

PLAINTIFF'S EXHIBIT

CT-1417

TITLE PAGE-STOCK NO. 100TP

Industrial Hygiene Survey
HILLSBORO A/C PIPE PLANT
IHS Report No. 83-23
October 17-20, 1983

Smead MFG. CO. HASTINGS MN. LOS ANGELES. CHICAGO IL.
LOGAN OH. MCGREGOR TX. LOCUST GROVE GA.

CTD020300

Lathe Operator OK.

139 mg/m^3 instead of
139 g/cc

CertainTeed

	Date	To	Location and mail code
	November 30, 1983	Jack Anderson	Hillsboro, 257
Subject	Industrial Hygiene Survey Results Hillsboro A/C Pipe Plant October 17-20, 1983	From Peter Norris <i>PJN</i>	Location and mail code 1125/4

cc: B. Haigh - Hillsboro, 257
D. Hall - 2125/2B

J. McGinley - 2125/2B
F. Timpe - 1125/2B

Attached are the completed logs of personal and environmental sampling results for asbestos, silica and audiodosimetry performed on October 17-20, 1983.

The results show that three employee positions, Small Coupling Tester Operator (0.52 f/cc), Large Coupling Saw Operator (1.3 f/cc), and the Rework Saw Operator (0.56 f/cc) were found to exceed the OSHA Emergency Temporary Standard (ETS) of 0.5 fibers per cubic centimeter (f/cc). Silica exposures were within permissible limits in the Finishing Department of Plant A, and audiodosimetry results show many employee positions of both plants are exposed to an 8-hour time-weighted average (TWA) noise level greater than 90 dBA.

In general, asbestos fiber levels in Plants A and B have remained consistently lower than the "old" asbestos permissible exposure limit (PEL) of 2 f/cc as compared to the last annual survey. This indicates that housekeeping, work habits, and ventilation efficiencies have not significantly changed. Also, because of the lower standard, ~~five~~ ^{four} other positions statistically may be overexposed. These conclusions are based on the 95% confidence limits for determining compliance or noncompliance with OSHA standards. (See Exposure Sampling Confidence Limits Unit Program in the CertainTeed Health Maintenance Manual.) These positions are the Press Operator (0.38 f/cc), Line 1 Hydrotester Operator (0.4 f/cc) and the ~~Large Lathe Operator (0.39 f/cc)~~ of Plant A, and the Machine Tender (0.43 f/cc) and Press Operator (0.38 f/cc) of Plant B.

Hillsboro notified 1 Dec. 83

Since the issuing of the ETS, industry representatives filed a Petition for Review in the United States Fifth Circuit Court of Appeals and subsequently a Motion for Stay of the ETS was presented to OSHA. As of November 25, 1983, a Motion for Stay of the ETS was granted. Regardless of the outcome of this standard, OSHA is expected to issue a permanent asbestos rulemaking, and it would be prudent for us to improve the working conditions in the plant now, rather than wait until we are forced to do it.

Immediate compliance with the ETS can be accomplished by the use of respiratory protection by the employees found to be overexposed to asbestos. The 3M 8710 respirators will provide adequate protection up to ten times the ETS (up to 5 f/cc). Warning signs need to be installed at these same job positions, and a training program needs to be instituted for these employees on the health effects of asbestos, work practices and engineering controls for minimizing exposures, and the purpose, use and fitting instructions on respiratory protection.

Since you are already investigating employee work practices and ventilation efficiencies, addition personal sampling is needed each time a change is made. Also, the employees which were identified as being possibly overexposed be resampled to determine if exposure levels are true and consistent. This department is available if sample analysis is needed.

CTD020302

Industrial Hygiene Survey Results
Hillsboro A/C Pipe Plant
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Page 2

I also recommend that each employee be informed of exposure results in this survey. Employees whose asbestos and noise exposures exceed the PEL and the action level respectively, must be informed by OSHA regulation. I suggest that a copy of the attached tables be posted on the employees' bulletin board for that purpose. Alternately, the employees, including those in similar positions to those measured, can be informed personally.

A completed comprehensive survey report is forthcoming, detailing sample analysis and observations.

PJN/car

Attachments

CTD020303

CertainTeed

Date

December 15, 1983

To

D. Hall

Location and mail code *8*

2125/2B

Subject

INDUSTRIAL HYGIENE SURVEY
HILLSBORO A/C PIPE PLANT
October 17-20, 1983

From

P. Norris

Pete

Location and mail code

1125/4

The attached Industrial Hygiene report on Hillsboro is provided for your review and comments before we distribute it.

I would appreciate your comments as soon as possible.

Thanks.

PJN/ejs

Attachment

CTD020304

CertainTeed

	Date	To	Location and mail code
	December 20, 1983	Jack Anderson	Hillsboro, 257
Subject	Industrial Hygiene Survey Hillsboro A/C Pipe Plant October 17-20, 1983	From <i>[Signature]</i> Peter Norris	Location and mail code 1125/4

cc: D. Hall - 2125/2B
J. McGinley - 2125/2B
F. Timpe - 1125/2B
B. Haigh - Hillsboro, 257

Attached is the report on the industrial hygiene survey conducted at the Hillsboro A/C Pipe Plant on October 17-20, 1983. If you have any questions or comments, please contact me.

PJN/car

Attachment

CTD020305

Industrial Hygiene Survey
Hillsboro Asbestos/Cement Pipe Plant
October 17-20, 1983

Introduction

An Industrial Hygiene Survey was conducted at the Hillsboro Asbestos/Cement Pipe Plant by Peter Norris of Corporate Health and Safety on October 17-20, 1983.

This survey was conducted to supplement the on-going asbestos fiber exposure surveillance program. Additional monitoring for respirable dust, silica dust, 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 the 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

The Coupling Tester Operator, Large Coupling Saw Operator and the Rework Saw Operator were exposed to asbestos fibers above the OSHA Emergency Temporary Standard of 0.5 fibers per cubic centimeter (f/cc).

The Press Operator and line 1 Hydrotester of Plant A and the Machine Tender and Press Operator of Plant B possibly exceed the 0.5 f/cc limit of asbestos fibers based on the 95% confidence levels.

All respirable silica dust exposures are less than the 5 mg/m³ OSHA PEL.

The hearing conservation program, again this year, is up to date and has 100% employee participation.

CTD020306

Hillsboro AC Pipe Plant
Production Schedule

PLANT A

Manufacturing Department
1st Shift
2nd Shift

Monday
10/17/83
8" 150
Downtime: 1.75 HR
8" 150
Downtime: 1.75 HR

Finishing Department
1st Shift
2nd Shift

Coupling Outoff - 4" 200
4" 150
8" 150
Boring Mill #1 - 6" TBIC
4" TBIC
8" 150
Boring Mill #2 - 6" TBIC
4" TBIC
8" 150
Boring Mill #3 - 18" FT 50
PM Lathe - 16" FT - CG/150
Coupling Saw - 18" FT 50
Rework Saw - 8" 150 RAND
8" 150 MED 1/2
8" 150 MED 1/4
Lathe Line #1 - 8" 150 1/4 PM
Quarter Tester - 6" 150

Manufacturing Department
1st Shift
2nd Shift

12" 150
8" 150 C/S
18 FT 50 C/S
Downtime: 0 HR
12" 150
8" 150 C/S
18" FT 50 C/S
Downtime: 0 HR

Finishing Department
1st Shift
2nd Shift

12" 150 P/B
12" 150
8" 150 C/S
18" FT 50 C/S
Downtime: 0 HR

PLANT B

Tuesday
10/18/83
18" 150
Downtime: 0 HR
16" 150
Downtime: 0 HR

Coupling Outoff - 8" 150 T
Boring Mill #1 - 8" 150
Boring Mill #2 - 8" 150
Boring Mill #3 - 18" FT 50
Small PM Lathe - 16" PM 150 1/2
12" PM 150 1/4
Coupling Saw - 12" 150 P/B 3
Rework Saw - 12" 150 MED 1/2
12" 150 MED 1/2
12" 150 MED 1/4
12" 150 PM 1/2
14" 150 PM 1/4
14" 150 RAND
Lathe Line #1 - 12" 150
Lathe Line #3 - 14" 150
Quarter Tester - 6" 150 1/4 PM

Coupling Saw - 12" 150 P/B 3
Rework Saw - 12" 150 RAND
6" 200 1/2
14" 150 RAND
14" 150 1/2
Lathe Line #3 - 14" 150
12" 150

12" 150
6" 150 C/S
18" FT 45 C/S
Downtime: 0.5 HR
12" 150
6" 150 C/S
18" FT 45 C/S
Downtime: 0 HR

12" 150 P/B
12" 150
6" 150 C/S
18" FT 45 C/S
Downtime: 0 HR

Hillsboro A/C Pipe Plant
Production Schedule

PLANT A

	Manufacturing Department	
	1st Shift	2nd Shift
Wednesday 10/19/83	16" 150 Downtime: 0 HR	16" 150 6" 150 PM Downtime: 0 HR

PLANT B

	Manufacturing Department		Finishing Department	
	1st Shift	2nd Shift	1st Shift	2nd Shift
	12" 150 6" 150 C/S 16" FT 45 C/S 12" 150 C/S Downtime: 0 HR	12" 150 12" 150 C/S 16" FT 45 18" FT 50 C/S 8" 200 PM Downtime: 0 HR	Coupling Outoff - 8" 150T 6" 150T Boring Mill #1 - 8" 150 6" 150 Boring Mill #2 - 8" 150 6" 150 Boring Mill #3 - 18" FT 50 18" FT 45 Small PM Lathe - 16" PM 150 1/4 18" End plug Coupling Saw - 18 FT 45 Rework Saw - 6" 200 MED 1/2 8" 150 MED 1/2 8" 150 MED 1/4 8" 150 MED 1/2 12" 150 RAND 12" 150 MED 1/2 12" 150 MED 1/4 14" 150 MED 1/2 14" 150 MED 1/4 Lathe Line #1 - 8" 150 Lathe Line #3 - 18" 150 Quarter Tester - 6" 200 1/4 PM	Coupling Saw - 18" FT 45 16" FT 45 Rework Saw - 8" 150 1/2 8" 150 1/4 12" 150 RAND 12" 150 1/2 Lathe Line #1 - 8" 150 Lathe Line #3 - 18" 150

Thursday 10/20/83	6" 150 4" 150 PM Downtime: 0 HR	6" 150 4" 150 PM Downtime: 1.5 HR
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	Coupling Tester - 8" 150 6" 150 8" FT 50 Coupling Outoff - 6" 150T 12" 150T Boring Mill #1 - 6" 150 12" 150 Boring Mill #2 - 6" 150 12" 150 Boring Mill #3 - 18" FT 45 18" FT 50 Small PM Lathe - 18" End plugs Saw #2 - 18" FT 50 C/S Rework Saw - 18" 150 MED 1/2 18" 150 MED 1/4 12" 150 RAND 12" 150 MED 1/2 12" 150 MED 1/4 Lathe Line #1 - 8" 200 1/4 PM Lathe Line #3 - 18" FT 50 P/B Quarter Tester - 6" 200 PM 1/4	Coupling Saw - 18" FT 45 Rework Saw - 6" 200 RAND 6" 200 1/2 6" 200 1/4 5" 150 RAND 6" 150 1/2 5" 150 1/4 12" 150 RAND Lathe Line #1 - 8" 150 Lathe Line #3 - 18" FT 50 18" 150 16" 150	12" 150 8" 200 PM 12" 150 C/S Downtime: 0 HR 8" 150 PAD 3 5" 150 C/S 5" FT 45 C/S Downtime: 0 HR	12" 150 P/B
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CTD020308

Industrial Hygiene Survey
Hillsboro Asbestos/Cement Pipe Plant
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Asbestos Emergency Temporary Standard

Effective November 4, 1983, the Occupational Safety and Health Administration (OSHA) issued an emergency temporary standard on asbestos exposure. The Permissible Exposure Level for an 8 hour time-weighted average airborne concentration of asbestos fibers shall not exceed 0.5 fiber, longer than 5 micrometers per cubic centimeter of air (f/cc).

Other requirements imposed by the emergency temporary standard are as follows:

1. Compliance may be "achieved by any feasible combination of engineering controls, work practices, and personal protective equipment and devices".
2. An employee training program shall be instituted for all employees exposed above 0.5 f/cc. The major aspects of this training program shall be on the associated health effects of asbestos, the relationship between asbestos and smoking, the nature of operations in producing exposure and protective measures to minimize exposure, standard operating procedures governing respiratory protection, and all provisions of the OSHA asbestos standard.
3. The placement of warning signs in areas where asbestos concentrations have been determined to exceed 0.5 fibers/cc.
4. Respiratory protection be selected based on the information in Table I of Appendix II.

Immediately after the ETS was issued, industry representatives filed with the United States Fifth Circuit Court of Appeals a Motion for Review and subsequently a Motion for Stay of the ETS was presented to OSHA. On November 25, 1983, the Motion for Stay was granted.

Regardless of the outcome of the ETS, OSHA is expected to issue a permanent asbestos rulemaking which will not be promulgated for at least 6 months.

Until such time when a permanent standard is issued, it would be wise for us to work on improving conditions within the plant at this time rather than wait until we are forced to do it. A copy of the emergency temporary standard is in appendix II.

ASBESTOS

Table I shows the results of the personal and environmental samples performed on the pipe manufacturing and pipe finishing/fittings departments of both plants. A summary of the sampling results are found in Table II.

In general, exposure to asbestos fibers did not significantly change since our last annual survey. All exposures are less than the Permissible Exposure Limit (PEL) of 2 f/cc.

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Three positions in the finishing department of Plant A exceeded the stayed ETS limit of 0.5 f/cc and four other positions in both plants statistically may have exceeded the 0.5 f/cc level.

Overall, 95% of the samples were less than the stayed OSHA ETS of 0.5 f/cc and 43% were less than the recommended NIOSH standard of 0.1 f/cc.

Manufacturing Department - Plant A

Environmental samples taken around the asbestos bag opener show airborne asbestos fibers to be very low. The results ranged between 0.013 to 0.04 f/cc supporting my observations of excellent exhaust ventilation at the bag entrance to the bag opener and at the access windows when windows are opened for internal adjustments. During the personal sampling of the Mixer Operator, he occasionally opened the access windows to unjam empty bags or reslit full bags. The airflow was always into the bag opener.

The housekeeping in the immediate area around the bag opener was excellent. There were no torn bags or spillage of fibers on the warehouse or mixing area floors.

Samples were taken on the Mixer Operator on three different working shifts. The exposures ranged from 0.14 to 0.37 f/cc with an average of 0.22 f/cc. These results also include various times when the operator would open the access windows to work inside the bag opener. 3M 8710 toxic dust respirators were available and worn by each of the operators, always when opening the access windows.

The Machine Tender, Mandrel Handler, Tray Loader and Relief Person all had exposures less than 0.5 f/cc. The Press Operator had slightly higher levels (0.19 and 0.38 f/cc) than the other positions in the manufacturing area. The source of fibers is not known but the Press Operators exposure has been higher than the other positions for the last two surveys.

Finishing/Fittings Department - Plant A

The results of the personal exposure samples of employees in this department ranged from 0.04 to 1.3 f/cc. The highest levels were obtained on the Coupling Tester (0.52 f/cc), Large Coupling Saw Operator (1.3 f/cc) and the Rework Saw Operator (0.56 f/cc). These three operations are located next to each other which may explain the high level for the Coupling Tester.

Normally, the Coupling Tester is not the type of operation which would generate dust. The dust might be drifting over from the other two operations located to the right of the Coupling Tester. Since the Rework Saw is located next to the

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plant opening which exits to the pipe storage yard, it is possible that air currents are carrying dust from this operation and the Coupling Saw over to the Coupling Tester. Dust is generated either by the radial saws cutting the pipe, or by the release of dust or tailings left by the saw when the small pipe or scrap pipe is thrown into the hoppers.

Following our verbal reporting of the exposure results to the plant, additional samples were taken by plant personnel on November 28 and 30, 1983 on the Coupling Tester, Rework Saw Operator and Coupling Cutoff Saw Operators. These samples were analyzed by Corporate Health and Safety. The purpose of these samples was to evaluate the effect of placing a curtain between the plant opening and the Rework Saw and moving the pipe hoppers closer to the Saw Operators to reduce dust when dumping scrap.

On November 28th, just the Rework Saw and Coupling Tester were operating. Time weighted average (TWA) exposures for these operations were 0.64 f/cc and 0.38 f/cc respectively. The November 30th samples were taken when these two operations plus the Coupling Cutoff Saw were in use. The TWA exposures were 0.5 f/cc (Rework Saw), 0.26 f/cc (Coupling Tester) and 0.81 f/cc (Coupling Cutoff Saw).

The Coupling Tester exposure on an average (0.32 f/cc) was below the 0.5 f/cc limit but the two saw operations remain consistently above this limit when compared to the sample results obtained in the industrial hygiene survey of October 1983.

These results indicate that other factors may be involved. In the past surveys, environmental levels and personal exposures at the Rework Saw have exceeded the 0.5 f/cc level.

In order to further reduce the fiber levels below this level, refinements or changes in the existing local exhaust ventilation system may be needed.

First, I recommend that the ductwork and plenum face of the exhaust ventilation systems on the Rework and Coupling Saws be inspected for free or unhampered air flow, to determine that large pipe tailings are not clogging the system, and the flexible hoses do not have leaks.

