc	TOTAL SAMPLE TIME (MIN)	floc x MIN.
0637	35.0	100	.35	—	183	$\frac{fff}{LITERS} \times K = 063$	408	25.53
TOTALS							408	25.53

TIME WEIGHTED AVERAGE TOTAL floc x MIN. = TWA TOTAL MIN. 1063 floc
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SIGNATURE OF SAMPLER <i>L. Megawer</i>	SIGNATURE OF ANALYST <i>L. Megawer</i>
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PLANT <i>RIVERSIDE</i>		PLANT <i>260</i>	DATE OF TEST <i>3/26/92</i>
EMPLOYEE NAME <i>T STEEN</i>	PAYROLL NUMBER <i>121</i>	JOB TITLE <i>MAINT. MECHANIC</i>	CODE
PUMP MANUFACTURER <i>MSA</i>	SERIAL NUMBER <i>3153</i>	FLOW RATE (lpm) <i>1.92</i>	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
<i>1638</i>	<i>803</i>	<i>235</i>	<i>Routine maintenance activities</i>	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F <i>67</i> WIND DIRECTION <i>SE</i> WIND VELOCITY <i>10</i> SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐

BLANK FIBER COUNT FIBERS IN _____ FIELDS = <i>flf</i>	MICROSCOPE MAKE & MODEL <i>B-L</i>	FIELD AREA <i>.0061</i> mm ²	CONSTANT K = <i>855</i> = <i>140</i> FIELD AREA x 1000
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED flf + VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
<i>0638</i>	<i>34.5</i>	<i>100</i>	<i>1345</i>	<i>—</i>	<i>752.4</i>	<i>flf x K = .061 x 1345 = 81.9</i>	<i>392</i>	<i>25.15</i>
TOTALS								<i>392 25.15</i>

TIME WEIGHTED AVERAGE TOTAL flcc x MIN. = TWA TOTAL MIN. <i>.061 flcc</i>
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SIGNATURE OF SAMPLER <i>L. Meza</i>	SIGNATURE OF ANALYST <i>L. Meza</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT <i>RIVERSIDE</i>										PLANT 260		DATE OF TEST 3/26/92			
EMPLOYEE NAME J MCFANN										PAYROLL NUMBER 112		JOB TITLE MACHINIST		CODE	
PUMP MANUFACTURER MSA										SERIAL NUMBER 02899		FLOW RATE (lpm) 2.0			

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0635	807	235	LATHE WORK IN MAINT. SHOP + MISC.	
			TRIPS TO STORE ROOM	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	67	PARTLY CLOUDY	FOG	SHOWERS	SNOW
WIND DIRECTION		WIND VELOCITY			

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN FIELDS = <i>flf</i>	<i>B-L</i>	<i>.0061 mm²</i>	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $flf \times \text{VOLUME} \times K = flcc$	TOTAL SAMPLE TIME (MIN)	$flcc \times \text{MIN.}$
0635	7.0	100	707		776	$flf \times K =$ LITERS <i>.013</i>	388	5.04
TOTALS							388	5.04

TIME WEIGHTED AVERAGE	
TOTAL $flcc \times \text{MIN.}$	TWA
TOTAL MIN.	
<i>.013 flcc</i>	

SIGNATURE OF SAMPLER <i>T. Meagan</i>	SIGNATURE OF ANALYST <i>T. Meagan</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022922

ASBESTOS MONITORING DATA SHEET

NO. 82-85

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 3/26/82
EMPLOYEE NAME R. JENNY	PAYROLL NUMBER 342	JOB TITLE MAINT. MECHANIC	CODE
PUMP MANUFACTURER MSA	SERIAL NUMBER 3744	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0634	803	222	ROUTINE MAINTENANCE WITH SOME WELDING - (APPROX. 15 MIN.)	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS (AVERAGE) OUTSIDE TEMPERATURE °F 67 WIND DIRECTION SE WIND VELOCITY 10	SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = fff	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm²	CONSTANT $K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED fff + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0634	23.5	100	.235		758	$\frac{fff}{LITERS} \times K = 0.43$	379	16.45
TOTALS							379	16.45

