

Department of Environmental Sciences

March 21, 1979

M. O. Varner  
ManagerMr. G. Sidlo  
CAPCO - Ragland PlantEnvironmental Survey Report

Enclosed for your review is the D.O.E.S. report for the environmental survey conducted at the Ragland Plant on December 4-5, 1978. I particularly call your attention to the Executive Summary and the Recommendations on page 13. In general, the recommendations are listed in order of descending importance. In other words, the first few recommendations are the most critical in the opinion of the environmental scientist making the survey.

If you have any questions concerning this survey, please contact me or Stanley G. Cothrin, the author of the report. I would appreciate receiving your comments on the recommendations contained in the report or any other aspects you deem worthy of comment.

*M. O. Varner*

M. O. Varner

MOV/cah

cc: WTWhitley ✓  
MJMessel  
DHSoutar  
KWNelson  
AJGillespie, Jr.  
RCBeckstead  
WTSweat  
Dr. CHHine  
JLWoods

ENVIRONMENTAL SURVEY

CAPL

Ragland Plant

December 4-5, 1978

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CAPCO  
Ragland Plant

December 4-5, 1978

Prepared by:

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Report Date:

March 21, 1979

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# ENVIRONMENTAL SURVEY

## CAPCO Ragland Plant

December 4-5, 1978

### EXECUTIVE SUMMARY

One of ten personal monitor time-weighted average (TWA) exposure samples obtained during this survey (dust collector tender) exceeded the current OSHA asbestos standard of 2 fibers/cc. Four of the ten TWA exposure samples exceeded the proposed OSHA TWA limit of 0.5 fibers/cc.

Noise dosimeter measurements indicated noise exposures exceeding OSHA limits for the pipe machine tender and autoclave charger. Noise dosimeter measurements for the batch operator, cutoff saw operator, hydrotester and MOA lathe operator were in the range of potential violation of the OSHA standard.

A great deal of improvement has been made in solid waste handling since the June 1977 D.O.E.S. survey report. The landfill now appears to be operated in a manner which assures compliance with the EPA National Emission Standard for Asbestos.

The Ragland Plant now has a full time Industrial Engineering and Safety Director which should help greatly in the plant effort to maintain compliance with applicable OSHA safety and health regulations.

Recommendations include: enclosing and venting the reclaim tank baghouse to the atmosphere; mandatory wearing of hearing protection for employees with excessive noise exposure; issuance of protective clothing for all employees; implementation of plans to replace the present wet charge mixer with a dry system and investigation of the feasibility of finishing line engineering controls for noise for the pneumatic control system, cutoff saw and finish lathe.

# ENVIRONMENTAL SURVEY

## CAPCO Ragland Plant

December 4-5, 1978  
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### I. OPERATING CONDITIONS

All operations were normal.

### II. SAMPLING AND ANALYTICAL PROCEDURES

#### A. Air:

Individual asbestos fiber samples were collected with M.S.A. personal monitor pumps equipped with open-face Millipore filters (0.8 micron pore size). The asbestos fibers were counted using a Zeiss phase-contrast microscope, according to the method specified in the NIOSH criteria document.

#### B. Noise:

1. Sound level measurements were taken with a B & K Model 2205 Sound Level Meter using the "A" scale and "slow" response setting. The meter was calibrated with a standard noise source before each set of measurements.
2. Personal noise exposure data were collected using DuPont Permissible Audio Dosimeters, Model D-100, which measure noise exposures in terms of the present 90 dBA OSHA standard. A DuPont Audio Dosimeter Readout (Model R150) was utilized to decode each dosimeter memory cell and produce a reading as a percentage of the current 90 dBA standard. A DuPont Audio Dosimeter Calibrator was used to check dosimeter calibrations.

A. PERSONAL MONITOR SAMPLES  
CAPCO-RAGLAND

| NAME<br>S.S. NUMBER | JOB TITLE<br>(RESP. TYPE) (3) | 1978 SAMPLING<br>DATE & TIME<br>SHIFT(4)(MIN.) | ANAL- CONC'N.<br>YSIS (fl/cc) |
|---------------------|-------------------------------|------------------------------------------------|-------------------------------|
|---------------------|-------------------------------|------------------------------------------------|-------------------------------|

