WALK-THROUGH SURVEY REPORT

AVTEX FIBERS, INC.
P. O. Box 1169
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(703)635-2141

DATE OF SURVEY:	July 14-15, 1977
PERSON(S) CONDUCTING SURVEY:	Sherry G. Selevan, Epidemiologist James H. Jones, Industrial Hygienist
DATE OF REPORT:	
PERSON(S) PREPARING REPORT:	Sherry G. Selevan James H. Jones
PURPOSE OF STUDY:	To evaluate the plant for possible inclusion in the cross-sectional medical and reproductive effects study of CS_2. The study is being conducted because of reports in the Soviet Union and Eastern European literature of reproductive effects due to exposure CS_2.
SUMMARY OF SURVEY FINDINGS:	There is some problem of using this plant for the reproductive study due to the noncontinuity of work for a number of workers.
CONTACTS AT PLANT:	Avtex - A.G. Ruff, Plant Manager J.A. Steinbacker, Industrial Relations E.J. Keenan, Industrial Relations Supervisor R.M. Biggs, Jr., Staff Assistant V.J. Malta, D.O., Plant Physician Amalgamated Clothing and Textile Workers Union Pat Sparks, M.D.

DESCRIPTION OF FACILITY

The plant is owned by Avtex Fibers, Inc. and includes a site of approximately 439 acres with about 55 acres under roof. The plant was built in 1939 and began production of viscose rayon in 1940. At that time the plant was owned by American Viscose Corp. The plant underwent continuous expansion during World War II. In 1963, the assets of American Viscose Corp. were acquired by FMC Corp. and the plant became a part of FMC's Fiber Division. In 1969, production of polyester fibers began at the plant. In 1976, the Fiber Division was sold and set up as a new corporation, Avtex Fibers. Inc.

Products produced at this plant are rayon staple fibers, rayon industrial and tire yarns, polyester staple fibers, and a by-product, sodium sulfate.

DESCRIPTION OF WORKPLACE AND PERSONNEL RECORD SYSTEM

This Avtex plant has a total of 1450 viscose rayon production workers; 1350 of these are hourly workers, including 400 hourly women. Most of the women (approximately 300) of them work in the converting department, where the filament is spooled, and consequently are not exposed to CS_2. The polyester facility on the premises has 50 employees 44 of these are hourly, including 10 women. Also employed are 450 engineering and maintenance workers.

There are three shifts daily, seven days a week with a bulk of the labor force (approximately one-half) working during the day.

The plant population, overall, is fairly old, the average age being 43 (hourly-42, salaried-45); one-third of the plant is over 60 years of age and one-third have been there 25 years (the amount of overlap is unknown). The company is expecting a big change in employees in the next 5 to 10 years due to retirement. They predict losing 50% of their population.

However, the annual turnover rate is fairly high; approximately 24%. Several factors influence this: as this is the only major industry in the county and in Northeast Virginia, farmers and construction workers apply for positions in the "off" seasons. These same workers will temporarily leave and return to the jobs in the plant.

There is no set pattern for promotions. People maintain their jobs by seniority. The starting positions are determined by the attitudes of the workers toward them. Those that are least desired are vacated for other jobs and these spots are filled by new employees. Seventy percent of the new workers start in spinning, 10% in staple, 10% in viscose, and 5% in polyester. Frequently people are promoted to engineering; these are highly desired jobs and are never filled from the outside.

There are several different forms included in the two personnel files (in the main office and in the departmental offices): The application form includes name, address, social security number. It has no date of birth, no marital status, no sex or race information, but some of this information in available from insurance forms filled out after employment. (Sex can only be determined by name, and race is not available).

The Personnel Data Card has the worker's date of birth, date of hire, expected retirement date; it also shows which department the worker is assigned to and the dates of assignment. This form does not, however, have the job title. The job title is available from either of two sources: (1) the Personnel Transaction form is used whenever there is a change in the worker's status: there is one form per change (this is used to fill out the Personnel Data Card). It has the individual's name, social security number, department, shift, job titles, date of change, and termination date, if applicable. (2) The Employment Record is each department's equivalent of the personnel data card, except that it also contains the job title.