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN. = TWA TOTAL MIN. 0.43 f/cc
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SIGNATURE OF SAMPLER <i>L. Mezger</i>	SIGNATURE OF ANALYST <i>L. Mezger</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT <i>RIVERSIDE</i>										PLANT		DATE OF TEST <i>260 3/25/82</i>	
EMPLOYEE NAME <i>W. W. H. TAKER</i>					PAYROLL NUMBER <i>309</i>		JOB TITLE <i>MAINT. MECHANIC</i>			CODE			
PUMP MANUFACTURER <i>MSA</i>					SERIAL NUMBER <i>3153</i>		FLOW RATE (lpm) <i>2.0</i>						

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>0633</i>	<i>803</i>	<i>230</i>	<i>GEN'L MAINT. WORK; 1/3 TIME SPENT IN MAINT. SHOP.</i>	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	☒ HUMID	RAIN
OUTSIDE TEMPERATURE °F <i>68</i>	WIND DIRECTION <i>SE</i>	WIND VELOCITY <i>10</i>	PARTLY CLOUDY	FOG	SHOWERS

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <i>fff</i>	<i>B-L</i>	<i>.0061 mm²</i>	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $fff \times \text{VOLUME} \times K = fcc$	TOTAL SAMPLE TIME (MIN)	$fcc \times \text{MIN.}$
<i>0633</i>	<i>47.5</i>	<i>100</i>	<i>.475</i>		<i>77.4</i>	$\frac{fff \times K}{\text{LITERS}} = .086$	<i>387</i>	<i>33.24</i>
TOTALS							<i>387</i>	<i>33.24</i>

TIME WEIGHTED AVERAGE
$\frac{\text{TOTAL } fcc \times \text{MIN.}}{\text{TOTAL MIN.}} = \text{TWA}$
<i>.086 fcc</i>

SIGNATURE OF SAMPLER <i>L. Megawer</i>	SIGNATURE OF ANALYST <i>L. Megawer</i>
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PLANT RIVERSIDE										PLANT 260		DATE OF TEST 3/25/82	
EMPLOYEE NAME W DARNELL					PAYROLL NUMBER 277			JOB TITLE MAINT MECHANIC			CODE		
PUMP MANUFACTURER MSA					SERIAL NUMBER 2899			FLOW RATE (lpm) 1.2					

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0632	800	226	GENERAL MAINTENANCE WORK	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS EXPLAINED PURPOSE OF THE SAMPLING; CAUTIONED NOT TO TURN OFF AT ANY TIME AND TO TAMPER WITH PUMP OR FILTER
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F (AVERAGE) 68	WIND DIRECTION SE	WIND VELOCITY SE	SUNNY ☐ CLOUDY ☒ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = sf	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm ²	CONSTANT K = 856 FIELD AREA x 1000 = 140
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED sf + VOLUME x K = sfcc	TOTAL SAMPLE TIME (MIN)	sfcc x MIN.
0632	17.5	100	.175		74.12	sf x K = 033 LITERS	386	12.76
TOTALS							386	12.76

TIME WEIGHTED AVERAGE TOTAL sfcc x MIN. = TWA TOTAL MIN.	
033	sfcc

SIGNATURE OF SAMPLER L. Megarzen	SIGNATURE OF ANALYST L. Megarzen
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PLANT RIVERSIDE		PLANT 260	DATE OF TEST 3/25/82
EMPLOYEE NAME SWANK	PAYROLL NUMBER 166	JOB TITLE MAINT. ELECTRICIAN	CODE
PUMP MANUFACTURER MSA	SERIAL NUMBER 03744	FLOW RATE (lpm) 2.0	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
631	7:48	2:04	GENERAL MAINT. DUTIES	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 68 WIND DIRECTION SE WIND VELOCITY 10 ☒ SUNNY ☐ CLOUDY ☒ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = 115	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .0061 mm²	CONSTANT K = 855 = 140 FIELD AREA x 1000
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0631	23.5	100	.235		752	$\frac{f/f \times K}{LITERS} = .044$	376	16.45
TOTALS							376	16.45

TIME WEIGHTED AVERAGE TOTAL f/cc x MIN TOTAL MIN .044 f/cc
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SIGNATURE OF SAMPLER <i>T. Megaw</i>	SIGNATURE OF ANALYST <i>T. Megaw</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TO BARRY PLANT COPY



NO. 82-81

SIGNATURE OF SAMPLER

SIGNATURE OF ANALYST

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY.