If no problems exist, then a change in the existing enclosure and ductwork placement might be needed. Presently, there exists two separate exhaust ducts leading behind the radial saw at the bottom and top of the saws. By moving the top duct to the front of the radial saw (see appendix III), dust which is missed by the bottom duct can be captured by the replacement of this duct.

CTD020311

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A major redesigning of the Coupling Saw and Rework Saw may ultimately be needed if these improvements are not effective, e.g. wet cutting.

Even though the 0.5 f/cc emergency temporary standard has been recently stayed, it is our opinion that any future permanent standard issued on asbestos will be at least 0.5 f/cc. We recommend that in the interim, the Coupling Saw and Rework Saw Operators be required to wear respirators.

The line 1 Hydrotester Operator's exposure may be exceeding the 0.5 f/cc limit. We cannot say with a 95% confidence level that his exposure of 0.4 f/cc would not exceed 0.5 f/cc.

The hydrotesting control panel is enclosed on two sides primarily for protection against the water. The pipes roll off the old line 2 lathes, are conveyed vertically over to the old line 1 Hydrotester, then roll down to be pressure tested. Dust and tailings from the lathes still remain in the ends of the pipe and become airborne during rolling. This procedure seems to be the only observable reason for the operators exposure.

In any case, I recommend resampling this position during different shifts and different size pipes to determine if this exposure is true and consistent. The use of respiratory protection should be encouraged by management in the mean time.

Manufacturing Department - Plant B

Environmental samples were also performed at the Plant B bag opener. The results confirm the excellent housekeeping observed in the immediate area, good exhaust ventilation within the bag opener and apparently no leakage from the unit. Asbestos levels ranged from 0.01 - 0.05 f/cc.

The Mixers exposure also reflected the conditions attendant with this operation. Hereto, the Mixer had to occasionally open the access doors to unjam the bags or reslit the full bags. Excellent airflow into the bag opener was observed.

The Machine Tender and Press Operator in pipe manufacturing area had exposures of 0.43 f/cc and 0.38 f/cc respectively. The housekeeping in the main manufacturing area is excellent and these comparatively higher levels cannot be readily explained. Exposures recorded 2 years ago were of the order of 0.2 f/cc. It was observed that during the sampling on the Machine Tender, maintenance work was being performed on the piping which transports the asbestos slurry from the mixer to the trough. This could be a source of fibers, even though the fibers are in a liquid state. Dry encrusted slurry was noticed on some of the piping being worked on.

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During this period, the Machine Tender wore a 3M 8710 respirator.

I would recommend that these positions be monitored regularly to determine if the exposures measured during this survey are accurate. Further steps to minimize exposure need to be explored.

All other positions in the manufacturing area had low asbestos fiber counts. Exposures to the Mandrel Handler, Tray Loader and Relief ranged from 0.01 to 0.24 f/cc which is well below the 0.5 f/cc limit.

Finishing Department - Plant B

Sampling results on the Lathe Operator, Hydrotester and one Finisher found exposures to be well below the 0.5 f/cc level. Results ranged from no fibers detected to 0.2 f/cc. The local exhaust ventilation at each pipe lathe controlled the dust very well as reflected in the 0.01 f/cc exposure level to the lathe operator.

RESPIRABLE DUST - SILICA

All measured respirable dust personal and environmental samples were below the OSHA Permissible Exposure Limit (PEL) of 5 mg/m³. These sample results are provided in Table I.

Samples were performed on all three Boring Mills, FM Speciality Lathe, Multiple Cut Lathe, Large Single Cut Lathe and Large Coupling Saw. The results ranged from 0.1 to 0.39 mg/m³. All the samples were submitted for silica analysis and were found to contain less than 25 micrograms of quartz which essentially means "none detected".

NOISE

Audiodosimetry monitoring results are found in Table III. The results are presented by department. Figures 1, 2 and 3 depict the sound pressure level isocontours in the manufacturing and finishing departments of both plants. An updated noise exposure evaluation for all positions is provided in Figures 4-10.

The hearing conservation program is well established in the plants. Audiometric testing is provided by Memorial Hospital, Garland, Texas. This program has been on-going for several years. The Hillsboro attending physician reviews each audiogram and counsels each employee on his evaluations.

CTD020313

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The wearing of hearing protection is widespread throughout the plants with almost 100% participation in both mandatory and non-mandatory protection areas.

It was noted, however, that several employees exposed in excess of the 90 dBA PEL were not wearing hearing protection. These persons are noted in Table III. We recommend that the wearing of hearing protection be strongly enforced, with disciplinary action if necessary. We also recommend that the use of personal protective equipment be extended to all persons entering these areas, whether casual visitors, plant managers or company officers. Such strict compliance will positively promote the acceptance of the requirement by employees.

The importance of a good hearing protection program was underscored by a recent, November 9, 1983 OSHA directive to its field staff. This directive instructs its field staff to allow employees to comply with the OSHA Noise Standard by the use of hearing protectors in lieu of engineering and administrative noise reduction for exposure levels up to 100 dBA. The directive provides this relief only if there is an effective hearing conservation program. A summary of the directive is provided in Appendix IV.

It should be noted that this directive is only an interpretive directive and not a regulatory change in the standard. As such, it is not binding and is subject to the whim of the administration.

Our previous survey reports contained a number of recommendations for reducing noise in this department. An outside consultant has also made recommendations. The most recent update on the status of these recommendations dated 10/7/83 stated that many of these recommendations were still under study. A few had been completed.

We recognize that noise control measures in this plant are complex and in many instances infeasible. Where this is the case, it is important that engineering studies be expedited and thoroughly documented as being ineffective and/or economically infeasible. We note that some of these recommendations are over 3 years old. You will note in the recent OSHA Directive (Appendix IV), that OSHA will not only be placing more emphasis on effective hearing conservation programs, but also on technological and economic feasibility of controls.

Manufacturing Department - Plant A

Two audiodosimeter measurements were obtained on almost all positions in the Manufacturing Department. The results were consistent and show good correlation with the sound pressure level measurements.

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Average sound pressure levels (SPL's) in Figure 1 correlate quite well with the audiodosimeter results. Generally, the exposures measured with the audiodosimeters will be slightly higher than would be predicted by the average SPL's due to the impulse and peak noise variations inherent in the manufacturing process, e.g., mandrel movement. These variances are very clearly seen in the Time History Audiodosimeter Tapes. Typical for example is the Time History Tape on the Mandrel Handler (Sample No. 084), where the average background noise is about 90 dBA. The one-minute reading on this individual are generally on the order of 92-95 dBA as a result of mandrel movement impulse noises. The hour-by-hour equivalent OSHA exposure on this employee was overly consistent 93.5, 93.5, 93.9, 88.8, 92.8, 93.2, 93.5, 88.8 dBA. The lower 4th hour results are from lunch break relief.

Likewise, the Tray Loader Audiodosimeter Results (Sample 087) of 83.2 dBA is higher than would be predicted by the 76-77 dBA average background noise level, again due mostly to mandrel movement noise, and the forklifts. His exposure tape measured peak levels to 110 dBA, 10% of the exposure exceeded 89 dBA and 50% exceeded 81 dBA.

Exposures to all of the employees in the manufacturing department exceed the OSHA 85 dBA action level. The Press Operator, Mandrel Handlers and Press Operator exposures exceed 90 dBA. As noted in Table III, most of the employees are wearing hearing protection. We recommend that all employees in this department wear hearing protection.

Finishing Department - Plant A

The Noise Contour Map shows the SPL's in this department generally exceed 90 dBA. The personal audiodosimetry exposure measurements confirm these high levels.

Employees in all positions in this department are exposed to noise levels in excess of the OSHA 8 Hour PEL of 90 dBA. The department is posted as a noise hazardous area with hearing protection required. With two exceptions (see samples 97 and 100), all employees in this department wore hearing protectors.

We recommend that the mandatory wearing of hearing protection in this department be strongly enforced.

Manufacturing Department - Plant B

The SPL's in this plant (Figure 3) are about the same as in "A" plant with slightly higher levels at the end of the line resulting from the proximity of the Finishing Department.

CTD020315

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Personal exposure measurements were also about the same as "A" plant with all of the positions exceeding the OSHA action level of 85 dBA. The Machine Tender, Mandrel Operator, Press Operator and Relief Person exceeded 90 dBA and with three exceptions (Samples 111, 115 and 116), all employees wore hearing protection.

We recommend that all employees in this department wear hearing protection.

Finishing Department - Plant B

The SPL's in this department (Figure 3) generally exceed 90 dBA and are on the order of 94 to 98 dBA.

Personal exposure measurements were all about 94-96 dBA on an 8 hour TWA. About half of the employees wore hearing protection.

We recommend that the wearing of hearing protection be strongly enforced in this area and the area be posted as a mandatory protection area.

MISCELLANEOUS

It is our standard procedure in taking personal exposure samples, to inform each employee of the purpose of the sample and what they should and should not do to invalidate the results.

Specific do's and don'ts are: To go about their work as normal, not to remove the sampler, disconnect the tubing or filter holder, or purposely contaminate the sampling tube or filter, not to shout into a dosimeter microphone or otherwise violate the sample by artificially exposing it to loud noises.

We also request they inform us of any loss of integrity of the sample such as sampling tube or cassette accidentally coming off, dropping or otherwise subjecting the devices to unnecessary impacts. We strongly encourage plant management to similarly inform the employees when conducting their sampling programs.

We also recommend that each employee be informed of exposure results in this survey. Employees whose noise exposures exceed the PEL and the action level respectively, must be informed according to OSHA regulation. We suggest that a copy of the attached audiodosimetry table be posted on the employees bulletin board for that purpose. Alternately, the employees, including those in similar positions to those measured, can be informed personally. All asbestos exposures whether exceeding the PEL or not must be reported in writing to the employees using the Fiber Exposure Notification (FEN) Form as outlined in the Asbestos Unit Program.

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Recommendations

It is recommended that:

1. Inspection of the exhaust ventilation ductwork be made for clogs and leakage on the Coupling Saw and Rework Saw.
2. Redesigning of the local exhaust ventilation ductwork on the Coupling Saw and Rework Saw be accomplished. (See appendix III)
3. The Small Coupling Tester, Coupling Saw Operator and Rework Saw Operator wear respiratory protection.
4. The Press Operator and Line 1 Hydrotester of Plant A and the Machine Tender and Press Operator of Plant B be resampled for asbestos to determine if exposure results are true and consistent.
5. The wearing of hearing protectors be made mandatory for all employees in the Manufacturing and Finishing Departments in both Plants "A" and "B" including all visitors.
6. Employees be informed of the results of the measurements in this report.
7. A quarterly report be made to Corporate Health and Safety as to the status of these recommendations.

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TABLE I

Area and Personal Exposure Sample Results for Asbestos Fibers and Respirable Dust

NO.	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc or mg/m ³	REMARKS
PLANT A - MANUFACTURING DEPARTMENT							
001	Warehouse October 19, 1983	AREA	Asbestos	8:54a- 12:30p	210	VOID	Sample hanging next to bag conveyor.
002				12:30p- 3:55p	205	0.013 f/cc	OSHA ETS - 0.5 f/cc
003	Bag Opener October 19, 1983	AREA	Asbestos	8:55a- 12:30p	205	0.015 f/cc	Sample placed on bag opener ledge, next to plexiglass windows
004				12:30p- 1:54p	205	VOID	OSHA ETS - 0.5 f/cc
005	Bag Opener October 19, 1983	AREA	Asbestos	4:00p- 11:02p	362	0.04 f/cc	Sample placed on top of desk. OSHA ETS - 0.5 f/cc
006	Bag Opener October 19, 1983	AREA	Asbestos	4:00p- 11:02p	362	0.02 f/cc	On bag opener ledge next to plexiglass windows. OSHA ETS - 0.5 f/cc
FI	007 Mixer October 17, 1983	Bruce Ward	Asbestos	1:42p- 4:00p	118	0.14 f/cc	3M 8710 Respirator worn OSHA ETS - 0.5 f/cc
FI	008 Mixer October 17, 1983	J. Ray	Asbestos	4:53p- 7:11p	138	0.37 f/cc	3M 8710 Respirator worn OSHA ETS - 0.5 f/cc
FI	009 Mixer October 18, 1983	Bruce Ward	Asbestos	8:45a- 3:44p	419	0.16 f/cc	3M 8710 Respirator worn OSHA ETS - 0.5 f/cc
W	010 Machine Tender October 17, 1983	Ray Rodriguez	Asbestos	1:30p- 7:30p	360	0.13 f/cc	OSHA ETS - 0.5 f/cc
W	011 Machine Tender October 18, 1983	Ray Rodriguez	Asbestos	8:49a- 3:45p	416	0.06 f/cc	OSHA ETS - 0.5 f/cc
W	012 Press Operator October 17, 1983	Milton Cook	Asbestos	1:31p- 7:30p	359	0.19 f/cc	OSHA ETS - 0.5 f/cc
W	013 Press Operator October 18, 1983	John Chambers	Asbestos	8:40a- 11:45a	185	0.38 f/cc	OSHA ETS - 0.5 f/cc
W	014 Mandrel Handler October 17, 1983	Roy Black	Asbestos	1:35p- 3:55p	140	0.22 f/cc	OSHA ETS - 0.5 f/cc
W	015 Mandrel Handler October 17, 1983	Shanna Biber	Asbestos	4:50p- 7:30p	170	0.08 f/cc	OSHA ETS - 0.5 f/cc

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE 1

Area and Personal Exposure Sample Results for Asbestos Fibers and Respirable Dust

NO. 83	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc or ml/m ³	REMARKS
PLANT A - MANUFACTURING DEPARTMENT							
W 016	Mandrel Handler October 18, 1983	Roy Black	Asbestos	8:36a- 1:43p	477	0.03 f/cc	OSHA ETS - 0.5 f/cc
DP 017	Tray Loader October 17, 1983	Larry Young	Asbestos	1:12p- 3:50p	110	0.04 f/cc	OSHA ETS - 0.5 f/cc
W 018	Relief October 17, 1983	Calvin Thompson	Asbestos	4:58p- 7:50p	100	0.03 f/cc	OSHA ETS - 0.5 f/cc
PLANT A - FINISHING DEPARTMENT							
019	Line 1 Lathe Operator October 17, 1983	Bill Sellers	Asbestos	1:12p- 3:46p	153	VOID	OSHA ETS - 0.5 f/cc
020	Line 1 Lathe Operator October 17, 1983	O. Nelson	Asbestos	4:33p- 7:47p	134	0.16 f/cc	OSHA ETS - 0.5 f/cc
021	Line 1 Lathe Operator October 17, 1983	Allen Huse	Asbestos	4:30p- 7:45p	105	0.16 f/cc	OSHA ETS - 0.5 f/cc
021	Line 1 Lathe Operator October 18, 1983	Charles Flaherty	Asbestos	8:20a- 3:40p	440	0.07 f/cc	OSHA ETS - 0.5 f/cc
DP 023	Line 1 Hydrotester October 17, 1983	Larry Humphrey	Asbestos	1:14p- 3:45p	151	0.26 f/cc	OSHA ETS - 0.5 f/cc
DP 024	Line 1 Hydrotester October 17, 1983	Frank Kolar	Asbestos	4:38p- 7:48p	190	0.4 f/cc	OSHA ETS - 0.5 f/cc
025	Line 1 Beller October 17, 1983	Leon Sonnenberg	Asbestos	1:20p- 3:47p	147	0.12 f/cc	OSHA ETS - 0.5 f/cc
026	Line 1 Beller October 17, 1983	Jerry Morgan	Asbestos	4:43p- 7:50p	187	0.07 f/cc	OSHA ETS - 0.5 f/cc
027	Multiple Coupling Saw Operator October 18, 1983	Ronald Banik	Asbestos	8:00a- 3:30p	450	0.19 f/cc	OSHA ETS - 0.5 f/cc
028	#1 Boring Mill Operator October 17, 1983	Peter Brewer	Asbestos	12:42p- 3:37p	175	VOID	OSHA ETS - 0.5 f/cc

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE I

Area and Personal Exposure Sample Results for Asbestos, Silica
and Respirable Dust

NO. R3	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	CONC. f/cc or mg/m ³	TWA FOR SAMPLE PERIOD	REMARKS
029	#1 Boring Mill Operator October 18, 1983	Peter Brewer	Asbestos	8:00a- 3:35p	110	0.23 f/cc		OSHA ETS 0.5 f/cc
030	#1 Boring Mill Operator October 20, 1983	Peter Brewer	Respirable Dust	8:45a- 3:38p	413	0.1 mg/m ³		OSHA PEL - 5 mg/m ³
			Silica			--		No silica detected.
031	#2 Boring Mill Operator October 17, 1983	Charles Brown	Asbestos	12:40p- 3:36p	176	0.11 f/cc		OSHA ETS - 0.5 f/cc
032	#2 Boring Mill Operator October 18, 1983	Charles Brown	Asbestos	8:04a- 3:36p	452	0.11 f/cc		OSHA ETS - 0.5 f/cc
033	#2 Boring Mill Operator October 20, 1983	Charles Brown	Respirable Dust	8:40a- 3:37p	417	0.3 mg/m ³		OSHA PEL 5 mg/m ³
			Silica			--		No silica detected.
034	#3 Boring Mill Operator October 17, 1983	Autry Coaster	Asbestos	12:39p- 3:34p	175	0.11 f/cc		OSHA ETS - 0.5 f/cc
035	#3 Boring Mill Operator October 18, 1983	Autry Coaster	Asbestos	8:01a- 3:32	451	0.1 f/cc		OSHA ETS - 0.5 f/cc
036	#3 Boring Mill Operator October 20, 1983	Autry Coaster	Respirable Dust	8:36a- 3:36p	420	0.17 mg/m ³		OSHA PEL - 5 mg/m ³
			Silica			--		No silica detected.
037	Coupling Stacker October 17, 1983	Jerry Hooker	Asbestos	12:33p- 3:33p	180	0.11 f/cc		OSHA ETS - 0.5 f/cc
038	PM Cutter Operator October 17, 1983	Tony Brown	Asbestos	12:49p 3:35p	166	0.25 f/cc		OSHA ETS - 0.5 f/cc
039	PM Cutter Operator October 18, 1983	Simon Rodriguez	Asbestos	8:10a- 3:33p	443	0.18 f/cc		OSHA ETS - 0.5 f/cc
040	PM Speciality Lathe Operator October 17, 1983	Warner Poston	Asbestos	12:50p- 3:39p	169	0.14 f/cc		OSHA ETS - 0.5 f/cc
041	PM Speciality Lathe October 20, 1983	Area	Respirable Dust	9:10a- 2:36p	326	0.17 mg/m ³		Sample to the left of lathing area, on top of machine. OSHA PEL - 5 mg/m ³
			Silica			--		No silica detected.