The company insurance records do contain pregnancy related claims, but only for emergency and in-patient treatment and hospitalization.

DESCRIPTION OF SAFETY, INDUSTRIAL HYGIENE AND MEDICAL PROGRAMS

This plant has been surveyed in the past by corporate industrial hygienists from FMC. CS_2 samples are collected weekly in 50 areas and weekly summaries of the data are prepared. Semi-annual graphs of the area sample results are also available. These area samples are short-term (about 15 minute) samples and are analyzed by spectrophotometry. Personal TWA samples using charcoal tubes and spectrophotometric analysis have been collected since 1973. Monthly graphs of TWA's by department are prepared. The highest TWA currently are about 11 ppm. Weekly samples for H_2S using detector tubes are also collected. Occasional samples for isopropyl and tert-butyl alcohol, chlorine, hydrogen, and lead are collected when these materials are being used by maintenance personnel.

There is a part-time physician, Dr. V.J. Malta, at the plant. He is present at the plant four hours per day, five days per week. Dr. Malta has been the plant physician since February, 1977. The previous plant physician had not kept up with periodic exams for the workers recently, due to his ill health. Licensed nurses are on duty each shift at the plant. A pre-employment physical exam which includes vision tests, audiometric exam, chest x-ray and iodine azide urine tests is required.

Periodic physical exams are required for some workers depending on their jobs. Plans are being made to implement a periodic physical exam schedule similar to the Avtex plant in Nitro, West Virginia. This schedule calls for examination every 3 years for workers less than 45 years of age, and every 2 years for employees over 45 unless they have a known medical problem; in that case, they are examined annually.

There is a formal safety program at this plant with Ed Keenan as Safety Coordinator. There are monthly safety audits and a union safety committee. Production supervisors are responsible for the safety records in their area. The safety record of the supervisor's area is one of the criteria used when considering pay raises. Protective equipment required in various areas of the plant include protective clothing, safety glasses, safety shoes, and respirators. Shower and change facilities are provided. The plant, so far in 1977, has an accident frequency of 2.87 and severity of 248.41. The plant's OSHA 102 summary form for 1976 indicated they had 80 lost workday injuries, and one los workday illness due to repeated trauma.

DESCRIPTION OF PROCESS

Raw materials used in the production of rayon staple fibers are wood pulp, carbon disulfide, sulfuric acid, caustic soda, oleic acid and in some cases titanium dioxide. Hydrogen sulfide and sodium sulfate appear as by-products in part of the process.

The process begins with the steeping of sheets of wood pulp in caustic soda to form alkali cellulose. This mass is pressed to give a controlled ratio of alkali to cellulose and then shredded to increase surface area. The alkali cellulose is then "aged" by holding it in closed containers to allow oxygen in the air to depolymerize the cellulose to the desired extent. The alkali cellulose is then reacted with carbon disulfide to form soluble sodium xanthate. This xanthated cellulose is dissolved in dilute sodium hydroxide to form "viscose" which is then filtered, deaerated and aged. The viscose solution is extruded through a spinneret into a spin-bath consisting of sulfuric acid, sodium sulfate and surfactants. The extruded streams coagulate into individual filaments, which are stretched prior to complete regeneration to cellulose by continuing action of the acid component of the bath. The wet filaments from a number of spinnerets are combined into a large bundle of fibers called a "tow". This tow is then cut into short lengths after which the fibers undergo desulfurizing, bleaching, washing, application of lubricants, and drying. After drying the fibers are baled in approximately 500 pound bales. The areas reported to have the greatest CS_2 exposure are churning and mixing, filtration, spinning and cutting, and the first section of processing the staple.

SURVEY OBSERVATIONS

Potential health hazards at this plant include carbon disulfide, hydrogen sulfide, chlorine, hydrogen, lead, noise, isopropyl alcohol and tert-butyl alcohol.

Housekeeping at this plant was fair. Most of the spinning machines were not well enclosed which greatly reduces the effectiveness of the local exhaust ventilation.