

occupational health studies

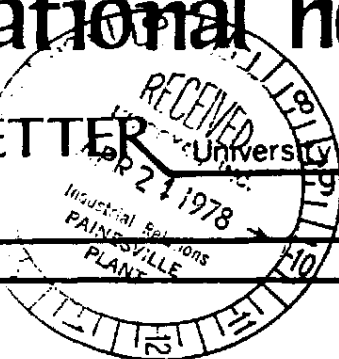
NEWS LETTER

University of North Carolina at Chapel Hill

School of Public Health

Vol. 5, No. 2

April, 1978



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INTRODUCTION

In this issue of the Newsletter, we review the status of our 1977 Mortality Study, the Goodyear Gadsden, Alabama plant dermatitis study, and the case-control study of leukemia in the rubber industry. Also included is a summary of an industrial hygiene sampling study of the Uniroyal, Scotts Bluff, Louisiana plant.

1977 MORTALITY STUDY

In previous issues of the Newsletter we have discussed our various mortality studies. These studies focused on selected plants and probed into the past experience in these plants, in some cases as far back as 1940. The purpose of these studies was to determine whether any of the various causes of death among groups of rubber workers were associated with jobs held in the industry. During 1978 we are conducting a new mortality study which is of a different nature. While past studies dealt with workers from selected plants, this study is designed to deal with workers from all plants covered under our research program. While previous studies probed into the past this study will consider only the mortality experience of 1977. We intend to include in the study all people who worked during 1977 and all retirees. We are now in the process of collecting and processing the necessary information for the study. We hope to be able to analyze the information in early summer and have a report ready by the end of the summer.

To perform a study like this one we need four different kinds of information. First, we need information on all of the deaths which occurred during the year among all workers and retirees from these plants. In addition to the cause of death we need to know the age, sex and race for each person who died. This information is provided on death certificates. Second, we need to know about the total population of workers and retirees from all of the plants. Again, we need to know the age, sex and race for the people in the population, but we also need to know the date of hire and whether or not each person was living at the end of 1977. For active employees and retirees this information is easy to determine, but for workers who quit, the living status is very

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difficult to determine. Third, we need information about another population so that we can compare the death rates in the rubber industry to the death rates in this other population. Because data are readily available from the government we usually use the total U.S. population or the population of the states in which the plants are located. The National Center for Health Statistics annually publishes the number of deaths in the U.S. for each cause of death. This information is further broken down into age, sex and race groups. The fourth set of data is the corresponding population data available from the Bureau of Census. With this information we can then compare death rates in the rubber industry with death rates in the U.S. population. If the death rate for a particular disease among a group of workers is high compared to the U.S. rate, this is an indication that further investigation needs to be done to determine the cause.

The information on age, sex and race is important to us because diseases occur more frequently among some age, sex or race groups than among others and we need to take this into account. For example, the leading cause of death among young people (age 20-24) is accidents, but among older people (age 65-69) it is heart disease. The death rate due to bronchitis, emphysema and asthma among white females is about the same as the rate among black females. However, the rate among black males is nearly three times the rate among white females while the rate among white males is more than four times the white female rate. Because of differences such as these we separate the population into groups by age, sex and race and consider the mortality experience of each group.

Although we perform all research on groups of people and our reports always deal with groups of people it is still important for us to have information on individuals so that we can determine the appropriate groupings. Each individual makes a certain contribution to the study and this contribution is added together with that of others in his group. For example, a person who worked the entire year contributes one year of experience to the study, but someone who began working in July contributes only half a year to the study. This is all taken into account in the analysis, but as mentioned before, the final report will deal only with the group.

To understand how we investigate health problems it may be helpful to think of the difference between a family doctor and our epidemiologists. When you visit a doctor he is concerned with any illness or disease you have as a person and its cause, so that he can treat it. An epidemiologist, on the other hand, looks at diseases and their causes among groups of people. By understanding the cause of any particular disease among a group of people, we can then take steps to decrease its occurrence, thereby helping the people in the group. It is through this process that individuals can benefit from this study. As we identify health problems and their causes, corrective measures can be taken to make a safer working environment.

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This study of deaths in 1977 is only a part of the health and environmental surveillance program which we are working to develop for the Company-Union Joint Occupational Health Program. Other aspects of the surveillance program will look into diseases prior to death. Mortality studies have great value in the study of occupational diseases and their causes. They do not deal, however, with diseases which do not cause death, nor do they necessarily deal with current exposures. In some cases the cause of a work-related disease may go back to exposures which occurred 20 to 30 years ago. For these reasons we hope to balance mortality studies by further studies of current disease patterns in the industry as well. Mortality studies do have advantages over other health studies, however, in that the diagnoses are usually more reliable than for illnesses and the information is clearly defined and available in the form of a death certificate. By doing more than one kind of study we can keep a balanced perspective on the health of workers in the industry.

