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environment

Search spreads for SBR-cancer link

NIOSH meeting studies potential hazards to 10,000 workers in SBR plants in wake of reports of higher-than-average incidence of leukemia cases at plants in Texas, Ohio, Kentucky

"There is no solid clue as to whether these leukemia cases are work-oriented, but we agree an investivation is warranted." That's what Edward W. Harrington. director of manufacturing for B.F. chemicals division, told last week's meeting of the National Institute of Occupational Safety and Health in Covington, Ky.

Harrington was responding to questions that have been raised about possible links between styrene-butadiene rubber plants and leukemia cases.

NIOSH scheduled the meeting after reports indicated a high incidence of the discasc among former workers at the SBR plants of Goodrich and Texas-U.S. Chemicals in Port Neches, Tex. (*CW, Apr. 7, p. 17*).

NIOSH was moving rapidly to protect the estimated 10,000 workers in SBR plants in the U.S. from possible risks. "We feel the same sense of urgency we had for the vinyl chloride problem," said J. William Lloyd, who heads the NIOSH task force on SDR.

SBR, however, presents several more problems than VCM poses. For example, the plants that make 3 billion lbs./year of styrene-butadiene elastomers arc complexes that use more than 200 chemicals in production--monomers, initiators, modifiers, short-stops--which will complicate the task of pinning down possible culprits.



GOODRICH'S HARRINGTON sees no 'solid clue' to leukemia link, agrees on study.

Moreover, the evidence available so far is limited. There are no animal studies linking styrene or butadiene with canccr. Some clues may turn up in animal studies of styrene sponsored by the Manufacturing Chemists Assn. and Mount Sinai Hospital (New York) test programs on workers at a styrene polymer plant.

More answers may emerge in epidemiological studies being sponsored by rubber makers as part of their 1970 labor contracts. Lewis Beliczky, director of industrial hygiene for the United Rubber Workers, says the union is pressing for larger industry contributions for such studies in bargaining now going on.

URW adds that it will seek from the Occupational Safety and Health Administration an emergency standard for worker exposure to benzene, which is a suspected link to leukemia cases.

More Funds: The 1970 contract between the URW and major rubber companies included a provision for company contributions of 0.5¢/hour per employee for studies of health problems in the rubber industry.

One study. funded by Goodyear, Firestone, Uniroyal and General Tire, is being carried out by the University of North Carolina's School of Public Health. Another, backed by B.F. Goodrich and Armstrong Rubber, is under way by the Harvard School of Public Health. The union is seeking to increase company funding of such studies to 1.2¢/hour per employee, which would amount to $1.7 million/year.

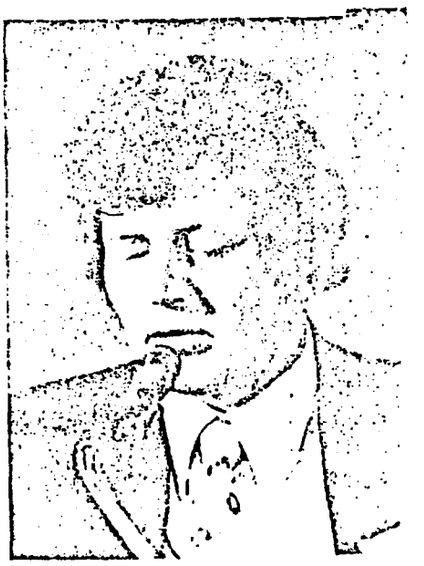
In the. *American Journal of Epidemiology* (March), Harvard scientists said that on the basis of their findings so far and the results of other studies, "attention should be directed to identify specific substances that may bc responsible for gastrointestinal cnnccr in processing workers, lung cancer in tire-curing workers, brain cancer in tire builders and leukemia in all rubber workers."

And reports of the North Carolina work in the *Journal of Occupational Medicine* (March) provided additional cause for concern. Comparing mortality data for some 7.000 workers at Akron, O., rubber plants in the 1964-1972 period with 1968 mortality rates for the U.S. male population, the researchers found a "significant excess" of leukemia deaths in six rubber plant work areas--compounding and mixing; inspection, finishing and repair; synthetic plant; janitoring and trucking; calendering and extrusion: tread cementing.

The pursuit of data intensified when Goodrich, on Mar. 18, told NIOSH that a Union representative was correct when hi "said he had heard there were some leukemia deaths among former workers at the company's SBR plant in Port Neches.

Texas Trail: Richard Lemen, a NIOSH epidemiologist, told the Covington meeting that five leukemia cases had been linked to the Goodrich plant in Texas and three more to the Texas-U.S. Chemical plant in Port Neches. The Goodrich employees had worked as laborers, truck drivers, pipefitters and in the process department. The cases "occurred randomly. not seemingly related to work areas," Lemen observed.