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE I
Area and Personal Exposure Sample Results for Asbestos Fibers
and Respirable Dust

NO. 83	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	REMARKS f/cc or mg/m ³	TWA FOR SAMPLE PERIOD	REMARKS
D 042	Multiple Cut Lathe Operator October 20, 1983	Warner Poston	Respirable Dust	9:11a- 12:00p	169	0.14 mg/m ³		OSHA PEL - 5 mg/m ³
			Silica			--		No silica detected.
D 043	Large PM Lathe Operator October 18, 1983	Warner Poston	Asbestos	8:12a- 3:34p	442	0.13 f/cc		OSHA ETS - 0.5 f/cc
D 044	Large Single Cut Lathe October 20, 1983	R. Jewett	Respirable Dust	9:17a- 12:00a	163	0.13 mg/m ³ 0.39 mg/m ³		OSHA PEL - 5 mg/m ³
			Silica			--		No silica detected
OP 045	Large Coupling Tester October 17, 1983	Rex May	Asbestos	12:58p- 3:41p	163	0.00		OSHA ETS - 0.5 f/cc
OP 046	Small Coupling Tester October 17, 1983	Betty Starrett	Asbestos	12:55p- 3:40p	165	0.52 f/cc		Exceeds OSHA ETS - 0.5 f/cc. Respirator not worn.
D 047	Large Coupling Saw Operator October 17, 1983	Simon Rodriguez	Asbestos	1:03p- 3:42p	159	1.3 f/cc		Respirator now worn. Exceeds OSHA ETS - 0.5 f/cc. 3M 8710 Respirator Protection Mandatory
D 048	Large Coupling Saw Operator October 20, 1983	James Russel	Respirable Dust	8:32a- 3:35p	423	0.14 mg/m ³		OSHA PEL - 5 mg/m ³ Switched to Rework Saw at 12:30. Wore 3M 8710 respirator.
			Silica			--		No silica detected.
D 049	Rework Saw October 17, 1983	James Russel	Asbestos	1:05p- 3:42p	157	0.50 f/cc		Wore 3M 8710 respirator Exceeds OSHA PEL - 0.5 f/cc. Respirator Protection Mandatory
D 050	Rework Saw October 18, 1983	James Russel	Asbestos	8:25a- 3:39p	434	0.13 f/cc		OSHA ETS - 0.5 f/cc Wore 3M 8710 respirator.
OP 051	Forklift Operator October 17, 1983	Robert Wilson	Asbestos	4:35p- 7:51p	196	0.04 f/cc		OSHA ETS - 0.5 f/cc
D 052	Crusher Operator October 17, 1983	Charles Harris	Asbestos	1:10p- 4:02p	172	0.15 f/cc		OSHA ETS - 0.5 f/cc
PLANT B - MANUFACTURING DEPARTMENT								
053	Bag Opener October 19, 1983	Area	Asbestos	9:17a- 1:07p	230	0.05 f/cc		OSHA ETS - 0.5 f/cc Sample on Bag Opener Ledge next to Plexiglas Windows.
054				1:07p- 3:49p	162	0.02 f/cc	0.038 f/cc	

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE 1

Area and Personal Exposure Sample Results for Asbestos Fibers
and Respirable Dust

NO. B3	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	EXPOSURE	TWA FOR SAMPLE PERIOD	REMARKS
055	Bag Opener October 19, 1983	Area	Asbestos	9:17a- 1:08p	231	0.016 f/cc	0.016 f/cc	OSHA ETS - 0.5 f/cc Samples next to conveyor. Near Bag Opener entrance.
056				1:08p- 3:49p	161	0.016 f/cc		
057	Bag Opener October 19, 1983	Area	Asbestos	3:50p- 11:12p	442	0.016 f/cc		OSHA ETS - 0.5 f/cc Sample next to Plexiglas Window on ledge.
058	Bag Opener October 19, 1983	Area	Asbestos	3:50p- 11:12p	442	0.016 f/cc		OSHA ETS - 0.5 f/cc Sample next to Bag Opener entrance.
FI 059	Mixer October 18, 1983	Ronald Rodecker	Asbestos	8:58a- 3:54p	416	0.016 f/cc		OSHA ETS - 0.5 f/cc
FI 060	Mixer October 19, 1983	Donald Clay	Asbestos	5:23p- 11:13p	350	0.016 f/cc		OSHA ETS - 0.5 f/cc
W 061	Machine Tender October 18, 1983	Jerry Owens	Asbestos	9:06a- 11:47a	161	0.43 f/cc		OSHA ETS - 0.5 f/cc
W 062	Machine Tender October 19, 1983	Dennis Hawkins	Asbestos	5:18p- 11:10p	352	0.21 f/cc		OSHA ETS - 0.5 f/cc
W 063	Press Operator October 18, 1983	Cheve Salinas	Asbestos	9:04a- 3:48p	404	0.12 f/cc		OSHA ETS - 0.5 f/cc
W 064	Press Operator October 19, 1983	Gary Sulak	Asbestos	5:15p- 11:07p	352	0.1 f/cc		OSHA ETS - 0.5 f/cc
W 065	Mandrel Handler October 18, 1983	Charles Cook	Asbestos	9:02a- 3:50p	408	0.21 f/cc		OSHA ETS - 0.5 f/cc
DP 066	Tray Loader October 18, 1983	Mitchel Willenborg	Asbestos	9:12a- 3:53p	401	0.014 f/cc		OSHA ETS - 0.5 f/cc
DP 067	Tray Loader October 19, 1983	Charles Greer	Asbestos	5:05p- 11:07p	362	No fibers detected.		OSHA ETS - 0.5 f/cc
W 068	Relief October 18, 1983	Richard Wade	Asbestos	9:15a- 3:56p	401	0.01 f/cc		OSHA ETS - 0.5 f/cc
W 069	Relief October 19, 1983	Mike McFarlin	Asbestos	5:10p- 11:16p	366	0.01 f/cc		OSHA ETS - 0.5 f/cc

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE I
Area and Personal Exposure Sample Results for Asbestos Fibers
and Respirable Dust

NO. 83	POSITION LOCATION (DATE)	NAME/AREA	ANALYSIS FOR	TIME	MIN	RESULT f/cc	TWA FOR SAMPLE PERIOD f/cc	REMARKS
PLANT II - FINISHING DEPARTMENT								
D 070	Lathe Operator October 20, 1983	Clyde Venable	Asbestos	9:35a- 3:50p	375	0.01 f/cc		OSHA ETS - 0.5 f/cc
OP 071	Hydrotester October 20, 1983	Dave Miller	Asbestos	9:15a- 1:12p	237	0.1 f/cc	0.092 f/cc	OSHA ETS - 0.5 f/cc
072				1:12p- 3:43	151	0.01 f/cc		
D 073	Finisher October 19, 1983	Robert Baker	Asbestos	9:10a- 1:12p	242	0.2 f/cc	0.12 f/cc	OSHA ETS - 0.5 f/cc
074	<i>Follow</i>			1:12p- 3:43p	151	No fibers detected		
D 075	Crusher Operator October 19, 1983	Charles Harris	Asbestos	9:24a- 1:05p	221	0.11 f/cc	0.18 f/cc	OSHA ETS - 0.5 f/cc
076				1:05p- 3:45p	160	0.23 f/cc		

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Table II
Asbestos Samples

<u>Department</u>	<u>No. Samples</u>	<u>Mean f/cc</u>	<u>Percent > 0.5 f/cc</u>	<u>Percent > 0.1 f/cc</u>	<u>Percent > 0.05 f/cc</u>	<u>Percent > 0.01 f/cc</u>	<u>Percent > 0.001 f/cc</u>
<u>Plant a</u>							
Manufacturing	16	0.12	0	44	56	100	100
Finishing	22	0.255	14	90	95	100	100
Crusher	1	0.15	0	100	100	100	100
<u>Plant b</u>							
Manufacturing	17	0.10	0	35	47	88	94
Finishing	5	0.07	0	40	60	80	75
Crusher	<u>2</u>	<u>0.18</u>	<u>0</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Plant	63	0.15	5	57	62	87	97

7 samples were voided due to problems.

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Industrial Hygiene Survey
Hillaboro A/C Pipe Plant
October 17-20, 1983

TABLE III
Audiometry Results

NO. 83	POSITION LOCATION (DATE)	NAME	TIME	MIN	R. H. H. H. H. DOSIMETER DOSE (dB)	DOSE (dB)	RESULTS
PLANT A - MANUFACTURING DEPARTMENT							
077	Mixer October 18, 1983	Mille Ray	5:10p- 11:08p	358	69		Exceeded OSHA Action Level (50% - 85 dBA) Hearing Protection not worn. Hearing Protection recommended
078	Mixer October 20, 1983	Bruce Ward	8:10a- 3:29p	439	71	97.5	Exceeded OSHA Action Level (50% - 85 dBA) Hearing Protection not worn. Hearing Protection recommended
079	Machine Tender October 20, 1983	Ray Rodriguez	8:22a- 3:28p	426	--	--	Sample voided Equipment problems
080	Press Operator October 18, 1983	Milton Cook	5:05p- 11:10p	365	--	--	Sample voided Equipment problems
081	Press Operator October 19, 1983	Milton Cook	5:00p- 11:01p	361	115	92.1	Hearing Protection worn Exceeded OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
082	Press Operator October 20, 1983	John Chambers	8:15a- 3:29p	434	98.4	89.9	Hearing Protection worn Expected to exceed OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
083	Mandrel Handler October 18, 1983	Calvin Thompson	--	--	--	--	Sample voided Employee left plant.
084	Mandrel Handler October 19, 1983	Calvin Thompson	5:00p- 11:01p	361	143	92.5	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
085	Mandrel Handler October 20, 1983	Roy Black	8:05a- 3:33p	448	144.6	92.7	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
086	Tray Loader October 18, 1983	Alvis Sonnenberg	5:04p- 11:06p	362	53	85.2	Hearing Protection worn Exceeds OSHA Action Level (50% - 85 dBA)
087	Tray Loader October 20, 1983	Larry Young	8:00a- 3:27p	447	39	83.2	OSHA Action Level (50% - 85 dBA)
088	Relief October 18, 1983	Shanna Biber	5:00p- 11:06p	366	86.6	88.9	Hearing Protection worn Exceeds OSHA Action Level (50% - 85 dBA) Hearing Protection recommended

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TAB. F III
Audiotosimetry Results

NO. 83	POSITION LOCATION (DATE)	NAME	TIME	MIN	8 HOUR ENQ DOSIMETER MEAS - 90 dBA DOSE (dB)	RESULTS
PLANT A - MANUFACTURING DEPARTMENT						
089	Relief October 20, 1983	James Yates	8:27a- 3:31p	424	82	Hearing Protection not worn. Exceeds OSHA Action Level (50% - 85 dBA) Hearing protection recommended
PLANT A - FINISHING DEPARTMENT						
090	Line 1 Lathe Operator October 19, 1983	Charles Flaherty	7:58a- 3:36p	458	332	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
091	Line 1 Lathe Operator October 19, 1983	Bill Sellers	8:00a- 3:36p	456	283	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
092	Line 3 Lathe Operator October 18, 1983	Odell Nelson	4:47p- 11:02p	375	193.3	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
093	Line 3 Lathe Operator October 18, 1983	Allen Huse	4:49p- 11:03p	374	201.5	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
094	Line 1 Hydrotester October 19, 1983	Larry Humphrey	8:27a- 3:50p	443	140	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
095	Line 1 Beller October 19, 1983	Frank Kolar	8:24a- 3:38p	429	202.5	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
096	Line 3 Beller October 18, 1983	Jerry Morgan	4:50p- 11:05p	374	--	Sample voided Equipment problems
097	Line 3 Beller October 19, 1983	Jerry Morgan	4:51p- 11:05p	374	71	Hearing Protection not worn Exceeds OSHA Action Level (50% - 85 dBA) Hearing Protection recommended
098	Multiple Coupling Saw Operator October 19, 1983	Ronald Banik	7:56a- 3:27p	451	175	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE III
Audiometric Hearing

NO.	POSITION	NAME	TIME	MIN	8 HOUR TWA DOSIMETER DOSE - 80 dBA DOSE (dB)		RESULTS
	LOCATION (DATE)						
83							
PLANT A - FINISHING DEPARTMENT							
099	#1 Boring Mill Operator October 19, 1983	Peter Brewer	8:10a- 3:10p	440	231	96.0	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
100	#2 Boring Mill Operator October 19, 1983	Charles Brown	8:08a- 3:30p	432	245.8	96.6	Hearing Protection not worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
101	#3 Boring Mill Operator October 19, 1983	Autry Coaster	8:06a- 3:30p	444	167.6	91.7	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
102	Coupling Stacker October 19, 1983	Jerry Hooker	8:02a- 3:27p	445	183	94.4	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
103	PM Saw Operator October 19, 1983	Simon Rodriguez	8:04a- 3:32p	448	249.6	96.6	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
104	PM Specialty Lathe Operator October 19, 1983	Betty Starrett	8:14a- 3:31p	437	459	90.1	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
105	Large PM Lathe Operator October 19, 1983	Roy Jewett	8:15a- 3:33p	438	192.9	91.7	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
106	Coupling Tester October 19, 1983	Dwayne Bowland	8:17a- 3:34p	437	141.7	92.5	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
107	Network Saw Operator October 19, 1983	James Russel	8:20a- 3:37p	437	209	95.3	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
108	Lathe Operator (Manual) October 19, 1983	Warner Poston	8:30a- 3:33p	423	114.5	91.0	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
109	Forklift Driver October 18, 1983	Robert Wilson	4:42p- 11:01p	379	115	91.1	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
110	Forklift Driver October 19, 1983	James Clark	8:36a- 3:26p	410	142	92.5	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory

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Industrial Hygiene Survey
Hillsboro A/C Pipe Plant
October 17-20, 1983

TABLE 111
Audiometry Results

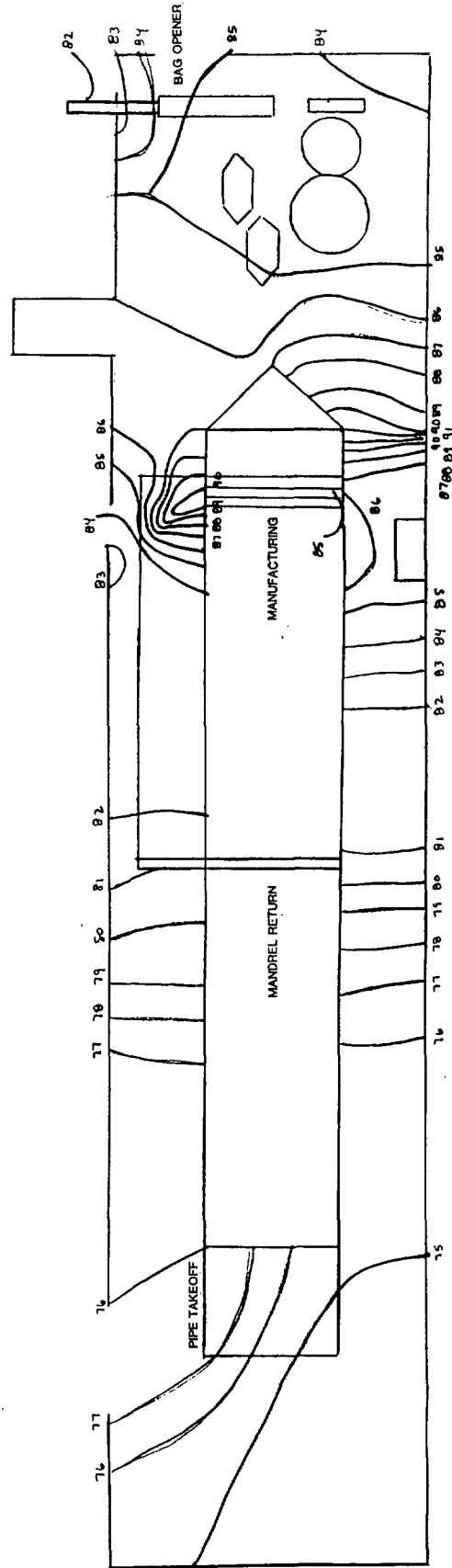
NO. 83	POSITION LOCATION (DATE)	NAME	TIME	MIN	8 HOUR TWA DOSIMETER NOISE - DOSE (1)	80 dBA dBA	RESULTS
PLANT B - MANUFACTURING DEPARTMENT							
111	Mixer October 18, 1983	Donald Clay	5:20p- 11:18p	358	61	86.1	Hearing Protection not worn Exceeds OSHA Action Level (50% - 85 dBA) Hearing Protection recommended
112	Machine Tender October 18, 1983	Dennis Hawkins	5:15p- 11:15p	360	142.7	92.6	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
113	Press Operator October 18, 1983	Gary Sulak	5:14p- 11:15p	360	134.7	92.1	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
114	Mandrel Handler October 18, 1983	Don Shuffield	5:25p- 11:18p	353	153.7	93.1	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
115	Tray Loader October 18, 1983	Charles Greer	5:26p- 11:14p	348	80	88.4	Hearing Protection not worn Exceeds OSHA Action Level Hearing Protection recommended
116	Relief October 18, 1983	Mike McFarlin	5:27p- 11:14p	347	113.4	90.9	Hearing Protection not worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
PLANT B - FINISHING DEPARTMENT							
117	Lathe Operator October 20, 1983	Clyde Veneble	8:55a- 3:50p	415	216	95.6	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
118	Hydrotester October 20, 1983	Dave Miller	8:53a- 3:50p	417	206	95.2	Hearing Protection worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
119	Finisher October 20, 1983	Robert Baker	8:52a- 3:47p	415	179	94.2	Hearing Protection not worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory
120	Forklift Driver October 20, 1983	Philip Stevens	8:49a- 3:47p	420	180	94.3	Hearing Protection not worn Exceeds OSHA PEL (100% - 90 dBA) Hearing Protection mandatory