The previous mortality studies we have done have dealt in depth with mortality experience among workers at a few plants. The 1977 study will deal with workers and retirees from all of the plants which we can include, and although it covers only one year it is much closer to what is currently happening in the industry than previous studies have been. It is much more efficient and accurate to do studies as events occur rather than have to dig through records to try to reconstruct what happened in the past. We expect that this study will be the forerunner of studies to be done in the future on a continuing basis.

GADSDEN DERMATITIS STUDY

During a previous environmental survey at the Goodyear Tire and Rubber Company plant in Gadsden, Alabama airborne particulates were collected along with various materials from equipment surfaces, clothing of workers, and process stocks. These samples are in the process of being analyzed for specific accelerators and antioxidants. The Goodyear Analytical Research Laboratory is assisting in this study by collaborating with OHSG on laboratory analysis methodology for these accelerators and antioxidants.

The Kettering Laboratory at the University of Cincinnati is collaborating with the OHSG in an effort to understand and eliminate dermatitis problems at the Gadsden plant. Trips for additional sampling and collecting of various materials and observation of plant conditions with Kettering personnel is planned in the near future.

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A CASE-CONTROL STUDY OF LEUKEMIA AMONG RUBBER AND TIRE WORKERS

A case-control study of leukemia among rubber workers was completed last fall after more than two years of data collection and analysis. Earlier studies conducted by OHSG identified an excess of deaths due to leukemia among male workers in the four companies studied, as well as an association with solvent use in one company. The main objective of this most recent study was to investigate further the possibility that workers in jobs involving exposure to solvents are at increased risk of developing leukemia. In addition, analyses were initiated to determine if an association exists between developing leukemia and other agents or conditions specific to the work environment.

Seventy-two deaths due to leukemia occurred in the period 1964-1973 among the workers in the four plants involved in the study. Analyses of the work histories for these cases and their matched controls confirmed the association of lymphatic leukemia and solvent use in one plant, while revealing no statistically significant association in the remaining three companies.

This suggests the possibility that there were differences in the use of solvents among the plants which may have resulted in differences in leukemia incidence. We are working further on this through an investigation of past uses of solvents, and particularly uses of benzene, in the industry.

Results also showed an increased risk of lymphatic leukemia for workers with experience in general service jobs. No deaths from leukemia were found among pliofilm workers during the period 1964 through 1973, nor was any work area found to be at an elevated risk for myeloid leukemia. Together these findings are important in view of the recent NIOSH report concluding that pliofilm workers between 1940 and 1949 were at a high risk of developing myeloid leukemia because of their exposure to benzene.

More detailed analyses are underway to investigate the latency of leukemia, as well as the relationship between leukemia and benzene use.

INDUSTRIAL HYGIENE SAMPLING STUDY - Unifroyal - Scotts Bluff, Louisiana

Sampling Study

A three-day industrial hygiene sampling study was conducted in late January at the Scotts Bluff plant for the purpose of developing

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estimates of employee exposure to acrylonitrile. Under the direction of Mr. Earl Arp, OHSG Industrial Hygienist, the University team collected approximately four hundred personnel and area samples for analysis. Throughout the sampling activities, investigators noted the process locations and operations offering potential for exposure and observed operating procedures and control measures which may effect potential exposure levels. This information will be used for grouping workers with similar exposure potential for analysis in the epidemiologic phase of this combined study.

Comparison samples of the plant environment were collected by Uniroyal personnel in a joint investigation to determine the comparability of sampling results obtained by the various investigators. Participating in this portion of the study were Mr. Richard Boudreau of Scotts Bluff and Mr. Bud Westerhoff and Dr. Ed Sowinski of Chemical Division, Naugatuck, Connecticut.

Our appreciation is extended to Mr. Ross Williams, Safety Director, for local arrangements and coordination of this study and to Mr. Earl Killingsworth, President of URW Local No. 979, for providing continuous escort to the UNC teams in the persons of Mr. Fred Herbert and Mr. Ronnie Wilson of the Local Safety Committee.

Mr. Louis Beliczky, Industrial Hygienist with the URW International was on-site for independent investigations at the time of the OHSG study and accompanied the University personnel during a portion of the study.

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Epidemiologic Data Collection

Mr. Dale Herman, Ms. Dianne Byrne, Mr. Donald Doerfler and Ms. Yoko Sakuma visited the Scotts Bluff Uniroyal plant during the week of January 30. During the visit they collected data for a complete listing of all people who have ever worked at the plant as the initial phase of a retrospective mortality study. This population will be studied to learn the cause of death for all who have died. From this study we will be able to learn if there is anything unusual about the rates of death due to specific diseases within the plant population.



At the end of a shift, samples are logged, stored, records completed and equipment prepared for the following day.



UNC and Scotts Bluff personnel take a break for the camera - shown, left to right, are: Jonathan Wendel, Carolyn Bishop, Frank Prael and Robert Kutcher, UNC; Fred Herbert, Local Safety Committee; Ross Williams, Plant Safety Director; Sylvia Berman, UNC; Ronnie Wilson, Local Safety Committee; and Earl Killingsworth, President of URW Local 979.