A/C PRODUCTION-CAPCO

|         |                            |                |              |
|---------|----------------------------|----------------|--------------|
| BAGWELL | STRIPPER OP.<br>9          | 12/ 5 142<br>D | ASB .07      |
| BAGWELL | STRIPPER OP.<br>9          | 12/ 5 97<br>D  | ASB .01      |
| BAGWELL | STRIPPER OP.<br>9          | 12/ 5 153<br>D | ASB .05      |
|         | CALCULATED<br>TWA EXPOSURE | 12/ 5 392<br>D | ASB .05      |
| JONES   | BATCH MIXER<br>1           | 12/ 5 145<br>D | ASB .68      |
| JONES   | BATCH MIXER<br>1           | 12/ 5 113<br>D | ASB 1.62 ✓   |
| JONES   | BATCH MIXER<br>1           | 12/ 5 160<br>D | ASB .95      |
|         | CALCULATED<br>TWA EXPOSURE | 12/ 5 418<br>D | ASB 1.04 (2) |

REDACTED

A. PERSONAL MONITOR SAMPLES (Cont.)  
CAPCO-RAGLAND

| NAME<br>S.S. NUMBER | JOB TITLE<br>(RESP. TYPE) (3) | 1978 SAMPLING                   |  | ANAL- CONC'N.<br>YSIS (fi/cc) |
|---------------------|-------------------------------|---------------------------------|--|-------------------------------|
|                     |                               | DATE & TIME<br>SHIFT (4) (MIN.) |  |                               |

A/C PRODUCTION-CAPCO

|                      |                            |            |     |     |         |
|----------------------|----------------------------|------------|-----|-----|---------|
| ECHOLS<br>418369610  | MACHINE TEND<br>9          | 12/ 5<br>D | 120 | ASB | .57     |
| ECHOLS.<br>418369610 | MACHINE TEND<br>9          | 12/ 5<br>D | 106 | ASB | .66     |
| ECHOLS<br>418369610  | MACHINE TEND<br>9          | 12/ 5<br>D | 162 | ASB | .53 (2) |
|                      | CALCULATED<br>TWA EXPOSURE | 12/ 5<br>D | 388 | ASB | .58     |
| TRAMMELL             | CALENDER OP.<br>9          | 12/ 5<br>D | 142 | ASB | .39     |
| TRAMMELL             | CALENDER OP.<br>9          | 12/ 5<br>D | 98  | ASB | .68     |
| TRAMMELL             | CALENDER OP.<br>9          | 12/ 5<br>D | 166 | ASB | .51 (2) |
|                      | CALCULATED<br>TWA EXPOSURE | 12/ 5<br>D | 406 | ASB | .51     |

REDACTED

A. PERSONAL MONITOR SAMPLES (Cont.)  
CAPCO-RAGLAND

| NAME<br>S.S. NUMBER         | JOB TITLE<br>(RESP. TYPE) <sup>(3)</sup>   | 1978<br>DATE &<br>SHIFT <sup>(4)</sup> | SAMPLING<br>TIME<br>(MIN.) | ANAL-<br>YSIS | CONC'N.<br>(ft/cc) |
|-----------------------------|--------------------------------------------|----------------------------------------|----------------------------|---------------|--------------------|
| <u>A/C PRODUCTION-CAPCO</u> |                                            |                                        |                            |               |                    |
| DAFFRON<br>420540596        | DUST COL TEND<br>1<br>(Reclaim Baghouse)   | 12/ 5<br>D                             | 145                        | ASB           | 2.98               |
| DAFFRON<br>420540596        | DUST COL TEND<br>1                         | 12/ 5<br>D                             | 100                        | ASB           | .97                |
| DAFFRON<br>420540596        | DUST COL TEND<br>1<br>(Empty baghse. hop.) | 12/ 5<br>D                             | 43                         | ASB           | 6.94 (2)           |
| DAFFRON<br>420540596        | DUST COL TEND<br>1                         | 12/ 5<br>D                             | 125                        | ASB           | .12                |
|                             | CALCULATED<br>TWA EXPOSURE                 | 12/ 5<br>D                             | 413                        | ASB           | 2.04 (1)           |
| <u>A/C FINISHING-CAPCO</u>  |                                            |                                        |                            |               |                    |
| ODONNELL<br>417320116       | Resaw Oper. 6"<br>9                        | 12/ 5<br>D                             | 131                        | ASB           | .21                |
| ODONNELL<br>417320116       | Resaw Oper.<br>9                           | 12/ 5<br>D                             | 82                         | ASB           | .16                |
| ODONNELL<br>417320116       | Resaw Oper.<br>9                           | 12/ 5<br>D                             | 139                        | ASB           | .13                |
|                             | CALCULATED<br>TWA EXPOSURE                 | 12/ 5<br>D                             | 352                        | ASB           | .17                |

