

Walk-Through Survey Report

Nazar Rubber Company
2727 Avondale Avenue
Toledo, Ohio 43607

PURPOSE:

A walk-through survey was undertaken in a plant where a confirmed case of angiosarcoma of the liver had been reported (Herbert, Bureau of Epidemiology) in April 1976. The rubber worker was a roll builder for the Nazar Rubber Company during 1952-1967 and was involved extensively with the handling of neoprene. This survey is part of the industry-wide study of industries producing and using chloroprene or polychloroprene (neoprene).

DATE OF SURVEY:

April 7, 1977

DATE OF REPORT:

May 24, 1977

PERSONS CONDUCTING SURVEY:

Howard R. Ludwig, Industrial Hygiene Engineer
Peter F. Infante, DDS, Epidemiologist

CONTACTS AT PLANT:

William Strange, Plant Manager (419)513-1641
Tom Peace, Teamsters Local 20

DESCRIPTION OF PLANT:

The plant which was built in 1949 presently employs a total of 55 with 42 being considered production workers in the roll division. Personnel records for employees who terminated employment prior to 1968 had been destroyed.

DESCRIPTION OF PROCESS:

The Nazar Rubber Company fabricates various types of rubber into rolls for use in conveyor equipment. In the past, the majority of roll building was done using polychloroprene (neoprene). Presently, 15% of current production involves neoprene; natural rubber is used about 65% with the remaining 20% of production involving styrene-butadiene, acrylonitrile, and Hycar (polyacrylic rubber). Until about 1965 Nazar mixed its own natural rubber, styrene butadiene, acrylonitrile, and neoprene adding fillers, plasticizers, etc. including carbon black, oils, sulfur, zinc oxide and titanium dioxide. Chloroprene (latex)

has never been handled here, only neoprene chips. Polyvinyl chloride (PVC) has never been used at Nazar.

The pre-mixed (finished) neoprene is fed through two calenders until it reaches the desired consistency. A strip of the neoprene is then transferred by conveyor from the second calender into an extruder. A hollow tube (about an 8 inch diameter) was extruded, cut off in a 6 foot length and placed over and glued to a metal roller. The roller had been coated with various paints and glues which, when the roller assembly is steam vulcanized (about 300°F), bonds the neoprene to the metal roller. The steam vulcanization step takes place in an area remote from the roll building operation monitored during the survey. Following vulcanization the rolls are finished by trimming and grinding before being shipped out. The constituents of the coatings for the metal rollers include toluene, xylene, hexone, methyl ethyl ketone, and 2-ethoxyethanol.

PROCEDURES FOR DATA COLLECTION:

Two personal samples and two area samples were collected to be analyzed for residual chloroprene, toluene, xylene, and hexone. Sampled air was pulled through charcoal tubes (SKC Corporation) attached to the roll builders' lapel by calibrated Sipin Model SP-1 Pumps operating at a rate of 150 cubic centimeters per minute. In addition to sliding the extruded neoprene onto the metal roller (often a snug fit) the roll builders were also responsible for having previously coated the metal roller with the paint-glue-bonding solutions. The roll builders sampled did not have occasion to go next to the calenders, although they are in the same general area. Neither of the roll builders during the sampling period went near the steam vulcanization area which is located in a different part of the plant. The area samples were collected on the second calender with charcoal tubes and calibrated MSA Model G Pumps.

RESULTS:

The collected air samples were analyzed by P&CAM Method #127 (organic solvents) with the addition of a benzene internal standard. Analyses were performed on a HP5840 autosampler with a 10' SP2100 carbowax 1500 column. The blank was below the limit of detection (5 micrograms for chloroprene and 10 micrograms for the other solvents).

Analytical results are shown in Table 1. The concentration of toluene ranged from 2.9 to 25.5 parts per million (ppm) with xylene and hexone being found at concentrations of less than 2 ppm, all levels being well below their respective OSHA standards (see Table 1).

The concentration of residual chloroprene was found to range from 0.14 to 0.18 ppm.

DISCUSSION AND RECOMMENDATIONS:

The environmental levels of the agents measured are well below the current standards. In regard to chloroprene concentrations, levels ranging from 0.14

(area sampling) to 0.18 (personal sampling) were detected. Because of the structural similarity of chloroprene and vinyl chloride, the latter known to cause angiosarcoma in man and given that chloroprene is known to cause gene mutations, it is possible that chloroprene may have induced the angiosarcoma in the worker who died in 1967, after working as a roll builder, mostly with polychloroprene rubber, from 1952-1967. Although one case of angiosarcoma can not establish causality, the observation raises serious public health concern, particularly in light of the fact that vinyl chloride or polyvinyl chloride is not used at this plant.

Table 1
Weyer Rubber Company
Results of Chloroprene and
Solvent Analyses

Sample Number	Sampling Time	Type	Time-Weighted Average Concentrations, ppm			
			Chloroprene	Toluene	Xylene	Benzene
T-1	1018-1135a	Personal-Bell Builder	0.18	6.4	0.5	1.3
T-2	1030-1135a	Personal-Bell Builder	0.14	25.5	1.4	1.2
T-3	1031-1135a	Area-Calender	0.14	5.2	1.2	1.0
T-4	1040-1100a	Area-Calender	0.14	2.9	0.3	0.4

Agents	8-Hour Time Weighted Average, ppm	
	OSHA Standard	NIOSH Recommended Standard
Chloroprene (2-chloro-1,3-butadiene)	25	pending
Toluene	100	100
Xylene	100	100
Benzene (nathyl isobutyl ketone)	100	---