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HILLSBORO A/C PIPE PLANT 'A'

Noise Control Map

Manufacturing

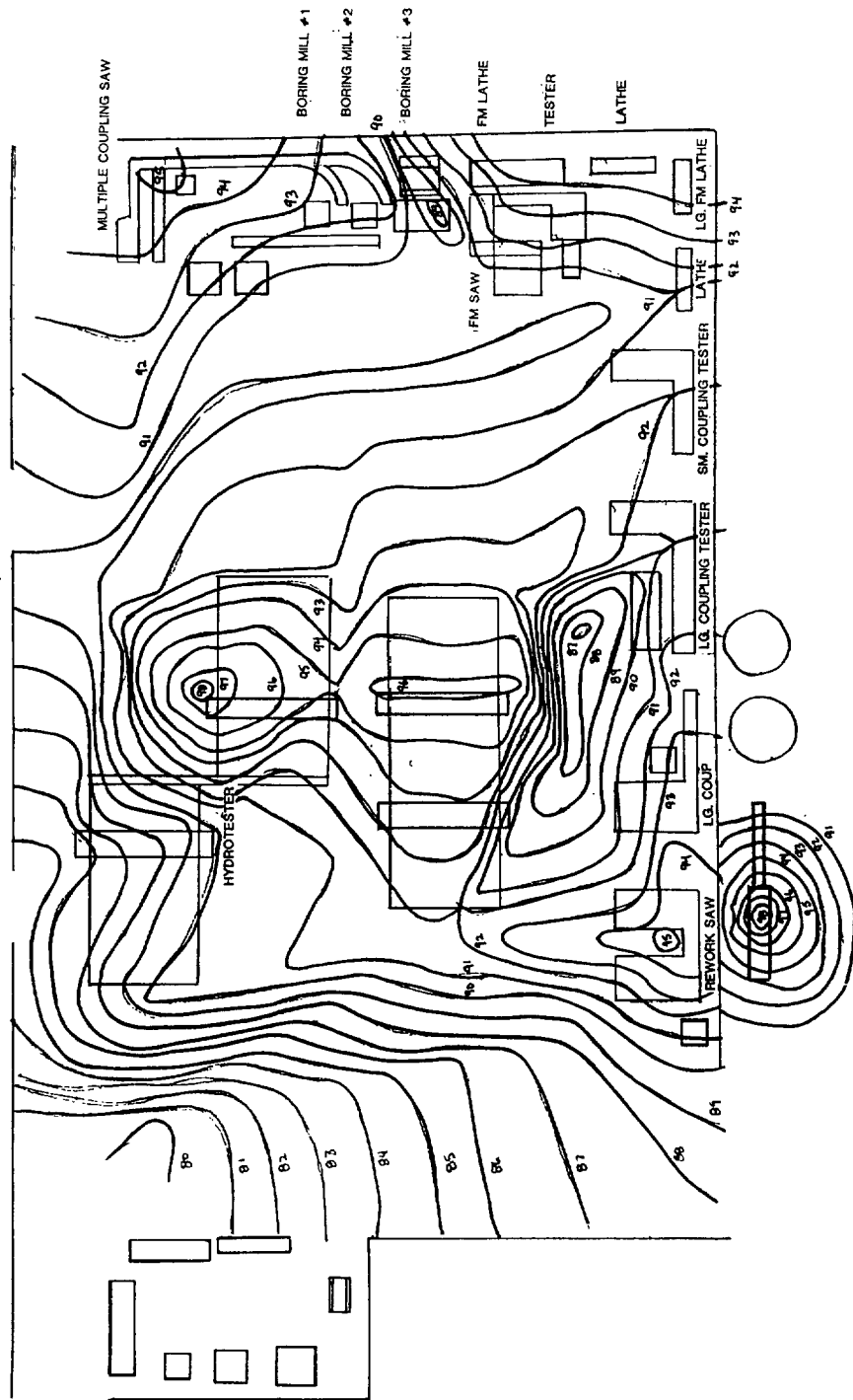


CTD020329

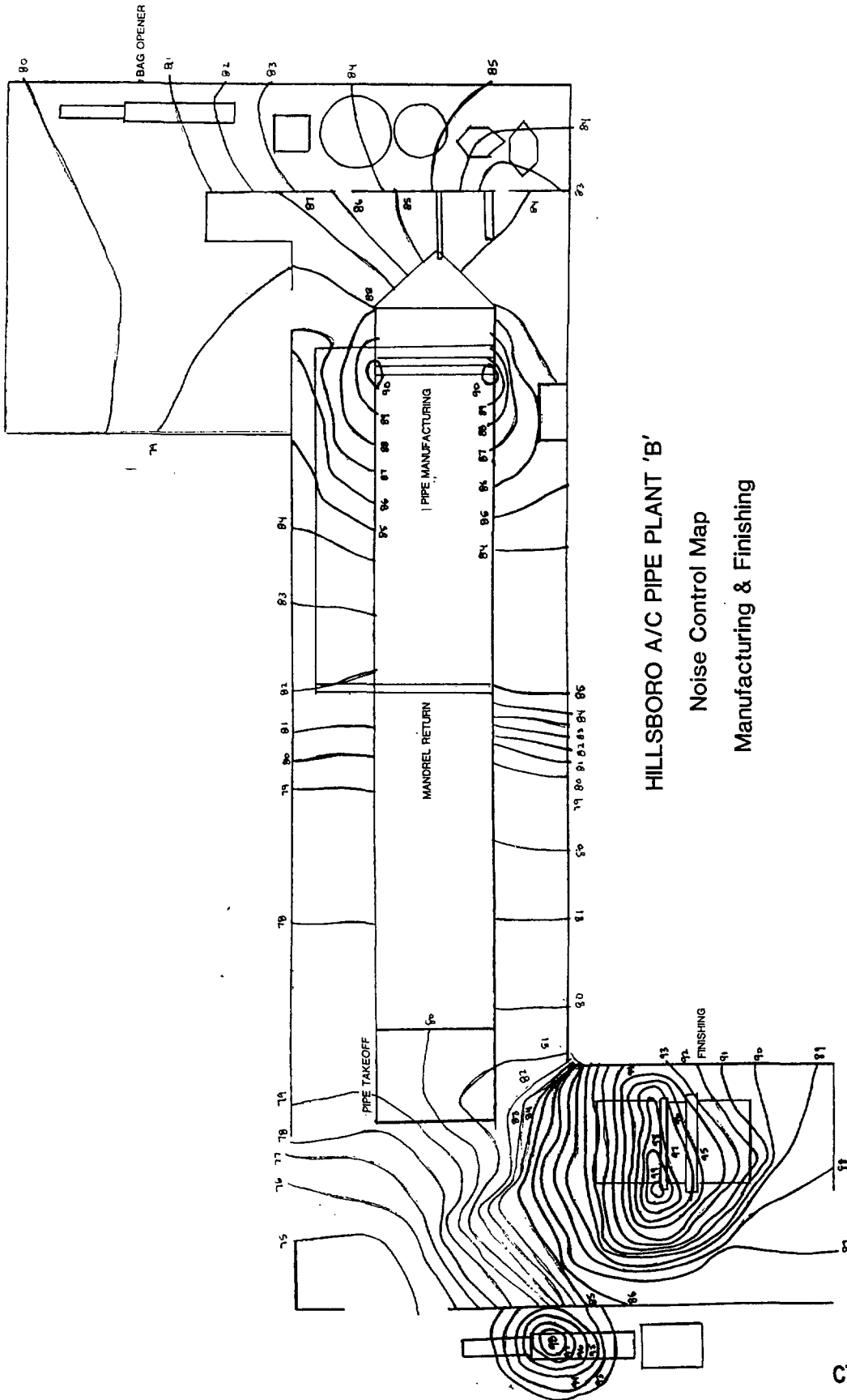
HILLSBORO A/C PIPE PLANT 'A'

Noise Control Map

Finishing



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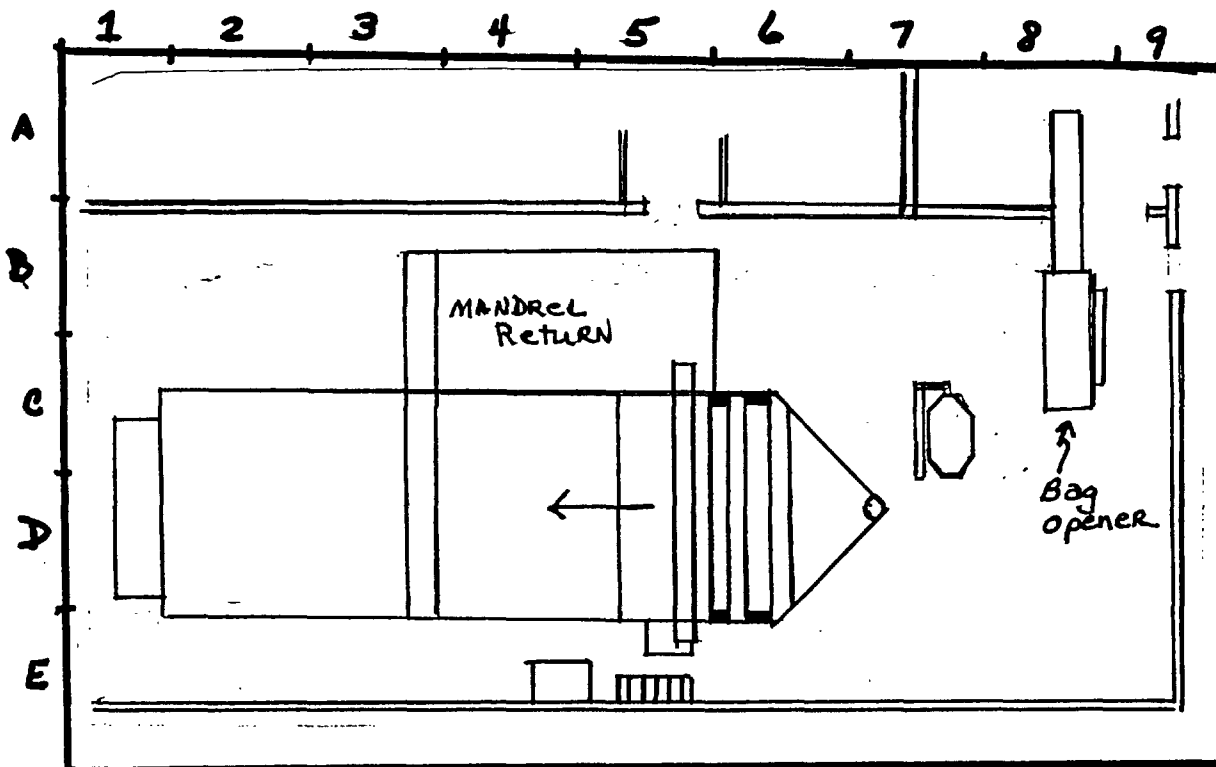
HILLSBORO A/C PIPE PLANT 'B'

Noise Control Map

Manufacturing & Finishing

HILLSBOBO 'A' PIPE PLANT
PIPE MACHINE

FIGURE 4

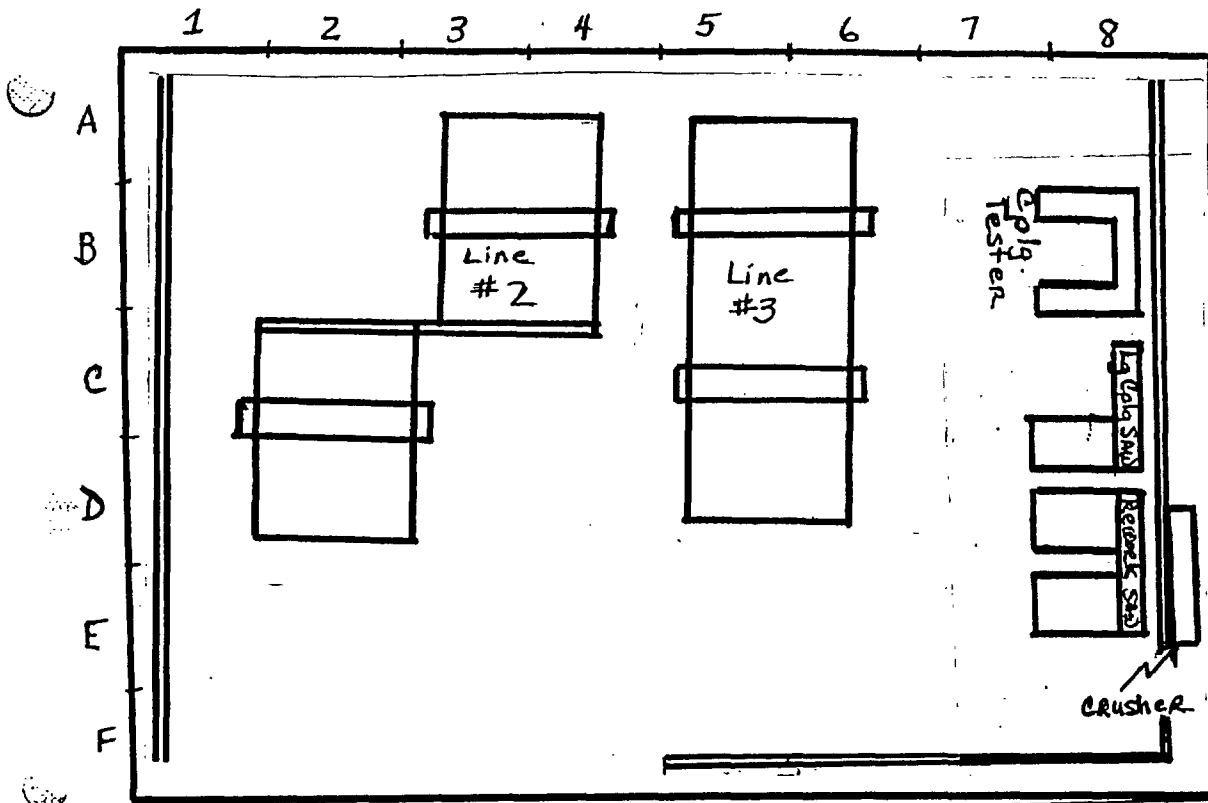


10/83							
POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Mixer Operator (4)	A-C 8-9	72-86		87.5			
Machine Tender (5)	B-E 6-9	84-89		91.6			
Press Operator (4)	D-E 6-9	85-88		90.5			
Pipe Handler (5)	B-E 1-2	86-94		92.6			
Laborer (2)	A-E 1-9	76-79		84.2			Tray Loader
Manufacturing Supervisor (7)	A-E 1-9	72-94		84.2			
Autoclave Truck Driver	A-E 1-3	76		92.7			180 Hyster
Relief Operator	A-E 1-9	72-94		88.8			