A. PERSONAL MONITOR SAMPLES (Cont.)  
CAPCO-RAGLAND

| NAME<br>S.S. NUMBER   | JOB TITLE<br>(RESP. TYPE) <sup>(3)</sup>                   | 1978<br>DATE &<br>SHIFT <sup>(4)</sup> | SAMPLING<br>TIME<br>(MIN.) | ANAL-<br>YSIS | CONC'N.<br>(ft/cc) |
|-----------------------|------------------------------------------------------------|----------------------------------------|----------------------------|---------------|--------------------|
| A/C FINISHING-CAPCO   |                                                            |                                        |                            |               |                    |
| CAMPBELL<br>416709599 | MEE/MOA LATHE<br>9<br>(Short, small diameter) <sup>D</sup> | 12/ 5<br>D                             | 162                        | ASB           | .10                |
| CAMPBELL<br>416709599 | MEE/MOA LATHE<br>9                                         | 12/ 5<br>D                             | 85                         | ASB           | .07                |
| CAMPBELL<br>416709599 | MEE/MOA LATHE<br>9                                         | 12/ 5<br>D                             | 133                        | ASB           | .09                |
|                       | CALCULATED<br>TWA EXPOSURE                                 | 12/ 5<br>D                             | 380                        | ASB           | .09                |
| JOHNSON               | COUPLING LATHE<br>9<br>(6" - 150)                          | 12/ 5<br>D                             | 169                        | ASB           | .05                |
| JOHNSON               | COUPLING LATHE<br>9                                        | 12/ 5<br>D                             | 73                         | ASB           | .02                |
| JOHNSON               | COUPLING LATHE<br>9                                        | 12/ 5<br>D                             | 140                        | ASB           | .09                |
|                       | CALCULATED<br>TWA EXPOSURE                                 | 12/ 5<br>D                             | 382                        | ASB           | .06                |

REDACTED

| NAME        | JOB TITLE (3) | 1978 DATE | SAMPLING TIME (4) | ANAL- CONC'H. |
|-------------|---------------|-----------|-------------------|---------------|
| S.S. NUMBER | (RESP. TYPE)  | SHIFT     | (MIN.)            | YSIS (f1/cc)  |

APC FINISHING-CAPCO

|                  |                                               |            |     |          |
|------------------|-----------------------------------------------|------------|-----|----------|
| KAY<br>421706619 | FINISH LATHE (6")<br>9                        | 12/ 5<br>D | 98  | ASB- .04 |
| KAY<br>421706619 | FINISH LATHE<br>9                             | 12/ 5<br>D | 135 | ASB .02  |
|                  | CALCULATED<br>TWA EXPOSURE                    | 12/ 5<br>D | 233 | ASB .03  |
| CARROLL          | MEE/MOA LATHE<br>9<br>(Short, large diameter) | 12/ 5<br>D | 137 | ASB .04  |
| CARROLL          | MEE/MOA LATHE<br>9                            | 12/ 5<br>D | 67  | ASB .02  |
| CARROLL          | MEE/MOA LATHE<br>9                            | 12/ 5<br>D | 130 | ASB .03  |
|                  | CALCULATED<br>TWA EXPOSURE                    | 12/ 5<br>D | 334 | ASB .03  |

- (1) Exceeds OSHA 8-hour time-weighted average limit (TWA).  
 (2) Exceeds OSHA proposed 8-hour TWA.  
 (3) Respirator type: 1 = half-mask air-purifying, 9 = None.  
 (4) Shift Notation: D = Day

CURRENT OSHA STANDARDS

Asbestos 2 fibers/cc (8-hour TWA)  
 Asbestos 10 fibers/cc (ceiling)

PROPOSED OSHA STANDARDS

Asbestos 0.5 fibers/cc (8-hour TWA)  
 Asbestos 5 fibers/cc (ceiling)