Joseph Wagoner. head of NIOSH field services and leader of the Texas inspection group, noted that leukemia rates in the Port Neches area are higher than national averages. In Jefferson County and two adiacent counties with heavy petro chemical plant 'concentrations, the figure are 11.1, 10.7 and 13.2 leukemia deaths respectively, per 100,000 population compared with 9.9 in the state of Texa



NIOSH'S WAGONER cites high leukem incidence rates in three Texas counti

and 8.8 in the entire U.S.

Bradford Block of Kentucky's state health department reported that examination of death records of 53 workers at the American Synthetic Rubber plant in Louisville revealed some evidence of excess leukemia deaths. Block said the company was "not cooperating" in the department's continuing quest for death and medical surveillance records. However, an official of the company claimed it had provided all the information that had been requested.

And Steven Wodka, industrial hygienist with the Oil, Chemical and Atomic Workers union. said: "We will demand total disclosure" of information on workplace health hazards.

Poor Marks: It will be another week or two before NIOSH workers finish microfilming employment records from the two Texas SBR plants, but inspection of the two units has been completed.

NIOSH industrial hygienist Ronald J. Young said the condition of the plants "leaves quite a bit to be desired." He called housekeeping "rather poor," reported that workers were eating where toxic materials are stored and that vessels were being cleaned without the use of respirators.

Goodrich's Harrington cited these steps being taken to protect workers: no vessel can be cleaned without plant safety department approval. hose-fed respirators arc being supplied for all vessel entries, and all employees are offered blood tests.

Harringtan also said that in response to a union request Goodrich was supplying a list of all chemicals used in the plant. He added that monitoring at the Port Neches plant indicated that worker exposure to butadiene and styrene were well below OSHA standards: For butadiene, measurements did not exceed 20-30 ppin., compared with the 1,000-ppm. OSHA maximum. For styrene, the readings were 1-15 ppm., compared with OSHA's 100-ppm. standard.

These OSHA standards, however, are under intense study and could be changed. The International Institute of Synthetic Rubber Producers has launched a toxicological study of butadiene after finding that existing evidence is "inadequate."

A report to the IISRP meeting last month (*CW, Apr. 14, p. 22*) drew some "uncomfortable parallels" between butadiene and VCM: both are heavier than air, so they stay in open vessels; both are highly reactive monomers that form peroxides on exposure to air; and both have low toxicity and thus have drawn little industrial hygicnc attention in past years.

On the other hand, Goodrich's Harrington noted that the SBR proccss requires much less vessel cleaning than the PVC process—only about every six months or cvcn yearly. The SBR process, he said, is efficient in comparison with many polymerization processes, because the unrcacted liquid monomers are recovered and reused.

Sinai Study: New York's Mount Sinai School of Mcdiciiic is studying 500 styrene workcrs at Atlantic Richfield's Monaca, Pa., plant. Dr. Ruth Lilis noted there have been no reports from animal studies on styrene. (However, tests sponsored by the Manufacturing Chemists Assn. and being carried out by Dow Chemical and Litton Bionctics have shown that after six months several animal species have suffered no ill effects from inhaled and ingested styrene.)

Lilis said that analysis of blood, urine, nerve and X-ray tests on the Arco workers have not yet been completed, but mucous membrane irritations and chronic bronchitis have been noticed.

Dr. William Nicholson added that epidemiological studies of 562 employees who have worked at the plant since it started up in 1962 gave "cause for concern." Lilis notcd that the plant had originally made its own benzene to start the styrene process but switched to shipping in ethylbenzene in 1969.

It was benzene that attracted the most suspicion in the search for a possible link between rubber plants and leukemia. Harrington reported Goodrich's styrene contained 100 ppm. of residual benzene. But Dow, a major styrene produccr. says random tests of shipments indicate styrene leaves its plant with lcss than 10-ppm. residual benzene.

Harrington suggested an explanation: barges used to ship the styrcne' had previously carried bcnzcnc.

Other Suspects: Benzene 'isn't alone in the suspect category among chrniicals used in SBK production. A list distributed by NIOSH at the meeting included hydroperoxides (such as cumene hydroperoxide), *p*-nitroaniline, hydroquinone and sodium dithiocarbamate as potential carcinogens.

URW's Beliczky wants NIOSH to broaden its investigation to include possible health hazards in ABS production as well as latex and crumb rubber plants. NIOSH will have its hands full gathering and interpreting data. And rubber makers will be kept busy trying to meet industrial hygiene needs.

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