CTD020332

HILLSBORO 'A' PIPE PLANT
FINISHING DEPARTMENT

FIGURE 5

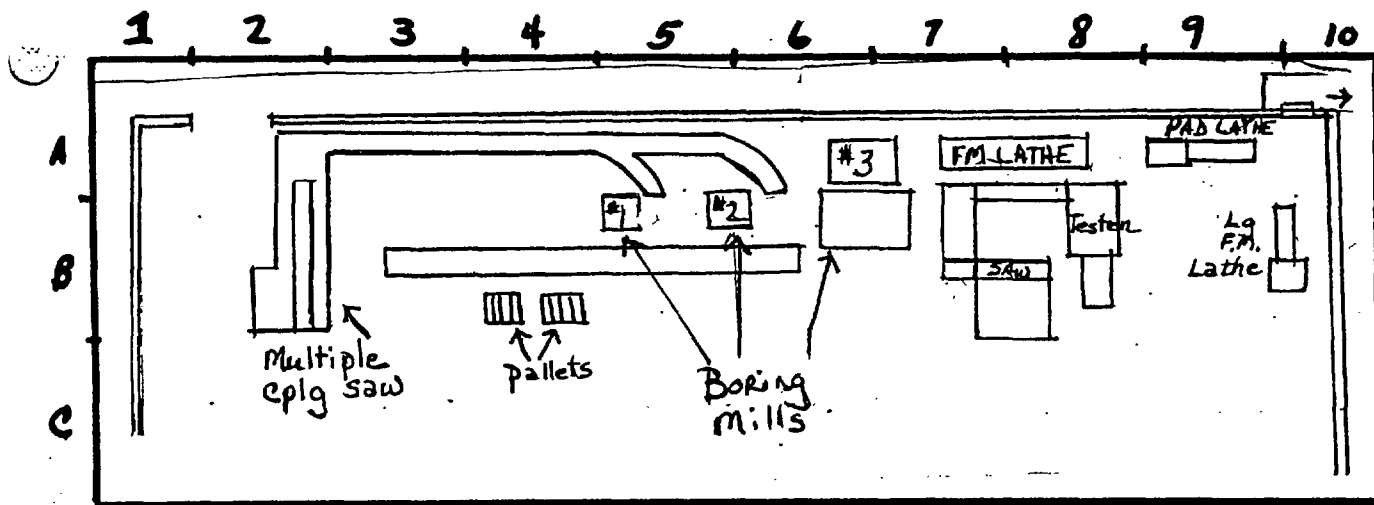


10/83		SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
POSITION	LOCATION			80	85	90	
Lathe Operator Line #2	A-B 3-4	85-99		98.1			(4) Lathe Operator Rotate Between Lines
Lathe Operator Line #3	A-B 5-6	92-95		95.0			
Inspector Line #2	A-D 1-4	82-99		91.2			
Inspector Line #3	A-D 5-6			93.4			
Hydrotester Operator Line #2	C-D 1-3	85-98		92.4			(2) Hydrotester Rotate Between Lines
Hydrotester Operator Line #3	C-D 5-6			93.8			
Coupling Tester Operator	A-B 7-8	82-99		95.7			
Lg. Coupling Saw Operator	C-D 7-8			92.5			
Rework Saw Operator	D-E 7-8	87-96		95.3			Work as Bellers/ Handlers & Stack- ers on Lines Rebanding Pipe.
Material Operator (10)	C-D 1-6	85-90		91.6			
Truck Driver (4)	A-F 1-8			92.5			
Laborer (1)	A-F 1-8			87.5			
Finish Supervisor (4)	A-F 1-8			91.0			Also Operates Wood Saw & Drives Truck to Dump
Crusher Operator	D-F 8	95-101		94.3			

CTD020333

HILLSBORO 'A' PIPE PLANT
FITTINGS DEPARTMENT

FIGURE 6



10/83							
POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Coupling Cut Off Saw Operator (1)	A-C 1-3	88-101		94.1			Consider all Mill Operators Exposed >90dBA
Coupling Stacker	B 3-5	87-91		94.4			
Boring Mill Operator #1 (1)	A-C 1-5	88-92		96.0			
Boring Mill Operator #2 (1)	A-C 5-6	91		96.6			
Boring Mill Operator #3	A-B 6-7	85-91		93.7			
M. Lathe Operator (2)	A-C 7-8	91-97		101			
FM Saw Operator (1)	A-C 7-8	88-96		96.6			
Specialty Lathe Operator (1)	A-C 9-10	83-93		94.7			

CTD020334

FIGURE 7

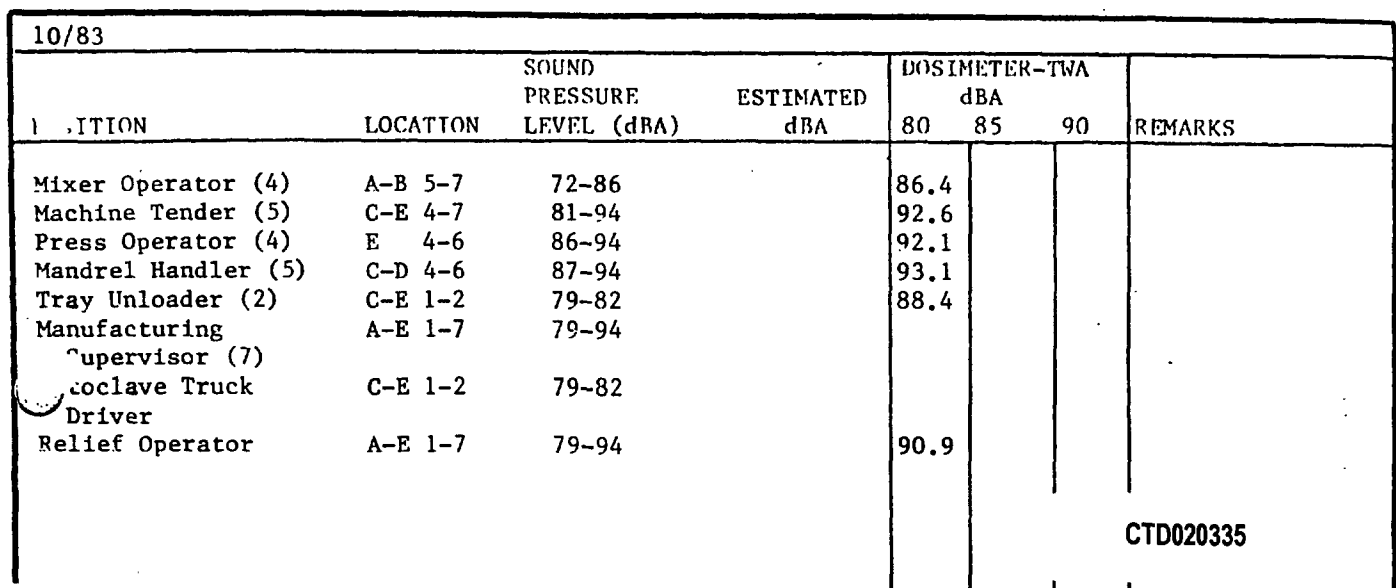
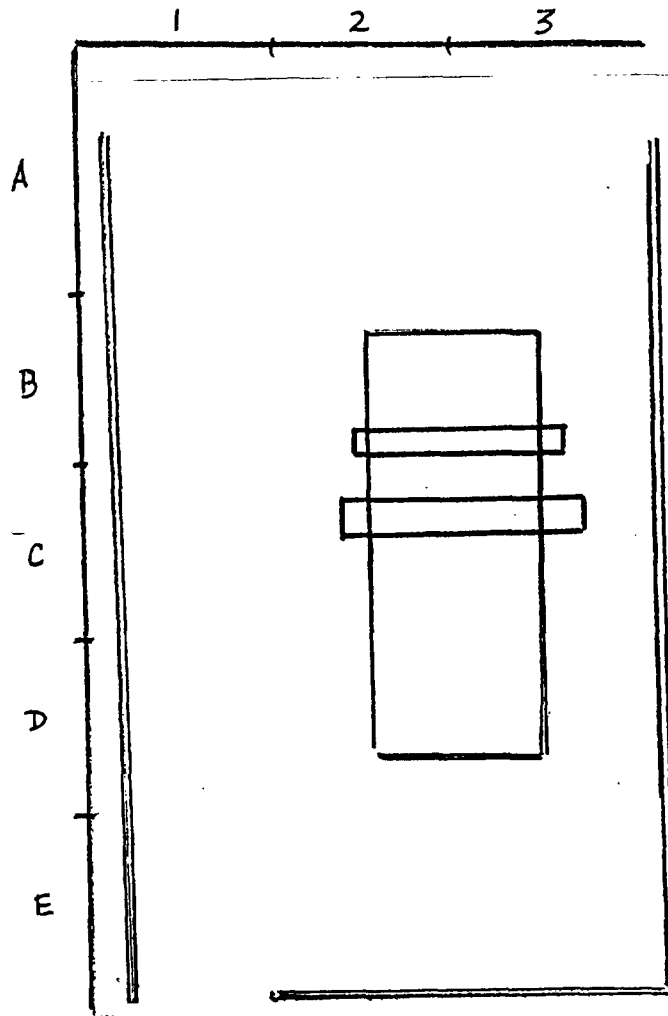


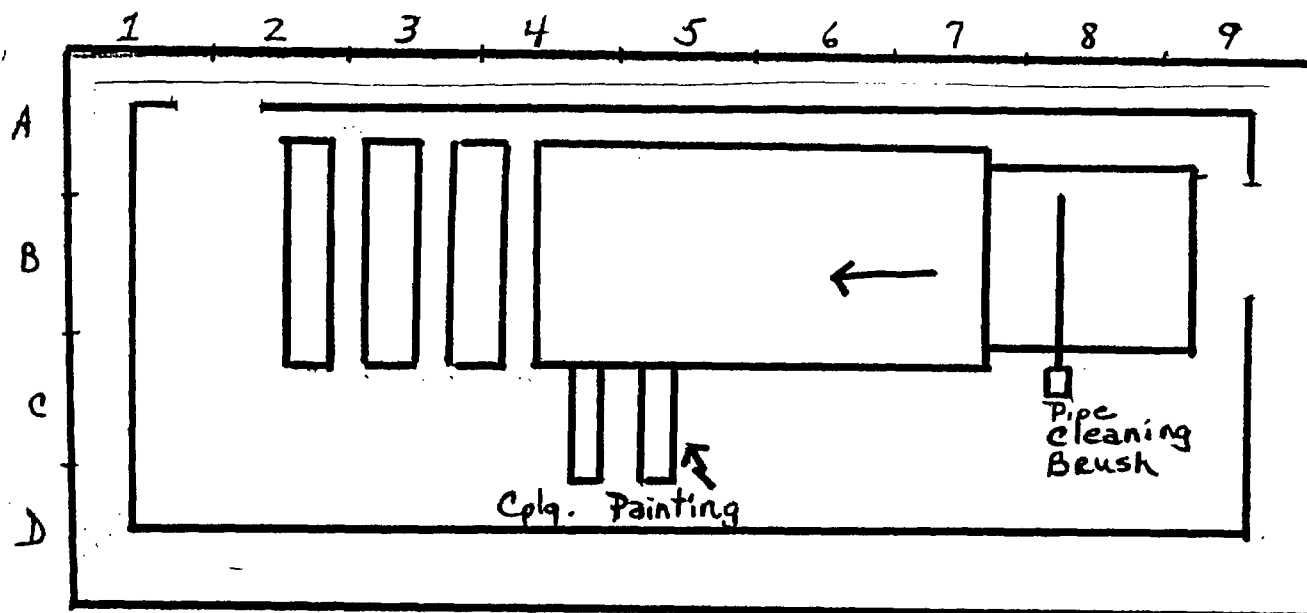
FIGURE 8



10/83							
POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Lathe Operator	A-C 1-3	85-105		95.6			
Hydrotester	B-C 1-2	98-100		95.2			
Finisher	C-E 1-3	87-97		94.2			
Forklift Driver	A-E 1-3	87-94		94.3			
							CTD020336

HILLSBORO A/C PIPE PLANT
EPOXY DEPARTMENT

FIGURE 9



6/82							
POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Pipe Cleaner	A-D 8					84.7	(1) Classified Person in Epoxy Department Not running at this time.
Coupling Painter	C-D 4-5		<85*				

CTD020337

HILLSBORO A/C PIPE PLANT
MISCELLANEOUS JOB POSITIONS

FIGURE 10

6/82							
POSITION	LOCATION	SOUND PRESSURE LEVEL (dBA)	ESTIMATED dBA	DOSIMETER-TWA dBA			REMARKS
				80	85	90	
Fittings Maker (2)	Fittings Area	79-85		89.2			
Mechanic (11)	Maintenance			86.9			
Boiler Operator (3)	Plant B Boiler Rm.	77-87		86.1			1 Boiler running
Machinist (3)	Maintenance	72-80			83.5		Doors closed
Electrician (1)	Maintenance			83.4			
Maintenance Supervisor (3)	Maintenance			82.4			
Equipment Operator (3)	Yard			88.8			
Bulk Cement Unloader (1)	Yard			89.8			
Warehouse Supervisor (1)	Yard		<85				
Pressure Operator (1)	Yard			78.4			
Loading Laborer (1)	Yard		<85				
Truck Driver (1)	Yard			89.5			
Shipping Supervisor (1)	Yard			78.0			
Lab Technician (1)	Lab			85.7			

CTD020338

Industrial Hygiene Survey
Hillsboro Asbestos/Cement Pipe Plant
October 17-20, 1983

Appendix I
Monitoring/Analytical Procedures
and
Current Standards

Asbestos

Personal samples, Area samples (which reflect employee exposure levels) and Area/Environmental/Engineering samples were obtained on Millipore 0.8 micrometer Mixed Cellulose Ester Filters (MCEF). DuPont P4000 and P2500 air sampling pumps were calibrated before and after each sampling day to approximately 2-liters per minute (1pm). In most cases, a series of three or four different filter samples were obtained for the person or area to establish an 8-hour time-weighted average concentration (TWA).

The analysis was conducted according to the USPHS/NIOSH Membrane Filter Method for Evaluating Airborne Asbestos Fibers (P & CAM 239) by an experienced fiber counter who was trained by NIOSH. Fibers were counted on a Nikon Model 96982 phase contrast microscope at 400X magnification.

The current OSHA standard is given in 29 CFR 1910.1001. It calls for an employee TWA airborne limit of two fibers, longer than 5 micrometers, per cubic centimeter of air (f/cc). Also, no employee shall be exposed at anytime to airborne concentrations in excess of 10 f/cc.

Dust Sampling

Total dust samples were obtained on MSA FWS-B polyvinyl chloride filters. Gravimetric analyses were accomplished on a Cahn C-25 electrobalance according to methods given in the OSHA Industrial Hygiene Field Operations Manual April 2, 1979. DuPont P4000 and P2500 air sampling pumps were utilized for area samples and were calibrated at approximately 1.7-2.0 liters per minute before and after each sampling day.

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, Ill.). The method utilized for these analysis was NIOSH Manual of Analytical Methods, 2nd. Edition, P&CAM 259. This method utilized the redeposition of the particulate material into a silver membrane filter followed by x-ray diffraction scan for the silica peaks.

CTD020339

Industrial Hygiene Survey
Hillsboro Asbestos/Cement Pipe Plant
October 17-20, 1983

The limit for Total Nuisance particulates is 15 mg/m^3 . The permissible exposure for silica dust is a function of the percentage of silica in the dust sample obtained as follows:

Silica (Crystalline):

$$\text{Quartz (Respirable)} = \frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$$

$$\text{Quartz (Total Dust)} = \frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$$

Noise

A B & K 2215 precision sound level meter with a B & K 4165 1/2 inch microphone, was utilized to obtain sound pressure level measurements. This instrument was calibrated before and after this survey. A 3" foam sphere was used as a microphone windscreen. The reference for all sound pressure level measurements is 0.0002 microbar.

DuPont Model D-376 and D-381 audiodosimeters utilized during this survey were set at the 80 dBA cutoff mode.

The DuPont audiodosimeters were calibrated before and after each day of dosimetry sampling utilizing the DuPont Audiodosimeter Calibrator Model C-114 by the direct reading method. Before and after each survey week the audiodosimeters were calibrated by the time calibration procedure utilizing the DuPont calibrator C-114 and Model R225 readout. This calibration was done for 5-minutes, 10-seconds at 114 dB to give an expected 30% +/- 4% result.

Also used for evaluating noise exposures, was the Metrosonics db 301/652 Metrologging System and the db-306 Sound Level Analyzer. The db-301 is used for correcting the basic sound level data in either a time history or statistical distribution computer program. The db-652 receives the data from the db-301, processes it, and provides a printout of the two program formats. The 80 dB cutoff mode is incorporated into these programs.

The db-301 and db-306 models were calibrated before and after each survey day with a Metrosonics CL-302 Calibrator.

The permissible OSHA noise exposure, (29 CFR 1910.95), ranges between 90 decibels for 8-hours per day through 115 decibels for a maximum duration of 1/4-hour per day. The maximum permissible audiodosimeter dose is 100% on the 85 and 80 dBA modes.

CTD020340

respirators, and to assure that all such employees participate in the program and are informed of specified categories of information. OSHA considers this provision to be "necessary" within the meaning of section 6(c) of the Act, to reduce the grave danger faced by asbestos exposed employees. The absence of a training program requirement in the asbestos standard has been pointed out as one of the serious deficiencies of the current standard. OSHA believes that participation in an adequate training program is essential for the protection of employees because most protective provisions enlist the employee as an active participant. For example, many employees handling asbestos depend on effective work practices. Without training in applying these work practices, employee protection would be inadequate. Where the employee plays a more passive role in his protection such as where engineering controls are relied on, training is also essential, because the employee must know the sources of workplace asbestos contamination, and the health hazards of asbestos exposure, in order to assess his own exposure situation and to help recognize when engineering controls are not operating properly. Certainly where housekeeping plays an important role in control, instruction about housekeeping methods, for example, frequent vacuuming, is essential. Perhaps most importantly, where employee protection depends upon respirator use, OSHA's experience shows that training employees in the use, fitting and limitations of respirators is critical to the effectiveness of respirator protection. Accordingly this requirement applies where airborne concentrations are reasonably expected to exceed 0.5 f/cc, even if employees use respirators to reduce breathing zone concentrations and thereby comply with the ETS.