**REDACTED**

B. Noise:

1. Noise Dosimeter Measurements

| <u>Department</u> | <u>Employee<br/>S.S. Number</u> | <u>Job (Hear-<br/>int Protec-<br/>tion Worn?)</u> | <u>1978<br/>Date &amp;<br/>Shift (6)</u> | <u>Sampling<br/>Time<br/>(Min.)</u> | <u>Dosimeter<br/>Readout<br/>(Percent) (1)</u> | <u>Adjusted<br/>to 8 hr.<br/>(Percent) (2)</u> | <u>115 dBA<br/>Exceeded</u> |
|-------------------|---------------------------------|---------------------------------------------------|------------------------------------------|-------------------------------------|------------------------------------------------|------------------------------------------------|-----------------------------|
| Production        | Jones                           | Batch Op.<br>(No)                                 | 12/5<br>D                                | 418                                 | 90                                             | 103 <sup>(5)</sup>                             | No                          |
|                   | Eckols<br>418369610             | Pipe Machine<br>Tender (No)                       | 12/5<br>D                                | 388                                 | 132                                            | 163 <sup>(4)</sup>                             | No                          |
|                   | Trammel                         | Calendar Op.<br>(No)                              | 12/5<br>D                                | 406                                 | 0                                              | 0                                              | No                          |
|                   | Bagwell                         | Stripper Op.<br>(No)                              | 12/5<br>D                                | 392                                 | 48                                             | 59                                             | No                          |
|                   | Bean<br>420524089               | Tray Loader<br>Helper (No)                        | 12/5<br>D                                | 368                                 | 29                                             | 38                                             | No                          |
|                   | McCullough                      | Autoclave Chg.<br>(No)                            | 12/5<br>D                                | 368                                 | 114                                            | 149 <sup>(4)</sup>                             | No                          |
| Finishing         | Odonnel<br>417320116            | Cutoff Saw Op.<br>(6") (No)                       | 12/5<br>D                                | 379                                 | 96                                             | 122 <sup>(5)</sup>                             | No                          |
|                   | St. John                        | Hydrotester<br>(No)                               | 12/5<br>D                                | 374                                 | 76                                             | 98 <sup>(5)</sup>                              | Yes <sup>(3)</sup>          |
|                   | Campbell<br>416709599           | Short MOA<br>Lathe Op.<br>(No)                    | 12/5<br>D                                | 421                                 | 79                                             | 90 <sup>(5)</sup>                              | Yes <sup>(3)</sup>          |

REDACTED

- (1) Readout based on elapsed sampling time.
- (2) The 8-hour adjusted readout is an extrapolation of the original dosimeter reading. This extrapolation assumes that the employee will be exposed to the same noise level during the remainder of the shift when the dosimeter is not worn.
- (3) The OSHA noise standard does not allow employees to be exposed to sound levels greater than 115 dBA. However, experience to date shows that most dosimeter measurements greater than 115 dBA are the result of employee mischief, i.e., shouting into the microphone of the dosimeter. Therefore, these data must be interpreted cautiously.
- (4) Dosimeter readouts greater than 100% indicate a violation of the OSHA noise standard. However, the accuracy of the dosimeters (as specified by A.N.S.I.S1.4 - 1971) is  $\pm 2$  dBA which translates to an upper confidence

limit of 133%. Therefore, only readings greater than 133% are a positive violation of the OSHA noise standard.

(5) Readings from 75% - 133% fall within the dosimeter calibration limits and may be violations of the OSHA standard.

(6) Shift Notation: D = Day.

## 2. Sound Level Meter Measurements

| <u>Department</u> | <u>Location</u>                      | <u>dBA</u> | <u>OSHA Permissible Noise Exposure Duration Per Day (Hrs./Min.)</u> |
|-------------------|--------------------------------------|------------|---------------------------------------------------------------------|
| Production        | Batch Operator Booth                 | 84         | 8+                                                                  |
|                   | Mixer Control Panel                  |            |                                                                     |
|                   | Background                           | 87         | 8+                                                                  |
|                   | Chg. Mixer                           | 93         | 5/17                                                                |
|                   | Pipe Machine Tender Area             |            |                                                                     |
|                   | Background                           | 85         | 8+                                                                  |
|                   | Chg. Mixer                           | 93         | 5/17                                                                |
|                   | Asbestos Storage Area                | 82         | 8+                                                                  |
|                   | By Pipe Machine Hydraulic Pumps      | 92         | 6/4                                                                 |
|                   | Calendar Operator                    | 88         | 8+                                                                  |
|                   | Stripper Operator                    |            |                                                                     |
|                   | Background                           | 85         | 8+                                                                  |
|                   | Coupling Cutoff Air Noise            | 91         | 6/58                                                                |
|                   | Pipe Machine Takeoff End             |            |                                                                     |
|                   | Background                           | 82         | 8+                                                                  |
|                   | Crane Travel                         | 91         | 6/58                                                                |
| Finishing         | Short MOA Lathe Op. (Small diameter) |            |                                                                     |
|                   | Cutting                              | 84         | 8+                                                                  |
|                   | Air Noise                            | 88         | 8+                                                                  |

| <u>Department</u> | <u>Location</u>                         | <u>dBA</u> | <u>OSHA Permissible Noise<br/>Exposure Duration Per<br/>Day (Hrs./Min.)</u> |
|-------------------|-----------------------------------------|------------|-----------------------------------------------------------------------------|
| Finishing         | Short MOA Lathe Op.<br>(Large diameter) |            |                                                                             |
|                   | Cutting                                 | 88         | 8+                                                                          |
|                   | Air Noise                               | 92         | 6/4                                                                         |
|                   | Coupling Cutoff                         |            |                                                                             |
|                   | Cutting                                 | 88         | 8+                                                                          |
|                   | Air Noise                               | 93         | 5/17                                                                        |
|                   | Coupling Lathe (6"-150)                 | 87         | 8+                                                                          |
|                   | Hydrotester                             |            |                                                                             |
|                   | Background                              | 88         | 8+                                                                          |
|                   | Finish Lathe Noise                      | 93         | 5/17                                                                        |
|                   | Finish Lathe Op. (6")                   |            |                                                                             |
|                   | Background                              | 88         | 8+                                                                          |
|                   | Lathe Noise                             | 93         | 5/17                                                                        |
|                   | Unitizer Area                           | 87         | 8+                                                                          |
|                   | Cutoff Saw Op. (6")                     |            |                                                                             |
|                   | Not Cutting                             | 85         | 8+                                                                          |
|                   | Cutting                                 | 101        | 1/44                                                                        |