CTD022927

PLANT RIVERSIDE		PLANT 260	DATE OF TEST 3/24/82
EMPLOYEE NAME DON HEUTON	PAYROLL NUMBER 355	JOB TITLE BOILER OPERATOR	
PUMP MANUFACTURER MSA	SERIAL NUMBER 3153	FLOW RATE (lpm) 1.96	

SAMPLE NUMBER	START	TIME STOP	ACTIVITY DURING SAMPLING PERIOD	CODE
0629	750	220	16 WALK TRIPS TO AUTO CLAVES 2x TO OFFICE COOLING TOWER VIA FINISHING. ROUND TRIP THRU MFG. DEPT. WASHING FILTERS IN BOILER RM. TRIP TO MEZZ. FL. REMAINDER OF TIME IN BOILER ROOM. LUNCH + 2 BREAK PERIODS.	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☒ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS PURPOSE, FUNCTION + PROCEDURE OF WEARING PUMP EXPLAINED TO HEUTON + "DON'T TURN IT OFF -"
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WEATHER CONDITIONS OUTSIDE TEMPERATURE °F 70 WIND DIRECTION ☒ WIND VELOCITY ☒	SUNNY ☒ CLOUDY ☐ HUMID ☐ RAIN ☐ PARTLY CLOUDY ☐ FOG ☐ SHOWERS ☐ SNOW ☐
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BLANK FIBER COUNT FIBERS IN _____ FIELDS = flf	MICROSCOPE MAKE & MODEL B-L	FIELD AREA .006 mm²	CONSTANT K = 855
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED flf x VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
0629	45	10.0	.45		762.44	$\frac{flf}{LITERS} \times K = .083$	389	32.142
TOTALS							389	32.14

TIME WEIGHTED AVERAGE TOTAL flcc x MIN. - TWA TOTAL MIN
.083 flcc

SIGNATURE OF SAMPLER <i>L. Mezger</i>	SIGNATURE OF ANALYST <i>L. Mezger</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

PLANT <i>RIVERSIDE</i>		PLANT <i>260</i>	DATE OF TEST <i>3/21/82</i>
EMPLOYEE NAME <i>H. BASTIAANS</i>	PAYROLL NUMBER <i>339</i>	JOB TITLE <i>MAINT. MECHANIC</i>	CODE
PUMP MANUFACTURER <i>MISA</i>	SERIAL NUMBER <i>03744</i>	FLOW RATE (lpm) <i>1.92</i>	

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
<i>0648</i>	<i>744</i>	<i>219</i>	<i>ROUTINE MAINTENANCE; SOME WELDING</i>	
			<i>LUNCH + 2 10 MIN. BREAK PERIODS</i>	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	☒ CLOUDY	☐ HUMID	☐ RAIN
OUTSIDE TEMPERATURE °F <i>70</i>	WIND DIRECTION <i>SE</i>	WIND VELOCITY <i>SE</i>	☐ PARTLY CLOUDY	☐ FOG	☐ SHOWERS
				☐ SNOW	

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <i>sf</i>	<i>B-L</i>	<i>0.001 mm²</i>	$K = \frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED $\text{sf} \times \text{VOLUME} \times K = \text{floc}$	TOTAL SAMPLE TIME (MIN)	$\text{floc} \times \text{MIN.}$
<i>0628</i>	<i>18</i>	<i>100</i>	<i>.18</i>		<i>758.4</i>	$\frac{\text{sf} \times K}{\text{LITERS}} = .033$	<i>395</i>	<i>13.03</i>
TOTALS								<i>395 13.03</i>

TIME WEIGHTED AVERAGE
$\frac{\text{TOTAL floc} \times \text{MIN.}}{\text{TOTAL MIN.}} = \text{TWA}$
<i>.033 floc</i>

SIGNATURE OF SAMPLER <i>L. Megarson</i>	SIGNATURE OF ANALYST <i>L. Megarson</i>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022929

PLANT										PLANT		DATE OF TEST				
RIVERSIDE										260		1/13/82				
EMPLOYEE NAME					PAYROLL NUMBER					JOB TITLE					CODE	
L. E. A. R. G. E. E.										INDL ENGR; SAFETY DIRECTOR						
PUMP MANUFACTURER					SERIAL NUMBER					FLOW RATE (lpm)						
MISA					03744					1.85						

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
0627	8:45	2:55	MONITOR PIPE MACHINE OPERATION. WALK AROUND	
			INSPECTION OF PLANT & STG YARDS, OFFICE	
			ROUTINE	