As set forth in paragraph (k)(4) the employer must inform the employee of the health effects of asbestos exposure; the relationship between asbestos and smoking in producing lung cancer; the operations exposing employees to asbestos fibers and necessary protective steps to minimize exposure; the purpose, proper use, fitting instructions and limitations of respirators, and the contents of all the provisions of the Asbestos Standard at 1910.1001.

5. Paragraph (k)(5) *Respiratory protection during the ETS.* The ETS adds a new paragraph (k)(5) which includes a table which ties respirator selection to the 0.5 f/cc PEL. Under the ETS, the concentration cut-offs for various kinds of respirators are

multiples of the reduced PEL of 0.5 f/cc, rather than multiples of the previous 2 f/cc permissible limit. For example, approved air purifying respirators may be used only where asbestos concentrations are not expected to exceed 5 f/cc (10 x the PEL). Before the ETS, because the PEL was 2 f/cc, such respirators could be used where asbestos concentrations would not have exceeded 20 f/cc (10 x the PEL of 2 f/cc).

Similarly, powered air purifying respirators may be used where asbestos concentrations do not exceed 100 times the PEL, which at the new level of 0.5 f/cc is 50 f/cc. Previously, employers could have used such respirators at concentrations up to 200 f/cc.

It is likely that the main impact of the reduced PEL on respirator choice will be in operations and industries where exposure levels are between 5 f/cc and 20 f/cc. Formerly, employees exposed in this range could use half-mask air purifying respirators; now they must be protected by a powered air purifying respirator or a full facepiece respirator, or they may use a supplied air respirator.

6. Paragraph (k)(6). *Warning signs during the ETS.* The ETS requires that legible signs warning of the health hazards of asbestos be displayed at locations where airborne concentrations of asbestos fibers exceed the reduced exposure limit of 0.5 f/cc. No specific legend is required; signs for newly posted during the ETS. OSHA wishes to make as practicable as possible the rapid posting of signs, especially in workplaces where there has been previous non-compliance and in areas where asbestos concentrations were formerly below the 2.0 f/cc PEL.

XI. Public Participation

Interested persons are invited to submit written data, views and arguments with respect to the revisions to the asbestos standard made by the ETS. These comments must be postmarked on or before January 3, 1984 and sent to the Docket Officer, Docket No. H-033C, Occupational Safety & Health Administration, U.S. Department of Labor, 200 Constitution Avenue, NW, Room S-6212, Washington, D.C. 20210.

The data, views and arguments that are submitted will be available for public inspection and copying at the above address. All timely written submissions will be made a part of the record of the proceeding.

List of Subjects in 29 CFR Part 1910

Occupational safety and health. Asbestos. Health. Emergency temporary standard. Cancer.

Authority and Signature

This document was prepared under the direction of Thorne G. Auchter, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, NW, Washington, DC 20210. Pursuant to Sections 6(b), 6(c), 8(c) and 8(g) of the Act, 29 CFR 1910.1001 is amended by adding a new paragraph (k) as set forth below.

(Secs. 6(b), 6(c), 8(c) and 8(g). Pub. L. 91-596, 84 Stat. 1593, 1596, 1599, 1600; 29 U.S.C. 655, 657; Sec. 107, Pub. L. 91-54, 83 Stat. 96 (40 U.S.C. 333); 29 CFR Part 1911; Secretary of Labor's Order No. 9-63 (48 FR 25736))

Signed at Washington, D.C., this 2nd day of November 1983.

Thorne G. Auchter,
Assistant Secretary of Labor.

PART 1910—[AMENDED]

Section 1910.1001 of Part 1910 of Title 29 of the Code of Federal Regulations is hereby amended by adding a new paragraph (k) reading as follows:

§ 1910.1001 Asbestos.

(k) *Emergency temporary standard effective November 4, 1983.—(1) Scope.* This emergency temporary standard is issued pursuant to section 6(c) of the Act and applies to all workplaces where employees may be exposed to asbestos in all industries covered by the Act, including, general industry, construction and maritime. Except to the extent modified by this emergency temporary standard all provisions of § 1910.1001 remain in effect.

(2) *Permissible levels of exposure.* The 8-hour time-weighted average airborne concentration of asbestos fibers to which any employee may be exposed shall not exceed one-half (0.5) fiber, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) *Methods of compliance with the emergency temporary standard.* Notwithstanding any other requirements of this section, compliance with the reduced exposure limit of 0.5 f/cc shall be achieved by any feasible combination of engineering controls, work practices, and personal protective equipment and devices.

(4) *Employee information and training.—(i)* As soon as possible, but not later than thirty (30) days from the effective date of this emergency temporary standard, the employer shall institute a training program for all employees exposed to airborne concentrations of asbestos in excess of

0.5 f/cc, without regard to the use of respirators and shall assure their participation in the program during the effective period of this emergency temporary standard.

(4) The employer shall assure that each employee is informed of the following:

(A) The health effects associated with asbestos exposure;

(B) The relationship between asbestos and smoking in producing lung cancer;

(C) The nature of operations which could result in exposure to asbestos and necessary protective steps to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping and protective clothing;

(D) The purpose, proper use, fitting instructions and limitations of respirators permitted by the standard; and

(E) A review of all the provisions contained in 1910.1001.

(5) *Respiratory protection during the ETS.* Notwithstanding any other requirement of this section, where respirators are used to achieve the permissible exposure limit of 0.5 f/cc they shall be selected according to Table 1.

(6) *Warning signs during the ETS.* In addition to the requirements of

paragraph (g)(1) of this section, legible signs warning of the health hazards of asbestos shall be provided and

displayed at each location where airborne concentrations of asbestos fibers may exceed 0.5 f/cc.

TABLE 1

Respiratory Protection
For Airborne Concentrations of Asbestos

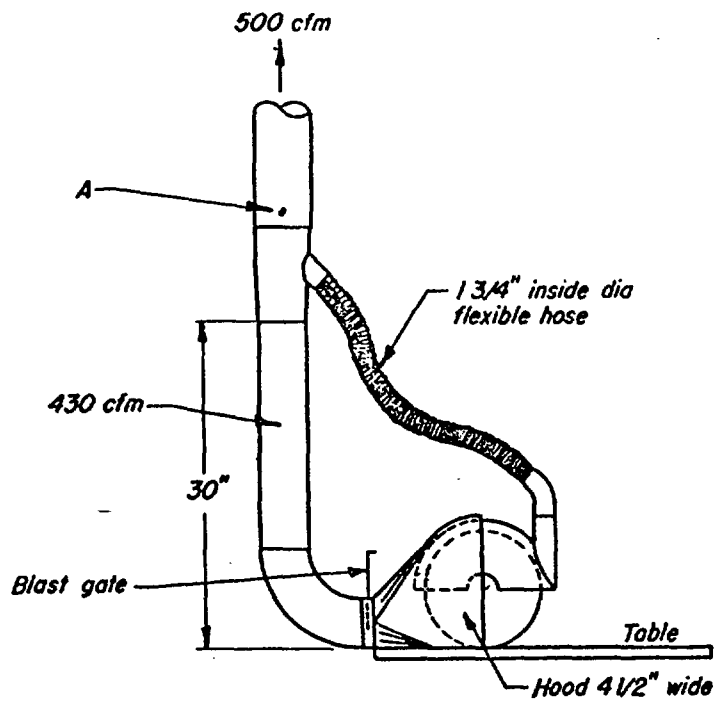
<u>Airborne Concentration of Asbestos (TWA)</u>	<u>Required Respirator¹</u>
Not in excess of 5 f/cc (10 X PEL)	Reusable or single use air purifying respirator
Not in excess of 50 f/cc (100 X PEL)	Full facepiece air purifying respirator, or a powered air purifying res- pirator
Greater than 50 f/cc	A type "C" continuous flow or pressure demand, supplied air respirator.

¹ Respirators specified for high concentrations may be used at lower concentrations of asbestos.

(Secs. 6(b), 6(c), 8(c) and 8(g), Pub. L. 91-596,
84 Stat. 1593, 1598, 1599, 1600; 29 U.S.C. 655,
657; Sec. 107, Pub. L. 91-54, 83 Stat. 96 (40

U.S.C. 223); 29 CFR Part 1911, Secretary of
Labor's Order No. 9-83 (46 FR 35735))

(FR Doc. 83-30073 Filed 11-2-83; 145 pm)
BILLING CODE 4510-26-M



Duct velocity = 3500 fpm
Entry loss = 3.5 VP in duct riser (Point A)

For booth enclosure, see VS-401

AMERICAN CONFERENCE OF
GOVERNMENTAL INDUSTRIAL HYGIENISTS

RADIAL SAW

DATE 1-68

VS-709

He still recommends, though, that employers continue to log the inspector's activities.

OSHA RELAXES NOISE STANDARD TO 100 DBA!

In a surprise move, OSHA issued instruction CPL 2-2.35, Enforcement of the Occupational Noise Exposure Standard, effective November 9, 1983, in which engineering and administrative controls are not to be required until the Time-Weighted Average noise exposure has reached 100 dBA or, equivalently, a dosimeter exposure value of 400%. The enforcement principles of this instruction are:

"The enforcement of 29 CFR 1910.95(b)(1) will allow employers to rely on personal protective equipment and a hearing conservation program, rather than engineering and administrative controls, when hearing protectors will effectively attenuate the noise received by the employee's ear to levels specified in Table G-16 or G-16a of the standard. The principles set forth below and Appendix A of this instruction are provided to aid in this evaluation. Professional judgement is necessary to supplement these general guidelines. In cases where deviations from these guidelines seem to be warranted, the Regional Office shall consult the Directorate of Field Operations.

"1. Area directors shall issue citations for violations of 29 CFR 1910.95(b)(1) when engineering and/or administrative controls are both technically and economically feasible; and

"a. Employee's exposure levels are so high that hearing protectors alone may not reliably reduce noise levels received by the employee's ear to the levels specified in Table G-16 or G-16a of the standard. Given the present state of the art, hearing protectors which offer the greatest attenuation may not reliably be used when employee exposure levels border on 100 dBA. (See Appendix A.)

"b. The costs of engineering and/or administrative controls are less than the cost of an effective hearing conservation program.

"NOTE: See Chapter III of the Field Operations Manual for guidelines on technical and economic feasibility. In addition, in the National Office the Directorate of Technical Support is a resource for information on engineering control costs and technological feasibility data requested by Regional Offices.

"2. A control is not reasonably necessary when an employer has an on-going hearing conservation program and the results of audiometric testing indicate that any existing controls and hearing protectors are adequately protecting employees. Take into consideration such factors as the exposure levels in question, the number of employees tested, and the duration of the testing program.

"3. When employee noise exposures are less than 100 dBA and an employer does not have an on-going hearing conservation program or the results of audiometric testing indicate that the employer's existing program is not working, consider whether:

"a. Reliance on an effective hearing conservation program would be less costly than engineering and/or administrative controls.

"b. Improvements could be made to the hearing conservation program which could bring the employer into compliance with Table G-16 or G-16a.

"c. Engineering and/or administrative controls are both technically and economically feasible.

"NOTE: If noise levels which are received by the employee's ear can be reduced to the levels specified in G-16 or G-16a, citations under the hearing conservation standard should be considered rather than citations requiring engineering controls. If improvements in the hearing conservation program cannot be made and feasible controls exist, a citation under 1910.95(b)(1) should be considered. The Area Director

shall discuss such cases with the Regional Administrator prior to issuing a citation. When the Regional Office determines that controls are justifiable, the Regional Administrator shall contact the Director of Field Operations. A decision will be made at the National Office level and communicated to the Area Director through the Regional Administrator. The citation shall not, however, be delayed beyond 6 months."

Thorne G. Auchter, Assistant Secretary.

Distribution: National, Regional and Area Offices, All Compliance Officers, State Designees, NIOSH Regional Program Directors, 7(c)(1) Project Managers.

RECAP OF THE MAJOR POINTS:

- *These guidelines result from the November 1982, Castle & Cooke Foods court decision.
- *Engineering and/or administrative controls will be required when exposure levels are so high that hearing protectors alone may not provide enough protection.
- *Engineering and/or administrative controls are not required if the employer has an effective hearing conservation program. It is assumed that hearing protectors will not be sufficient for exposures exceeding 100 dBA.
- *If the employer's hearing conservation program is not providing adequate protection, the National Office will decide if engineering and/or administrative controls are justified...even for exposures below 100 dBA.

NOISE CONTROL COSTS FIVE TIMES MORE THAN THE VALUE OF THE NOISE MAKER

A noise expert for the Dolese Company (OSHRC #76-3460) testified that a crawler crane valued at \$1200.00 could be modified to protect the operator from excessive noise exposure. Only one operator was involved, and the noise control modification was predicted to cost at least \$5,800.00. A Review Commission judge originally vacated the citation on the grounds that the costs of the controls outweighed the benefits that would be achieved.

On remand, the judge ruled that the proposed modification of the crane was technologically feasible, and cited the Review Commission's precedent in the Sun Ship, Inc. ruling of December 1982 in requiring that the modifications to the crane be made. The employer's argument that hearing protectors provided better protection at lower cost was rejected because in the Sun Ship ruling, the Review Commission held that cost-benefit analyses do not apply in safety and health matters.

OSHA has recently completed an amendment to the noise rules generally referred to as the "Hearing Conservation Amendment". That amendment became effective on 7 April 1983 but had no effect on the 90 dBA action level for engineering solutions.

It was announced in October that OSHA is scheduled to begin a review of the engineering requirements of Sections (a) and (b) in June 1984.

According to William Ihde of S V Engineering, Inc., management has several incentives for installing engineering controls in foundries. One incentive has been OSHA's recent position that excessive noise is a serious violation that carries fines in excess of \$200.00 per violation. Another incentive, Ihde says, is the compensation cost for noise-induced

South Carolina inspectors conducted eight cotton dust inspections in their state. However, since the standard took effect, federal OSHA has conducted only four inspections, all in response to complaints, in the two states under federal enforcement jurisdiction, Frumin reported.

"This policy against enforcement," he asserted, "has had the practical effect of exempting cotton textile employers from the need to comply with the standard."

Joan Claybrook, president of Public Citizen Research Group, suggested that the Administration's "disastrous policies" on enforcement could be corrected if Auchter would ask Congress for more inspectors, substantially increase follow-up inspections, immediately halt current targeting policies, and discontinue the policy of evaluating compliance officers based on their ability to settle as many contested cases as possible.

Noise

OSHA ENFORCEMENT INSTRUCTIONS ALLOW USE OF PROTECTORS TO COMPLY WITH NOISE RULE

New enforcement instructions issued Nov. 9 by the Occupational Safety and Health Administration to its field staff will allow employers to rely on hearing protectors and a hearing conservation program to comply with the OSHA noise standard, rather than engineering and administrative noise controls, when the protectors can effectively reduce employee noise exposure to levels specified in the standard.

However, the agency said that feasible engineering and/or administrative controls are required when exposure levels are so high (in the area of 100 dBA) that relying on hearing protectors alone may not provide adequate protection.

The agency issued the new instructions to address the ruling of the U.S. Court of Appeals for the Ninth Circuit in the case of *Donovan v. Castle and Cooke Foods and OSHRC* (Current Report, Dec. 2, 1982, p. 541). The court held in that case that the implementation of engineering and/or administrative controls could not be required under the noise standard without comparing the relative costs and relative effectiveness of these abatement methods with personal protective equipment.

Adequate Protection

OSHA said that administrative or engineering control of noise "is not reasonably necessary when an employer has an ongoing hearing conservation program and the results of audiometric testing indicate that any existing controls and hearing protectors are adequately protecting employees."

To make that determination, the number of employees tested and the duration of the testing program should be taken into account.

Whenever a hearing conservation program appears not to be providing adequate protection for employees who are exposed to noise levels less than 100 dBA, a decision will be made at OSHA's national office as to whether engineering and/or administrative controls are justifiable.

When employee noise exposures are less than 100 dBA and an employer does not have an ongoing hearing conservation program or the results of audiometric testing indicate that an employer's existing program is not working, enforcement personnel were advised to consider the following:

- Whether reliance on an effective hearing conservation program would be less costly than engineering and/or administrative controls.

- Whether improvements could be made to the hearing conservation program which could bring the employer into compliance with Table G-16 or G-16a of the standard.

- Whether engineering and/or administrative controls are both technically and economically feasible.

Section 1910.95(b)(1) requires employers to first attempt to use feasible administrative or engineering controls when employees are subjected to noise levels exceeding those listed in the standard. Hearing protection can be used only if such measures fail to reduce sound levels to within the limits of the standard.

The agency said if employee noise doses can be reduced to levels specified in the standard, citations under the hearing conservation amendment should be considered rather than citations requiring engineering controls.

If improvements in the hearing conservation program cannot be made and feasible controls exist, a citation under 1910.95(b)(1) should be considered, the agency said, adding that the area director will discuss such cases with the regional administrator prior to issuing a citation. When the OSHA regional office determines that controls are justifiable, the regional administrator shall contact the director of OSHA field operations. A decision will be made at the national office level and communicated to the area director through the regional administrator.