#### IV. COMMENTS

##### A. Asbestos

One of ten personal monitor time-weighted average (TWA) samples obtained during this survey exceeded the current OSHA asbestos TWA limit of 2 fibers/cc, and this was for the dust collector tender.

Four of the ten TWA personal monitor samples (batch mixer, machine tender, calendar operator and dust collector tender, exceeded the proposed OSHA limit of 0.5 fibers/cc.

An examination of the dust collector tender's personal

monitor sample results shows a fiber concentration of 2.98 fibers/cc for a 145 minute sample and a concentration of 6.94 fibers/cc for a 43 minute sample.. The 6.94 fibers/cc sample occurred when the dust collector tender empties the baghouse hopper into plastic bags, an operation which occurs daily. The 2.98 fibers/cc sample was caused by work performed on the reclaim tank baghouse. This baghouse has the bag chamber open to the warehouse area and at the time of the survey, broken bags had left visible deposits of settled dust around the baghouse (see section VI, Photographs). To avoid reentry of asbestos fibers into the working area it is recommended that the baghouse bag chamber be enclosed and discharged to atmosphere rather than back into the building.

With the exception of the dust collector tender, these sample results are consistent with those found during sampling performed in September 1978 and June 1977.

In-plant changes since the 1977 D.O.E.S. report include: use of a wet resaw instead of a dry, ventilated unit; ventilation for steam removal from the autoclaves; (section VI, Photographs), enclosure of the fiber charging operation in a booth; and a new lunchroom which is separated from the production area.

One obvious source of visible dust to the wet end of the pipe line is the batch mixer. When water is pumped into the mixer, displaced air from the mixer is forced out carrying fiber and cement dust with it. It is understood that there are plans to replace the wet mixing systems with a dry system similar to the Van Buren Plant.

Present plant policy is to issue company clothing in the form of disposable coveralls to any employee that requests them. Most employees observed did not wear coveralls. It is recommended that plant management seriously consider issuance of at least coveralls or other protective clothing to all employees, regardless of their asbestos exposure level, to reduce the possibility of lawsuits involving the employee's families in the future.

The current OSHA asbestos standard requires monitoring of representative employee job classifications every six months "for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits." Based on this and previous monitoring, it appears that most job classifications can be dropped from the six month monitoring requirement of the standard although it is

recommended that at least annual monitoring of representative job classifications be continued with monitoring every six months for job classifications with potentially excessive asbestos exposures (i.e., batch mixer, machine tender, calendar operator, dust collector tender). Because the asbestos concentration appears to remain relatively constant during the shift, the taking of samples to cover the full work shift is not necessary to represent average employee exposure or comply with the standard. However, samples of too short a duration should be avoided because of inaccuracies. A single sample of nominal two hours duration should be sufficient to represent the average exposure of a job classification and still avoid overloading the filter. If varying exposures during the shift are expected, however, multiple samples will need to be taken.

B. Respiratory Protection

The plant supplies the 3M8710 and Norton 7400-6 dust respirators when necessary for dust exposure. Respirator wearing was observed for the batch mixer and dust collector tender during this survey.

C. Noise

Noise dosimeter measurements indicated definite violations of the OSHA noise standard for the pipe machine tender and autoclave charger. Noise dosimeter measurements for the batch operator, cutoff saw operator, hydrotester and MOA lathe operator were in the range of potential violations of the OSHA standard. The noise dosimeter measurements are consistent with those found during the June 1977 D.O.E.S. survey except that the calendar and stripper operator levels were significantly less during this survey.

The pipe machine tender's and batch mixer's operator's noise exposure is primarily due to the charge mixer. The pipe machine tender's work area is around the charge mixer whereas the batch mixer operator uses a bench at the mixer console for a rest area. If the charge mixer is replaced with a dry system as planned, the excessive noise problem may be eliminated. In the interim, the pipe machine tender should wear hearing protection and the batch mixer operator should take his breaks in a different area.

