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WALK-THROUGH SURVEY REPORT

COURTAULDS NORTH AMERICA, INC.
P.O. Box 2648
Mobile, Alabama 36601
(205)675-1710

DATE OF SURVEY: July 21-22, 1977

PERSON(S) CONDUCTING SURVEY: James H. Jones, Industrial Hygienist
Sherry G. Selevan, Epidemiologist

DATE OF REPORT:

PERSON(S) PREPARING REPORT: James H. Jones
Sherry G. Selevan

PURPOSE OF SURVEY: To evaluate the plant for possible inclusion in the NIOSH cross-sectional medical and reproductive effects study of CS₂. The study is being conducted because reports in the Soviet Union and Eastern European literature of reproductive hazards due to exposure to CS₂.

CONTACTS AT PLANT:

Courtaulds - Don Smith, Personnel Manager
Dick Prescott, Safety Administrator
Paul Brock, Plant Attorney

Amalgamated Clothing and Textile Workers Union-Local 1465
A.C. Thomas, Vice President

DESCRIPTION OF FACILITY:

The plant is operated by Courtaulds North America, Inc., a subsidiary of Courtaulds Ltd. of Great Britain. The plant site contains approximately 650 acres. The plant was built in 1952 to produce viscose rayon staple fibers. Nylon fiber production began in 1964. Products produced at this plant include rayon staple fibers, nylon fibers, and a by-product, sodium sulfate.

DESCRIPTION OF WORKFORCE AND PERSONNEL RECORD SYSTEM

The viscose rayon workforce consisted of 400 men when this plant was built in 1952, it currently is 750. Of these, 350 are production workers. The nylon plant employs 151, with 121 in production. There is no changing between nylon and rayon. The plant has four shifts, 7 days/week, 24 hour/days.

There is a set progress for promotion, with the least pleasant and heaviest jobs at the beginning. The company thinks that this is why there are few women employed; only one has remained long enough to be moved up from these first jobs.

The average age for the entire plant is approximately 42. The nylon workers are probably somewhat younger since this process was started in 1964.

Approximately 29-30% of the population is black, and they are evenly distributed through the population.

Eighty to eighty-five percent are currently married.

Personnel records contain the following information: date of birth, weight, height, social security number, marital status, next of kin, address, sex, race, phone number, and department. The service record with department job classification, and a mark that indicates hire, transfer, or separation, is on the back.

DESCRIPTION OF SAFETY, INDUSTRIAL HYGIENE AND MEDICAL PROGRAM

The plant is periodically surveyed by an industrial hygienist from the plant's insurance carrier, Liberty Mutual. Area samples for CS₂ and H₂S are collected weekly. CS₂ samples are grab samples and are analyzed by spectrophotometry. H₂S is sampled using detector tubes. Levels of CS₂ in 1977, have ranged from 0 to 75 ppm in operating areas with averages ranging from 4 to 20 ppm. Area samples collected in personnel areas (breathing zone samples) ranged from 1 to 57 ppm with averages from 4 to 15 ppm. Average levels were based on 24-31 samples per location. Plant personnel were not aware of how far back sampling data existed.

A physician, Dr. George Lammons, is present at the plant two hours per day, two days per week. An R.N. is in charge of the dispensary and an LPN is on duty 24 hours per day, seven days per week. Also other employees on each shift have had formal first aid training. The required pre-employment physical includes vision tests, audiometric tests, pulmonary function tests and blood profiles. Retesting is done annually by the nurse, with any workers having abnormal test results referred to the physician.

There is a formal safety program at the plant with two persons involved fulltime. Safety committees exist in each area of the plant and meet monthly to discuss problems. Protective equipment required in various areas of the plant include protective clothing, safety glasses, safety shoes and respirators. The plant's OSHA 102 summary form for 1976 indicated they had 28 lost workday injuries.

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 byproducts in part of the process.

The process begins with the steeping of shredded wood pulp in caustic soda to form alkali cellulose. A controlled ratio of alkali to cellulose is left in the mass. The alkali is then "aged" 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 viscose 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 CS₂ exposure are spinning and cutting. Other areas that would be expected to have CS₂ exposure are churning and mixing and the first section of processing the staple although the plant has not monitored these areas.

SURVEY OBSERVATIONS

Potential health hazards at this plant include carbon disulfide, hydrogen sulfide, noise, sodium hydroxide, and sulfuric acid. Housekeeping at this plant was poor. Spinning machines were not well enclosed to prevent escape of CS₂ and H₂S vapors.