Determining Degree of Protection

OSHA told its enforcement personnel that when comparing the relative degree of attenuation of personal protectors and engineering and/or administrative controls, they must consider and document the following factors:

- Appendix B of the noise standard should be used to determine the laboratory-based noise reduction for a given hearing protector. However, enforcement personnel were instructed to apply a safety factor of 50 percent (divide the calculated laboratory-based attenuation value in half), because lab attenuation values are seldom achieved in the workplace.

The adjusted attenuation values should be sufficient to reduce employee exposure levels to within the limits of the standard. However, OSHA said that "depending on the specifics of the case," an exception may be appropriate when an employer is in compliance with the hearing conservation amendment and has a history of an effective hearing conservation program.

- Documentation of any hearing loss must include the amount of hearing ability lost and date it was recorded, exposure level, frequency and duration of exposure, length of employment, explanation of any followup measures taken, and any other pertinent information.

- The estimated costs for engineering controls must be "reasonable" and include the annualized cost of installing controls and, if available, the annual cost of their maintenance and costs due to any resulting loss of productivity or efficiency, according to the guidelines.

The agency said that in order to consider the permanency of engineering controls, enforcement personnel should compare the estimated cost for engineering controls to the estimated annual cost of a hearing conservation program multiplied by the approximate number of years the controls would be effective.

- An anticipated reduction in employee noise exposures should be considered significant if a three to five dB decrease is achieved by one, or a combination of the following: source controls, controlling the industrial environment by

measures such as barriers and enclosures, or administrative controls.

► When evaluating control options, enforcement personnel must consider all types of abatement possibilities. OSHA said, for example, that partial use of controls "may be beneficial to implement some of the controls while foregoing more costly ones." OSHA also said that abatement plans may include plans for replacing process equipment with quieter equipment that will significantly reduce exposure levels and make interim engineering controls for existing machinery impractical.

Enforcement

OSHA TO LAUNCH 'NEW INITIATIVE' AIMED AT IMPROVING WORKPLACE HEALTH PROGRAMS

NEW ORLEANS — (By a BNA Staff Correspondent) — In the "near future" the Occupational Safety and Health Administration will launch a "new initiative" aimed at improving long-range workplace health programs while ensuring compliance with the agency's standards as well as controlling potential health hazards, Deputy Assistant Labor Secretary Patrick R. Tyson announced Nov. 3.

Tyson called on members of the American Academy of Occupational Medicine, the American Academy of Industrial Hygiene, and others in the workplace health community, for their support and active participation, saying it is "crucial" to the success of OSHA's program. Tyson said that the agency's new policy, together with the assistance of health professionals, "is the only one that makes sense" for solving workplace health problems. More than 500 occupational physicians and industrial hygienists attended the Joint Conference on Occupational Health meeting Nov. 2-4.

In the past, the agency has relied on standards and enforcement to accomplish the objectives spelled out in the Occupational Safety and Health Act. While OSHA remains committed to issuing "effective, well-crafted rules," and improving and "enforcing those on the books," Tyson said that it now will focus on the provision in the Act charging the agency with the responsibility "to stimulate employers and employees to institute new and to perfect existing programs for providing safe and healthful workplaces."

The agency's approach to workplace health programs is patterned after its safety targeting system which is aimed at conducting inspections at the most hazardous manufacturing worksites. Tyson described the new focus as a "double-edged incentive" which recognizes employers with good worker health systems while concentrating inspections on those with poor programs.

Reliance would be on the OSHA inspector's "informed judgment" to use the employer's records to estimate the "scope and severity of potential hazards," he explained. If the employer's record and the inspector's short-term sampling indicate that hazards are well controlled, then the inspector can move on to another area of the plant or to a different workplace.

Tyson said that the agency wants employers to know that this "common sense" approach, which is basically how the agency's inspection system currently is working, will create the incentive for workplaces to strengthen their health programs. "The better your program," he declared, "the less chance your workplace will undergo a lengthy OSHA action."

OSHA also will use training and education as a way to promote workplace health, giving "special consideration" to grant applications for health protection projects and offer-

ing more courses at the agency's training institute on the establishment and management of workplace health systems.

Effective Program Elements

Tyson described for the audience some of the key elements for an effective workplace health system which were developed by the agency as a result of a conference on the issue last year and a follow-up field managers' conference during the summer (Current Report, July 21, p. 171). As a minimum the system must require compliance with OSHA standards; must have labor and management support; must contain written objectives, policies, and procedures; must have a plan for the recognition and abatement of hazards; should prescribe specific work practice procedures; and incorporate employee training and education.

Further, the OSHA official said that the program must be staffed by qualified and professional health personnel, and must provide for industrial hygiene monitoring, medical surveillance, and the retention of records with employees having access to data on hazardous substances. Hazards, he added, should be controlled through "cost-effective engineering controls wherever technologically feasible" and use of personal protective equipment should be permitted where engineering controls are not feasible.

In response to audience concern that OSHA's policies are in fact "opening up a can of worms" leading to employer falsification of records, Tyson conceded that the agency is aware of this "potential." However, he maintained that OSHA is doing "enough records checks to keep them [employers] honest" and will issue citations when false records are discovered, either through reviews by inspectors or employee complaints.

NIOSH Also Seeks Assistance

J. Donald Millar, director of the National Institute for Occupational Safety and Health, also called on the health professionals to help his agency with its data collection. In many cases, he said, the agency does not have sufficient data to tell "where we are or where we are going." He noted that this has been one of the main complaints that the institute has received in comments on its list of the 10 leading causes of occupational disease and injury — that the agency lacks the required data to justify its ranking. "The collection of data without feedback or action is useless," he commented.

In his remarks Nov. 2, Millar also told the gathering that he wants to re-establish the cooperative programs that once existed between the two professional groups and the institute. In particular, he said he wants to "revitalize" the now defunct system whereby association experts review NIOSH's criteria documents, as well as other publications, before they are released. Millar reported that he has put Dr. Frank Mitchell in charge of working out the details and setting up communications between NIOSH, AAOM, and AAIH.

In another area, Millar reported that the institute is in the "final stages" of selecting members for its newly formed Board of Scientific Counselors, which is intended to provide advice to the institute to ensure scientific quality and timeliness in NIOSH research (Current Report, July 14, p. 161). Millar said that he expects the peer review group to begin work in early 1984.

HILLSBORO A/C PIPE PLANT
ASBESTOS SAMPLE RESULTS COMPARISON

DEPARTMENT	NO. SAMPLES	Non Compliance	Statistically Non-Compliance				Compliance				NO. SAMPLES ≤ 0.1 f/cc
		NO. SAMPLES ≥ 0.5 f/cc	0.4 ≤ Samples < 0.5	0.375 ≤ Samples < 0.4	0.3 ≤ Samples < 0.375	0.2 ≤ Samples < 0.3	0.1 ≤ Samples < 0.2				
Plant A											
Manufacturing	16	0	0	1		1	1	4	9		
Finishing	22	3	1	0		1	3	11	3		
Crusher	1	0	0	0		0	0	1	0		
Plant B											
Manufacturing	17	0	1	1		0	2	2	11		
Finishing	5	0	0	0		0	1	1	3		
Crusher	2	0	0	0		0	1	1	0		
Plant Total	63	3	2	2		2	8	20	26		

CTD020348

FOLLOW-UP

CertainTeed

Date

November 30, 1983

To

Jack Anderson
From

Location and mail code

Hillsboro, 257
Location and mail code

Subject

HILLSBORO A/C PIPE PLANT
ASBESTOS FIBER SAMPLING RESULTS
NOVEMBER 28, 1983Peter Norris *PJN*

1125/4

cc: B. Haigh - Hillsboro, 257
D. Hall - 2125/2B

The results of asbestos fiber sampling performed by B. Haigh on November 28, 1983 shows that the Rework Saw and the Small Coupling Tester Operators are still exposed in excess of 0.5 fibers per cubic centimeter (f/cc) OSHA Emergency Temporary Standard (ETS). The results are listed in the attached table.

The Rework Saw Operator was exposed to 0.64 f/cc which is above the OSHA ETS of 0.5 f/cc and higher than the sample taken during the week of October 17-20, 1983.

Exposures to the Small Coupling Tester were 0.3 f/cc and 0.48 f/cc, resulting in a time-weighted average (TWA) of 0.38 f/cc. This level is below the OSHA ETS, but statistically the operator may still be overexposed. Table I also shows that based on a 95% confidence limit, exposure in excess of the ETS is still a possibility.

These samples were taken after a curtain was installed between the open door and the Rework Saw to hopefully block any air drafts which would carry the dust from this operation over to the Small Coupling Tester. Also, the hopper used by the Rework Saw Operator was moved closer to him to lessen the airborne dust produced when throwing the pieces into the hopper.

If you need more assistance, don't hesitate to contact me.

PJN/car

Attachment

CTD020349

TABLE I

HILLSBORO ASBESTOS SAMPLES

<u>SAMPLE NO.</u>	<u>POSITION</u>	<u>FIBERS/FIELD</u>	<u>FIBERS/CC</u>	<u>TWA-F/CC</u>
N738	Sm. Cplg. Tester	2.08	0.30	0.38
N677	Sm. Cplg. Tester	2.96	0.48	
N802	Rework Saw	5.56	0.64	0.64
N798	Rework Saw		Voided	
N733	BLANK	0.01		

Dr. Piller
8/1/54

EXPOSURE SAMPLING CONFIDENCE LIMITS

Lower Confidence Limit (LCL) - 95% = $Y - SAE$
Upper Confidence Limit (UCL) - 95% = $Y + SAE$

X - Samples N738 & N677 Concentration - 0.38 f/cc
PEL - Asbestos, 0.5 f/cc
SAE - Asbestos, 0.25 f/cc

$Y = X/PEL$
 $Y = .38/.5$
 $Y = .76$

LCL (95%) = $Y - SAE$ UCL (95%) = $Y + SAE$
 = $.76 - .25$ = $.76 + .25$
 LCL = .51 UCL = 1.01

If $LCL \leq 1$ and $UCL \geq 1$, the true exposure possibly exceeds the PEL.

CertainTeed

Date	To	Location and mail code
December 5, 1983	Jack Anderson	Hillsboro, 257
Subject	From	Location and mail code
Asbestos Sampling Results Hillsboro A/C Pipe Plant November 30, 1983	Peter Norris <i>PJN</i>	1125/4

cc: B. Haigh - Hillsboro, 257
D. Hall - 2125/2B

Asbestos fiber sampling performed by B. Haigh on November 30, 1983 show exposures to the Coupling Cutoff Saw and Rework Saw Operators to be consistently above the 0.5 fibers per cubic centimeter (f/cc) limit. Exposure to the Small Coupling Tester was less than the 0.5 f/cc limit.

The 8-hour time-weighted average (TWA) exposures to the operators are as follows:

Coupling Cutoff Saw	- 0.81 f/cc
Rework Saw	- 0.5 f/cc
Small Coupling Tester	- 0.26 f/cc

All three operations were running during this sampling period. Other than that, conditions remained the same as the November 28th sampling with the curtain located between the plant opening and rework saw and the pipe hoppers moved closer to the operators.

Refer to the attached table for sample details.

PJN/car

Attachment

CTD020351

TABLE I

HILLSBORO ASBESTOS SAMPLING
NOVEMBER 30, 1983

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>FIBERS/FIELD</u>	<u>FIBERS/CC</u>	<u>TWA-F/CC</u>
N723	Cplg. Cutoff Saw	5.9	0.76	0.81
N559	Cplg. Cutoff Saw	6.3	0.86	
N685	Rework Saw	3.6	0.47	0.5
N746	Rework Saw	4.0	0.53	
P004	Cplg. Tester	1.5	0.27	0.26
N691	Cplg. Tester	0.6	0.23	

*12/1/83
JW*

CTD020352

CertainTeed

Date

December 15, 1983

To

J. Anderson

13.5.5
Location and mail code

Hillsboro, 257

Subject

HILLSBORO A/C PIPE PLANT
ASBESTOS FIBER SAMPLING RESULTS
December 7, 1983

From

P. Norris

PJ Norris

Location and mail code

VF 1125/4

cc: B. Haigh - Hillsboro, 257
D. Hall - 2125/2B
J. McGinley - 2125/2B

The results of asbestos fiber sampling by B. Haigh on December 7, 1983 show time weighted average exposures to the Plant B Mandrel Handler (0.1 f/cc) and Press Operator (0.05 f/cc) to be below the 0.5 f/cc level. Exposure to the Press Operator (0.43 f/cc) in Plant A is still statistically above the 0.5 f/cc level.

The results are listed in the attached Asbestos Monitoring Data Sheets and the 95% Confidence Level calculations for the Plant A Press Operator are in Table I.

PJN/ejs

Attachments

CTD020353

TABLE I

EXPOSURE SAMPLING CONFIDENCE LEVELS

Lower Confidence Limit (LCL) - 95% = $Y - SAE$
Upper Confidence Limit (UCL) - 95% = $Y + SAE$

X = Samples N811 & N817 TWA exposure to Plant A
Press Operator - 0.43 f/cc

PEL = Asbestos - 0.5 f/cc

SAE = Asbestos - 0.25 f/cc

- $Y = X/PEL$
 $Y = 0.43/0.5$
 $Y = 0.86$

LCL (95%)	=	$Y - SAE$	UCL (95%)	=	$Y + SAE$
	=	$0.86 - 0.25$		=	$0.86 + 0.25$
LCL	=	0.61	UCL	=	1.11

If $LCL \leq 1$ and $UCL \geq 1$, the true exposure possibly exceeds the PEL.

CertainTeed

Date

January 30, 1984

To

J. Anderson

Location and mail code

Hillsboro, #257

Subject

Hillsboro A/C Pipe Plant
Asbestos Fiber Sampling Results
January 18, 1984

From

Peter Norris *PJN*

Location and mail code

1125/4

B. Haigh - Hillsboro
D. Hall - 2125/2B
J. McGinley - 2125/2B

The results of asbestos fiber sampling by B. Haigh on January 18, 1984 shows a time weighted average exposure to the line #1 Hydrotester Operator of 0.405 f/cc. This exposure is still statistically above the 0.5 f/cc level.

The results are listed on the attached Asbestos Monitoring Data Sheet and the 95% confidence level calculation for the Hydrotester is in Table I.

CTD020355

TABLE I

EXPOSURE SAMPLING CONFIDENCE LEVEL

Lower Confidence Limit (LCL) - 95% = $Y - SAE$

Upper Confidence Limit (UCL) - 95% = $Y + SAE$

X = Sample N818 & N1826 TWA exposure to line #1 Hydrotester Operator - 0.405 f/cc

PEL = Asbestos - 0.5 f/cc

SAE = Asbestos - 0.25 f/cc

$$Y = X/PEL$$

$$Y = 0.405/0.5$$

$$Y = 0.81$$

$$LCL (95\%) = Y - SAE$$

$$= 0.81 - 0.25$$

$$LCL = 0.56$$

$$UCL (95\%) = Y + SAE$$

$$= 0.81 + 0.25$$

$$UCL = 1.06$$

If $LCL \leq 1$ and $UCL \geq 1$, the true exposure possibly exceeds the PEL

CTD020356

CertainTeed

Date

To

Location and mail code

March 13, 1984

Mr. Peter Norris

V.F. 1125/4

Subject

From

Location and mail code

1st Quality Progress Report Hillsboro A/C

J. L. Anderson

#257 Hillsboro

cc: J. P. McGinley
D. R. Hall

Kit -
Jan 84

file copied

The following report is submitted in accordance with your recommendation No. 7 in your report of the survey, October 17 - 20, 1983.

1. The exhaust ventilation ductwork has been inspected and no clogs nor leakage was discovered. The fan speed has been checked and it is running at the design rpm.

2. The local exhaust ventilation and ductwork has been redesigned and installed in accordance with your recommendation in appendix III of your report. Although this design did not result in the fiber count falling within acceptable limits it has helped. ? who sampled ; counted?

3. A windbreak was installed between the small rework saw and the door preventing wind entrainment of dust from the saw flowing into the coupling tester area. After this installation, the coupling testers were resampled and the counts are below the .37 limit. The results of these counts have been duly documented and recorded. In view of the favorable counts, respirator protection is not required.

30 NOV. 83
Cpl Saw .76 flc
Rework .47 flc
Cplg tester .27 flc
Cplg tester .23 flc

4. The Press Operator in A plant has been resampled. The count is still above the .37 allowable, therefore respiratory protection is required for this employee as well as the mandrel handler working on the other side of the machine. Work is continuing on this problem and our progress will be reported in the next report.

1 Dec 83
0.22 flcc
0.59 flcc

The B plant machine tender and press operator have been resampled and acceptable counts were obtained.

Press op - 0.047 flcc
1 Dec 83
Mandrel Han - 0.0 flcc

We have not attempted an engineering control for the problem of the Line 1 Hydrotester. This will be accomplished this quarter.

18 Jan 84 - 0.405 flcc

5. Hearing protectors are now mandatory in all areas of the plant other than the maintenance shop.

This is a most difficult matter to enforce because the employees dislike the requirement intensely. If we can come up with an engineering control for noise, it will help considerably with our employee morale.

6. All employees have been notified of the results of the measurements. The proper documentation has been completed and entered into their files in accordance with company procedure. The results are also permanently displayed on the employees' bulletin board.