The autoclave charger's noise exposure appears to be due to exhaust noise from the Erickson lift truck. The existing muffler should be replaced with a quieter unit.

The MOA lathe operator's noise exposure is primarily due to air exhaust noise from the pneumatic material handling system (see sound-level meter measurements). It is recommended that the feasibility of installing suitable air exhaust mufflers be investigated.

The cutoff saw operator's and hydrotester's noise exposures are due to pipe sawing noise and finish lathe noise respectively. OSHA may view enclosure of the finish lathe and cutoff saw as a feasible engineering control method of noise reduction. Enclosures with viewing windows and leaded vinyl curtains for entry and exit of product have been used successfully in the Wood-working industry for several years. It is recommended that the feasibility of engineering noise control for the finish lathe and cutoff saw be investigated.

The plant supplies insert and muff type hearing protection for employees on request. Only the dust collector tender was observed to be wearing hearing protection during this survey. It is recommended that the pipe machine tender, autoclave charger, cutoff saw operator and finish lathe area employees should be mandatory hearing protection job classifications.

The Ragland Plant has its own audiometric testing booth and an individual certified as an industrial audiometric technician who conducts pre-employment and annual audiometric tests on all employees.

D. Solid Waste

A great deal of improvement has been made in solid waste handling since the last D.O.E.S. report. The entire dump has been fenced and posted, empty asbestos fiber bags are contained in plastic bags which are buried, and waste pipe is crushed with a crawler tractor and buried (see section VI, Photographs). The landfill appears to be operated in a manner which assures compliance with the EPA National Emission Standard for Asbestos.

E. Process Water

The process water continues to be handled in the same manner as discussed in the 1977 D.O.E.S. survey report. Additional dikes have been added below the settling basin with the dragout conveyor. It is understood that an additional dragout conveyor will be located at the water discharge point from the plant itself.

F. Program Director

The Ragland Plant has hired an individual (Mr. Saleem)

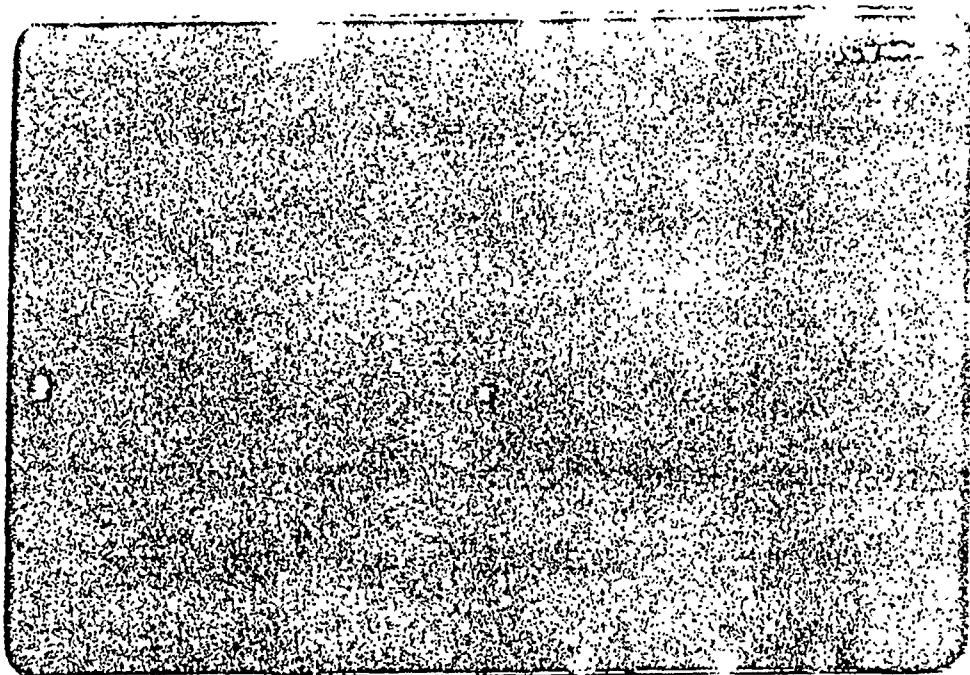
to administer safety and industrial engineering duties as recommended in the 1977 D.O.E.S. survey report. It is understood that Mr. Saleem will work in conjunction with Mr. Swafford as regards asbestos monitoring.