DID EMPLOYEE WEAR RESPIRATOR?	RESPIRATOR TYPE & MODEL	REMARKS
☐ YES ☒ NO ☐ SOMETIMES		

MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.)	CODE

EXHAUST CONTROL SYSTEMS	REMARKS
☒ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	

WEATHER CONDITIONS	(AVERAGE)	SUNNY	CLOUDY	HUMID	RAIN
OUTSIDE TEMPERATURE °F	60	WIND DIRECTION	NE	WIND VELOCITY	15
		PARTLY CLOUDY	☒	FOG	SHOWERS
				SNOW	

BLANK FIBER COUNT	MICROSCOPE MAKE & MODEL	FIELD AREA	CONSTANT
FIBERS IN _____ FIELDS = <u>115</u>	B-L	.0061 mm ²	K = $\frac{855}{\text{FIELD AREA} \times 1000} = 140$

SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (L)	CORRECTED f/f + VOLUME x K = f/cc	TOTAL SAMPLE TIME (MIN)	f/cc x MIN.
0627	17.0	100	.17		684.5	$\frac{115}{LITERS} \times K = .035$	370	12.86
TOTALS							370	1286

TIME WEIGHTED AVERAGE
TOTAL f/cc x MIN = TWA
TOTAL MIN.
.035 f/cc

SIGNATURE OF SAMPLER	SIGNATURE OF ANALYST
<i>L. E. A. R. G. E. E.</i>	<i>L. E. A. R. G. E. E.</i>

DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/GOLDENROD-TEMPORARY PLANT COPY

CTD022930

PLANT <u>RIVERSIDE</u>										PLANT <u>260</u>		DATE OF TEST <u>1/13/92</u>	
EMPLOYEE NAME <u>L. H. HAN</u>					PAYROLL NUMBER <u>171</u>		JOB TITLE <u>PRESS OPERATOR</u>			CODE			
PUMP MANUFACTURER <u>MCA</u>					SERIAL NUMBER <u>12549</u>		FLOW RATE (lpm) <u>1.90</u>						

SAMPLE NUMBER	TIME		ACTIVITY DURING SAMPLING PERIOD	CODE
	START	STOP		
1	4:45	5:00	OPERATED PIPE MACH. PRESS SECTION	

DID EMPLOYEE WEAR RESPIRATOR? ☐ YES ☐ NO ☐ SOMETIMES	RESPIRATOR TYPE & MODEL	REMARKS
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MANUFACTURING INFORMATION (Size - Type of pipe - Downtime - Etc.) <u>12" 150</u>	CODE
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EXHAUST CONTROL SYSTEMS ☐ FUNCTIONING NORMALLY ☐ NOT FUNCTIONING NORMALLY	REMARKS
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WEATHER CONDITIONS (AVERAGE)	SUNNY ☐ CLOUDY ☐ HUMID ☐ RAIN ☐
OUTSIDE TEMPERATURE °F <u>60</u> WIND DIRECTION <u>NE</u> WIND VELOCITY <u>15</u>	PARTLY CLOUDY ☒ FOG ☐ SHOWERS ☐ SNOW ☐

BLANK FIBER COUNT FIBERS IN <u> </u> FIELDS = <u>flf</u>	MICROSCOPE MAKE & MODEL <u>B-L</u>	FIELD AREA <u>.0061</u> mm ²	CONSTANT K = <u>855</u> = <u>140</u> FIELD AREA x 1000
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SAMPLE NUMBER	TOTAL FIBERS	FIELDS COUNTED	FIBERS PER FIELD	CORRECT BY SUBTRACTING BLANK	TOTAL SAMPLE VOLUME (l)	CORRECTED flf + VOLUME x K = flcc	TOTAL SAMPLE TIME (MIN)	flcc x MIN.
1	455	100	4.55		725.2	flf x K = LITERS <u>.087</u>	370	32.19
TOTALS							370	32.19

TIME WEIGHTED AVERAGE TOTAL flcc x MIN = TWA TOTAL MIN
<u>.087</u>

SIGNATURE OF SAMPLER <u>T. Meagher</u>	SIGNATURE OF ANALYST <u>T. Meagher</u>
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DISTRIBUTION: WHITE-PLANT SAFETY FILE/CANARY-CORP. HEALTH & SAFETY/PINK-PLANT PERSONNEL FILE/WHITE-PLANT

CTD022931