CORP. HEALTH & SAFETY
MAR 16 1984
RECEIVED

CTD020357

Mr. Peter Norris
March 13, 1984
Page 2

We are currently preparing a computer file which will allow us instantaneous recovery of all counts classified in the following ways:

- (a) by name
- (b) by occupation
- (c) by fiber count
- (d) by date

This work is expected to be completed this quarter.

General Comments

Although we have not completed all of our goals in the area of industrial hygiene, we have made some significant starts.

1. We have purchased 2 additional portable vacuum cleaners which have been placed in the finishing departments. General area housekeeping is greatly improved.

2. We have received approval to install a developmental random cutter which may greatly reduce use of the rework saw. This equipment will be similar to the F/M cutter. A comparison of counts is as follows:

<u>Equipment</u>	<u>Count</u>
Small rework saw	0.56 - .33
F/M cutter	0.25 - .18

This concept has a good probability of success, although it is still in the developmental stage.

CTD020358

CertainTeed

Subject	Date	To	Location and mail code
	April 19, 1984	J. Anderson	Hillsboro, 257
HILLSBORO A/C PIPE PLANT ASBESTOS FIBER SAMPLING RESULTS APRIL 6, 1984		From	Location and mail code
		<i>PJN</i> Peter J. Norris	1125/4

cc: D. Hall - 2125/2B
J. McGinley - 2125/2B

The results of asbestos fiber sampling by B. Haigh on April 7, 1984 show a time-weighted average exposure to the Rework Saw Operator of 0.69 f/cc. The operator on the Small Coupling Tester was exposed to a 0.08 f/cc level.

The results are listed on the attached Asbestos Monitoring Data Sheets.

PJN/car

Attachments

CTD020359

CertainTeed

To	J. Anderson	Mail Code #257	From	P. J. Norris <i>PJN</i>	Mail Code 1125/4	Ext. 7707
Subject	HILLSBORO A/C PIPE PLANT ASBESTOS FIBER SAMPLING RESULTS JUNE 22-28, 1984					Date July 10, 1984

cc: B. Haigh - Hillsboro, 257
D. Hall - 2125/2B
J. McGinley - 2125/2B

The time-weighted average (TWA) results of asbestos fiber sampling by B. Haigh during the period June 22-28, 1984 are as follows:

<u>POSITION</u>	<u>TWA - f/cc</u>
Rework Cutter Operator	0.02
Rework Cutter - Area	0.003
Inspector Line #1	0.085
Hydrotester Operator Line #1	None Detected
Press Operator	0.097
Boring Mill Operator #1	0.94

All the results are listed on the attached Asbestos Monitoring Data Sheets.

PJN/cac

Attachments

CTD020360

printout

SURVEY NUMBER=83-23

EMPLOYEE NAME	JOB POSITION	JOB_GRP	GRP LOCATION	DEPT	SOCIAL SECURITY NUMBER	SAMPLER	SN	SMPL DATE	START HOUR					
239 RAY, MILLE	MIXER		831018 PPG HILLSBORO PLT A-MAN			PJN	77	17						
240 WARD, BRUCE	MIXER		831020 PPG HILLSBORO PLT A-MAN			PJN	78	8						
241 RODRIGUEZ, RAY	MACHINE TENDER		831020 PPG HILLSBORO PLT A-MAN			PJN	79	8						
242 COOK, MILTON	PRESS OPERATOR		831018 PPG HILLSBORO PLT A-MAN			PJN	80	17						
243 COOK, MILTON	PRESS OPERATOR		831019 PPG HILLSBORO PLT A-MAN			PJN	81	17						
244 CHAMBERS, JOHN	PRESS OPERATOR		831020 PPG HILLSBORO PLT A-MAN			PJN	82	8						
245 THOMPSON, CALVIN	MANDREL HANDLER		831018 PPG HILLSBORO PLT A-MAN			PJN	83	8						
246 THOMPSON, CALVIN	MANDREL HANDLER		831019 PPG HILLSBORO PLT A-MAN			PJN	84	17						
247 BLACK, ROY	MANDREL HANDLER		831020 PPG HILLSBORO PLT A-MAN			PJN	85	8						
248 SONNENBERG, ALVIS	TRAY LOADER		831018 PPG HILLSBORO PLT A-MAN			PJN	86	17						
249 YOUNG, LARRY	TRAY LOADER		831020 PPG HILLSBORO PLT A-MAN			PJN	87	8						
250 RIBER, SHANNA	RELIEF		831018 PPG HILLSBORO PLT A-MAN			PJN	88	17						
251 YATES, JAMES	RELIEF		831020 PPG HILLSBORO PLT A-MAN			PJN	89	8						
252 FLAHERTY, CHARLES	LINE 1 LATHE OPERATOR		831019 PPG HILLSBORO PLT A-FIN			PJN	90	7						
OBS		DBA_THA	12	REM3	REM4	STR1_TM	STP1_TM	TTLMIN						
	START MIN	STOP HOUR	STOP MIN	WORE PROT	GT/ LT	SHIFT	SAMPLE METHOD	HOUR SHIFT						
239	10	23	8	87.2	N	2ND	80		1030	1388	358			
240	10	15	29	87.5	N	1ST	80		490	929	439			
241	22	15	28	0.0		1ST	80		502	928	426			
242	5	23	10	0.0		2ND	80		1025	1390	365			
243	0	23	1	91.1	Y	2ND	80		1020	1381	361			
244	15	15	29	89.9	Y	1ST	80		495	929	434			
245	0	0	0	0.0			80		0	0	0			
246	0	23	1	92.5	Y	2ND	80		1020	1381	361			
247	5	15	33	92.7	Y	1ST	80		485	933	448			
248	4	23	6	85.2	Y	2ND	80		1024	1386	362			
249	0	15	27	83.2		1ST	80		480	927	447			
250	0	23	6	88.9	Y	2ND	80		1020	1386	366			
251	27	15	31	88.6	N	1ST	80		507	931	424			
252	58	15	36	98.7	Y	1ST	80		478	936	458			
OBS	REM1					REM2					HOUR_SP	HOUR_ST	MIN_SP	MIN_ST
239	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)				BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED				23	17	08	10		
240	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)				BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED				15	8	29	10		
241	SAMPLE VOIDED - INSTRUMENT MALFUNCTION								15	8	28	22		
242	SAMPLE VOIDED - INSTRUMENT MALFUNCTION								23	17	10	05		
243	EXCEEDS 8-HOUR PEL (90DBA)				PROTECTION MANDATORY				23	17	01	00		
244	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)				BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED				15	8	29	15		
245	SAMPLE VOIDED - INSTRUMENT MALFUNCTION								0	0	00	00		
246	EXCEEDS 8-HOUR PEL (90DBA)				PROTECTION MANDATORY				23	17	01	00		
247	EXCEEDS 8-HOUR PEL (90DBA)				PROTECTION MANDATORY				15	8	33	05		
248	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)				BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED				23	17	06	04		
249	BELOW 8-HOUR ACTION LEVEL (85DBA)				NO PROTECTION NECESSARY				15	8	27	00		
250	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)				BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED				23	17	06	00		
251	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)				BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED				15	8	31	27		
252	EXCEEDS 8-HOUR PEL (90DBA)				PROTECTION MANDATORY				15	7	36	58		

CTD020361

----- SURVEY NUMBER=83-23 -----

OBS	EMPLOYEE NAME	JOB POSITION	JOB_GRP	SMPL DATE	GRP LOCATION	DEPT	SOCIAL SECURITY NUMBER	SAMPLER	SN SMPL NBR	SN START HOUR					
253	SELLERS, BILL	LINE 1 LATHE OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	91	8					
254	NELSON, ODELL	LINE 3 LATHE OPERATOR		831018	PPG HILLSBORO PLT A-FIN			PJN	92	15					
255	HUSE, ALLEN	LINE 3 LATHE OPERATOR		831018	PPG HILLSBORO PLT A-FIN			PJN	93	15					
256	HUMPHREY, LARRY	LINE 1 HYDROTESTER		831019	PPG HILLSBORO PLT A-FIN			PJN	94	3					
257	KOLAR, FRANK	LINE 1 BELLER		831019	PPG HILLSBORO PLT A-FIN			PJN	95	3					
258	MORGAN, JERRY	LINE 3 BELLER		831018	PPG HILLSBORO PLT A-FIN			PJN	96	15					
259	MORGAN, JERRY	LINE 3 BELLER		831019	PPG HILLSBORO PLT A-FIN			PJN	97	15					
260	BANK, RONALD	MULTIPLE COUPLING SAW OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	98	7					
261	BREWER, PETER	#1 BORING MILL OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	99	8					
262	BROWN, CHARLES	#2 BORING MILL OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	100	9					
263	COASTER, AUTRY	#3 BORING MILL OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	101	8					
264	HOOKER, JERRY	COUPLING STACKER		831019	PPG HILLSBORO PLT A-FIN			PJN	102	8					
265	RODRIGUEZ, SIMON	FM SAW OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	103	8					
266	STARRETT, BETTY	FM SPECIALTY LATHE OPERATOR		831019	PPG HILLSBORO PLT A-FIN			PJN	104	8					
OBS	START MIN	STOP HOUR	STOP MIN	DBA_TWA	WORE PROT	GT/ LT	SHIFT	SAMPLE METHOD	12 HOUR SHIFT	REN3	REN4	STRT_TM	STP_TM	TTLMIN	
253	0	15	36	97.5	Y		1ST	80				480	936	456	
254	47	23	2	94.7	Y		2ND	80				1007	1382	375	
255	49	23	3	95.1	Y		2ND	80				1009	1383	374	
256	27	15	50	92.4	Y		1ST	80				507	950	443	
257	24	15	38	95.1	Y		1ST	80				504	938	434	
258	50	23	5	0.0			2ND	80				1010	1385	375	
259	51	23	5	89.9	N		2ND	80				1011	1385	374	
260	56	15	27	94.1	Y		1ST	80				476	927	451	
261	10	15	30	96.0	Y		1ST	80				490	930	440	
262	8	15	30	96.6	N		1ST	80				488	930	442	
263	6	15	30	93.7	Y		1ST	80				486	930	444	
264	2	15	27	94.4	Y		1ST	80				482	927	445	
265	4	15	32	96.6	Y		1ST	80				484	932	448	
266	14	15	31	101.0	Y		1ST	80				494	931	437	
OBS	REN1									REN2		HCUR_SP	HOUR_ST	MIN_SP	MIN_ST
253	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	36	00
254	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		23	16	02	47
255	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		23	16	03	49
256	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	50	27
257	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	38	24
258	SAMPLE VOIDED - INSTRUMENT MALFUNCTION											23	16	05	50
259	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)									BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED		23	16	05	51
260	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	7	27	56
261	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	30	10
262	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	30	08
263	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	30	06
264	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	27	02
265	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	32	04
266	EXCEEDS 8-HOUR PEL (90DBA)									PROTECTION MANDATORY		15	8	31	14

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EMPLOYEE NAME	JOB POSITION	JOB_GRP	SMPL DATE	GRP	LOCATION	DEPT	SOCIAL SECURITY NUMBER	SAMPLER	SN SMPL NBR	START HOUR	START MIN
267	JEWETT, ROY	LARGE FN LATHE OPERATOR	831019	PPG	HILLSBORO	PLT A-FIN		PJM	105	8	15
268	BOWLAND, DWAYNE	COUPLING TESTER	831019	PPG	HILLSBORO	PLT A-FIN		PJN	106	8	17
269	RUSSEL, JAMES	REWORK SAW OPERATOR	831019	PPG	HILLSBORO	PLT A-FIN		PJN	107	8	20
270	POSTON, WARNER	LATHE OPERATOR (MANUAL)	831019	PPG	HILLSBORO	PLT A-FIN		PJN	108	8	30
271	WILSON, ROBERT	FORKLIFT DRIVER	831018	PPG	HILLSBORO	PLT A-FIN		PJN	109	16	42
272	CLARK, JAMES	FORKLIFT DRIVER	831019	PPG	HILLSBORO	PLT A-FIN		FJN	110	8	36
273	CLAY, DONALD	MIXER	831018	PPG	HILLSBORO	PLT B-MAN		PJN	111	17	20
274	HAWKINS, DENNIS	MACHINE TENDER	831018	PPG	HILLSBORO	PLT B-MAN		PJN	112	17	15
275	SULAK, GARY	PRESS OPERATOR	831018	PPG	HILLSBORO	PLT B-MAN		PJN	113	17	14
276	SHUFFIELD, DON	MANDREL HANDLER	831018	PPG	HILLSBORO	PLT B-MAN		PJN	114	17	25
277	GREER, CHARLES	TRAY LOADER	831018	PPG	HILLSBORO	PLT B-MAN		PJN	115	17	26
278	MC FARLIN, MIKE	RELIEF	831018	PPG	HILLSBORO	PLT B-MAN		PJN	116	17	27
279	VENABLE, CLYDE	LATHE OPERATOR	831020	PPG	HILLSBORO	PLT B-FIN		PJN	117	8	55
280	MILLER, DAVE	HYDROTESTER	831020	PPG	HILLSBORO	PLT B-FIN		PJN	118	8	53

OBS	STOP HOUR	STOP MIN	DBA_TWA	WORE -PROT	GT/ LT	SHIFT	SAMPLE METHOD	HOUR SHIFT	12 REM3	REM4	STRT_TM	STP_TM	TTLMIN	REMI
267	15	33	94.7	Y		1ST	80				495	933	438	EXCEEDS 8-HOUR PEL (90DBA)
268	15	34	92.5	Y		1ST	80				497	934	437	EXCEEDS 8-HOUR PEL (90DBA)
269	15	37	95.3	Y		1ST	80				500	937	437	EXCEEDS 8-HOUR PEL (90DBA)
270	15	33	91.0	Y		1ST	80				510	933	423	EXCEEDS 8-HOUR PEL (90DBA)
271	23	1	91.1	Y		2ND	80				1002	1381	379	EXCEEDS 8-HOUR PEL (90DBA)
272	15	26	92.5	Y		1ST	80				516	926	410	EXCEEDS 8-HOUR PEL (90DBA)
273	23	18	86.4	N		2ND	80				1040	1398	358	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)
274	23	15	92.6	Y		2ND	80				1035	1395	360	EXCEEDS 8-HOUR PEL (90DBA)
275	23	15	92.1	Y		2ND	80				1034	1395	361	EXCEEDS 8-HOUR PEL (90DBA)
276	23	18	93.1	Y		2ND	80				1045	1398	353	EXCEEDS 8-HOUR PEL (90DBA)
277	23	14	88.4	N		2ND	80				1046	1394	348	EXCEEDS 8-HOUR ACTION LEVEL (85DBA)
278	23	14	90.9	N		2ND	80				1047	1394	347	EXCEEDS 8-HOUR PEL (90DBA)
279	15	50	95.6	Y		1ST	80				535	950	415	EXCEEDS 8-HOUR PEL (90DBA)
280	15	50	95.2	Y		1ST	80				533	950	417	EXCEEDS 8-HOUR PEL (90DBA)
OBS	REM2										HOUR_SP	HOUR_ST	MIN_SP	MIN_ST

267	PROTECTION MANDATORY	15	8	33	15
268	PROTECTION MANDATORY	15	6	34	17
269	PROTECTION MANDATORY	15	9	37	20
270	PROTECTION MANDATORY	15	8	33	30
271	PROTECTION MANDATORY	23	16	01	42
272	PROTECTION MANDATORY	15	8	26	36
273	BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED	23	17	18	20
274	PROTECTION MANDATORY	23	17	15	15
275	PROTECTION MANDATORY	23	17	15	14
276	PROTECTION MANDATORY	23	17	18	25
277	BELOW 8-HOUR PEL (90DBA) - PROTECTION RECOMMENDED	23	17	14	26
278	PROTECTION MANDATORY	23	17	14	27
279	PROTECTION MANDATORY	15	8	50	55
280	PROTECTION MANDATORY	15	8	50	53

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OBS	EMPLOYEE NAME	JOB POSITION	JOB_GRP	SMPL DATE	GRP	LOCATION	DEPT	SOCIAL SECURITY NUMBER	SAMPLER		
281	BAKER, ROBERT	FINISHER		331020	PPG	HILLSBORO	PLT B-FIN		PJM		
282	STEVENS, PHILIP	FORKLIFT DRIVER		331020	PPG	HILLSBORO	PLT B-FIN		PJM		
OBS	SN		DRA_TWA				12	REM3	REM4	STAT_TM	STF_TM
	SMPL NBR	START HOUR	START MIN	STOP HOUR	STOP MIN	WORE PROT	GT/ LT	SAMPLE METHOD	HOUP SHIFT		
281	119	8	52	15	47	94.2	N	1ST	80	532	947
282	120	8	49	15	47	94.3	N	1ST	80	529	947
OBS	ITLMIN	REM1		REM2		HOUP_SP	HOUP_ST	MIN_SP	MIN_ST		
281	415	EXCEEDS 8-HOUR PEL (90DBA)		PROTECTION MANDATORY		15	8	47	52		
282	418	EXCEEDS 8-HOUR PEL (90DBA)		PROTECTION MANDATORY		15	8	47	49		

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IHS 83-23 HILLSBORO A/C PIPE PPG
10/17-20/83

Industrial Hygiene Survey
HILLSBORO A/C PIPE PLANT
IHS Report No. 83-23
October 17-20, 1983

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IHS 83-23 HILLSBORO A/C PIPE PPG
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