V. RECOMMENDATIONS

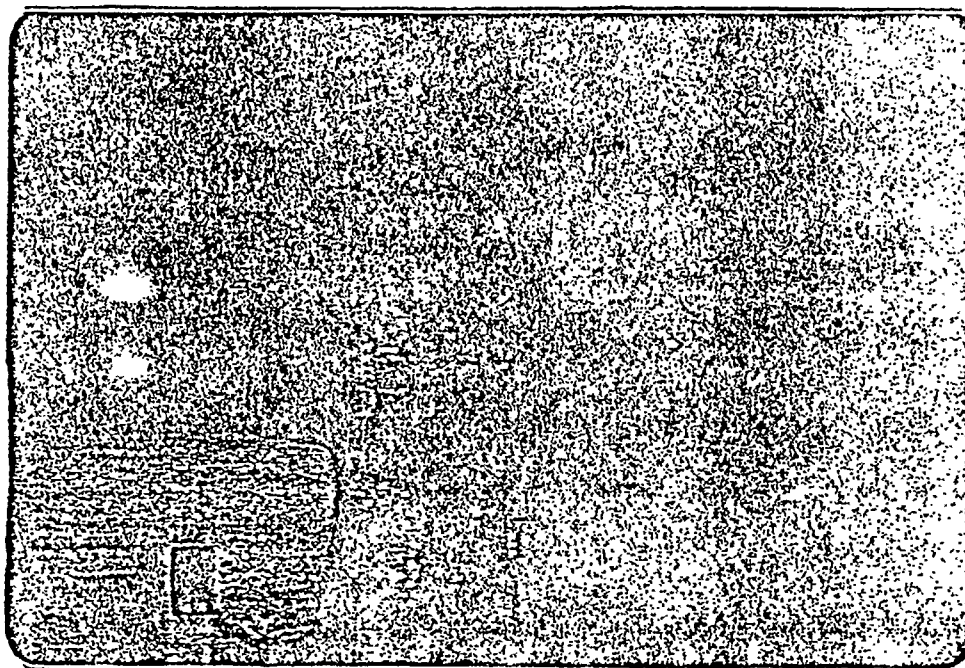
- A. The reclaim tank baghouse should be enclosed and vented to the atmosphere.
- B. The wearing of personal hearing protection should be mandatory for the pipe machine tender, autoclave charger, cutoff saw operator and for employees working in the immediate vicinity of the finish lathe.
- C. Management should consider issuing protective clothing to all employees.
- D. Plans to replace the present wet mixing system with a dry system (Van Buren type) should be implemented.
- E. The feasibility of noise engineering controls in the form of mufflers for the finishing line pneumatic control system exhausts and enclosures for the cut-off saw and finish lathe should be investigated.

  
Stanley G. Cothrin  
Environmental Scientist

SGC/cah

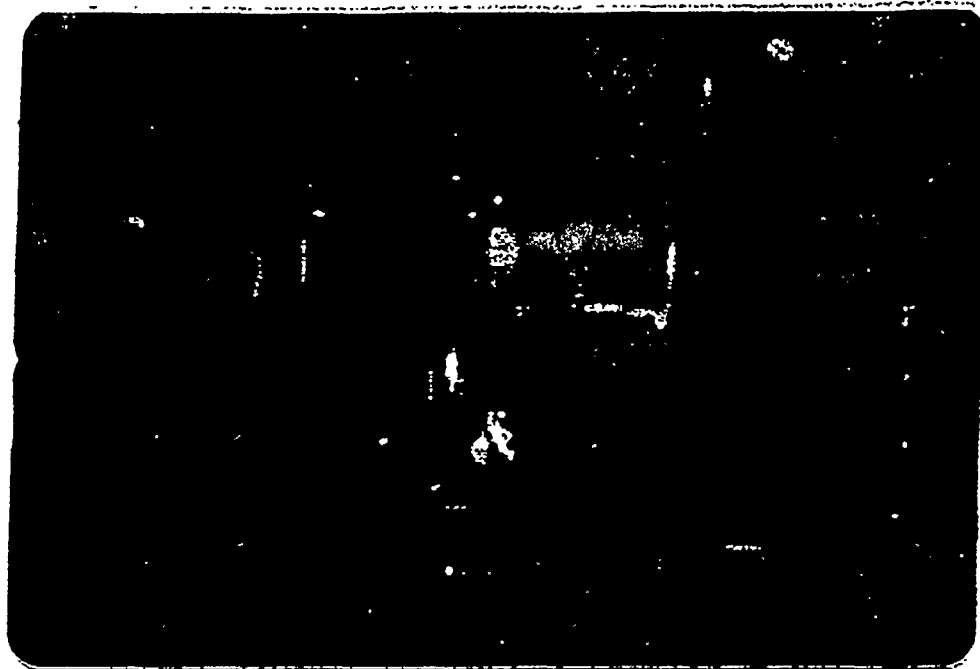


Leakage from broken bags in reclaim tank  
baghouse caused dust collector tender to  
have excessive asbestos exposure (Note  
settled dust on duct.)



