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cc: [REDACTED]

November 17, 1982

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TEXTILE FIBERS DEPARTMENT
CAMDEN

[REDACTED] AIR MONITORING DURING
A FOUR-POSITION PRIMARY APPLICATION OF
[REDACTED] MAY PL'NT, CAMDEN, SOUTH CAROLINA
(Haskell Laboratory Report No. 707-82; [REDACTED])

SUMMARY

An industrial hygiene survey was performed by R. W. Pell on August 31, and September 1, 1982 to evaluate concentrations of [REDACTED] during primary application of [REDACTED] at four positions of BCF spinning machine 370T. Measured concentrations were as follows:

Area and Source Samples: $0.06 - 2.1 \text{ mg/m}^3$
Personnel Samples: nondetectable - 0.5 mg/m^3

All [REDACTED] concentrations were below the Du Pont Acceptable Exposure Limit (AEL) of 5 mg/m^3 . It is recommended resampling be done during a preproduction or production run to confirm spinning machine operators and other workers are not overexposed to [REDACTED]

BACKGROUND

[REDACTED] has an [REDACTED]. The percentage of [REDACTED] is less than that in commercial [REDACTED]. The fact that less [REDACTED] is present should lead to a reduced concentration of [REDACTED] because the process is unchanged. The operating conditions during this particular run were a hot chest roll temperature of 183°C and an applicator roll speed of 29 rpm (standard operating conditions).

AIR SAMPLING AND ANALYSIS

[REDACTED] was collected on Tenax®-GC tubes. Air was drawn through the tubes by Du Pont Model P-200 pumps calibrated at about 60 mL/min. Tenax®-GC tubes were thermally desorbed at 200°C using an Envirochem Unacon Series 810 Thermal Desorber at Seaford. The carrier gas was nitrogen. Samples were analyzed on a Hewlett-Packard Series 5840 gas chromatograph equipped with a flame ionization detector and a 3.28' x 1/8" stainless steel column packed with 15% Igepal® C0880 and 5% potassium hydroxide on Chromosorb W. Two samples were analyzed at Jackson Laboratory using ion selective chromatography to determine total fluoride.

Samples were collected at the following locations around spinning machine 370T:

- On the spinning machine operators (personnel samples).
- On top of the primary finish control panel at position 22. Because of its proximity with the hot chest, this was considered a source sample.
- Approximately five inches from the primary applicator roller.
- On the spinning machine operators' I-beam work station, in the breathing zone.
- In the finish preparation area next to the [REDACTED] Tank.

Calibration data are recorded in [REDACTED]

[REDACTED] Analytical data are recorded in [REDACTED]

RESULTS

Air sampling results are listed in the attached Table.

DISCUSSION AND CONCLUSIONS

The highest [REDACTED] concentrations were at the primary applicator roll (1.6 to 2.1 mg/m³), located on the second floor approximately three inches above the floor. These were source samples and are not indicative of typical operator exposure concentrations. All other area concentrations were equal to or less than 1.0 mg/m³. Personnel samples ranged from nondetectable to 0.5 mg/m³. The lower limit of detection was 0.1 µg of [REDACTED]. All concentrations were less than those measured during a four-position test, with the hot chest open, of a [REDACTED]

Seaford's analytical method may overestimate [redacted] collected because the flame ionization detector can measure other finish components that come off the gas chromatograph column in the same detection window as [redacted]

[redacted] This problem is being resolved by Seaford Research and Development, and the Haskell Laboratory Analytical Section.

While all area, source and personnel concentrations were below the AEL of 5 mg/m³ during this four-position run, operators worked not only the four positions where [redacted] was being applied, but also other positions on spinning machine 370T. It is recommended resampling be done during a 28- or 40-position preproduction or production run of [redacted]. It is particularly important that personnel samples be taken on operators who are working only positions where [redacted] is being applied.

RECOMMENDATIONS

Collect additional [redacted] samples during primary application of [redacted] on a full 28- or 40-position machine.

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[redacted]
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[redacted]
Attachment: Table

TABLE

[REDACTED] SAMPLE CONCENTRATIONS OBTAINED
AROUND SM370T WHILE RUNNING [REDACTED]

<u>Sample</u>	<u>Date</u>	<u>Sample Designation</u>	<u>Time (min.)</u>	<u>Concentration (mg/m³)</u>
H-82-45-2	8/31/82	Area sample between two spinning machines, on the control panel.	216	0.6**
H-82-45-3	8/31/82	Area sample on cart at work station.	213	0.06**
H-82-45-4	8/31/82	Area sample at primary applicator.	238	1.6
H-82-45-5	8/31/82	Personal sample - "stringer."	142	0.21
H-82-45-7	9/1/82	At the work station.	496	0.60
H-82-45-8	9/1/82	Control panel between two spinning machines.	492	1.0
H-82-45-9	9/1/82	Personal sample - "stringer."	252	0.5
H-82-45-10	9/1/82	Personal sample - "tuber."	215	0.5
H-82-45-11	9/1/82	Area sample at primary applicator.	453	2.1
H-82-45-12	9/1/82	Finish Prep. Area next to [REDACTED] Tank.	430	1.0*
H-82-45-13	9/1/82	Finish Prep. Area next to [REDACTED] Tank.	431	1.0
HL-707-82				

TABLE (Continued)

[REDACTED] SAMPLE CONCENTRATIONS OBTAINED
AROUND SM370T WHILE RUNNING [REDACTED]

<u>Sample</u>	<u>Date</u>	<u>Sample Designation</u>	<u>Time (min.)</u>	<u>Concentration (mg/m³)</u>
H-82-45-14	9/1/82	Personal sample - "stringer."	197	0.35
H-82-45-15	9/1/82	Personal sample - "tuber."	177	<0.01

*TBA concentration may be lower because of probable interference.
**Analyzed at Jackson Laboratory.

HL-707-82