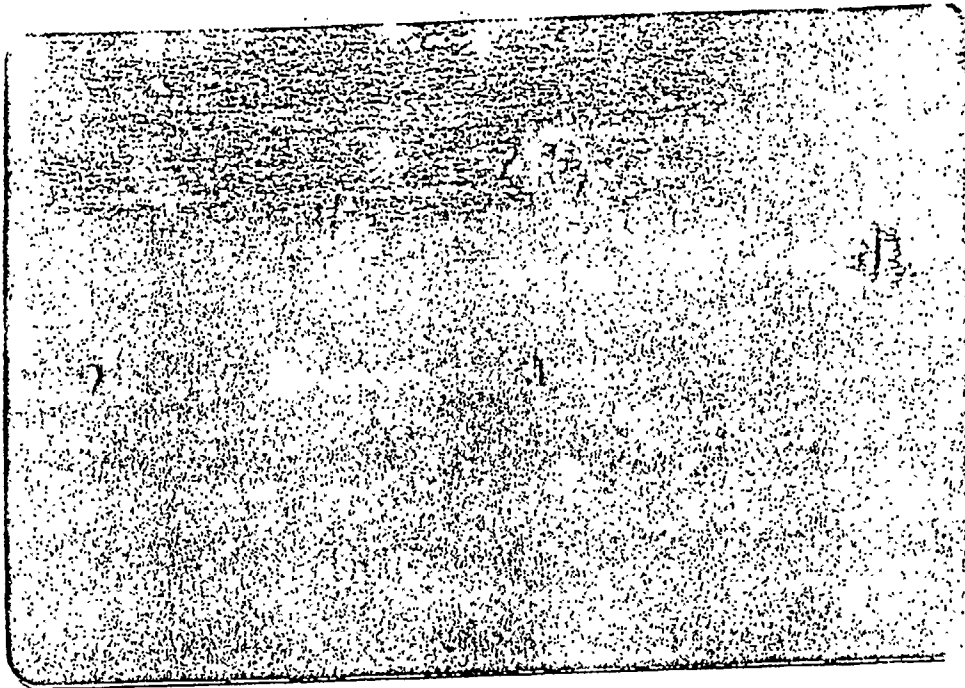
Wet cutoff saw demonstrated very low fiber  
exposure levels.

VI. PHOTOGRAPHS (Cont.)

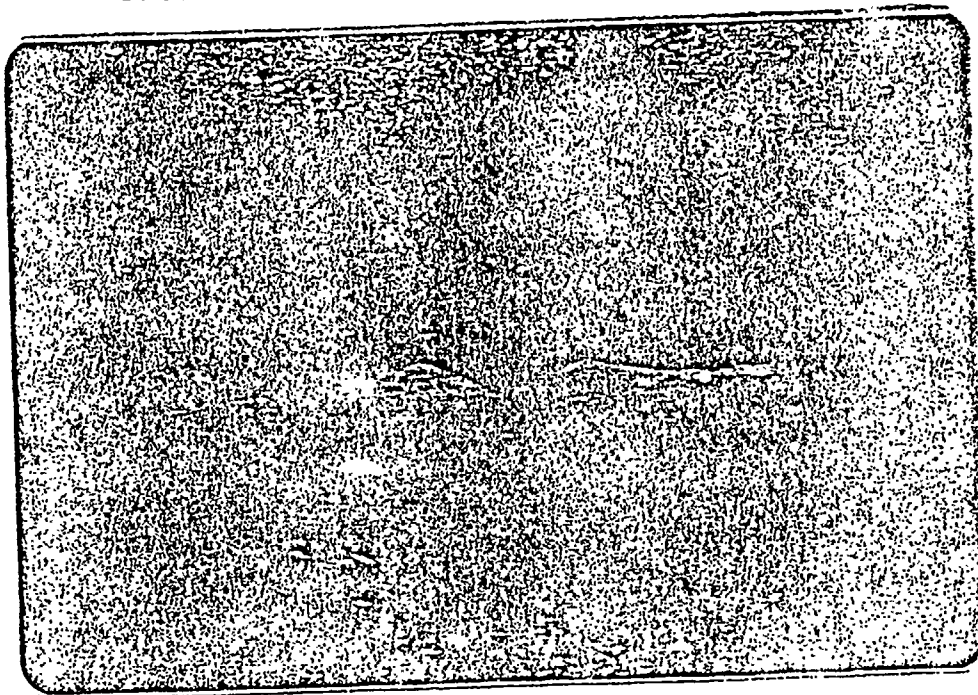


Autoclaves, showing new ventilation for steam removal.

VI. PHOTOGRAPH (Cont.)



Entrance to waste disposal site. Entire site is now fenced.



Waste disposal site showing plastic bags containing empty bags of fiber.