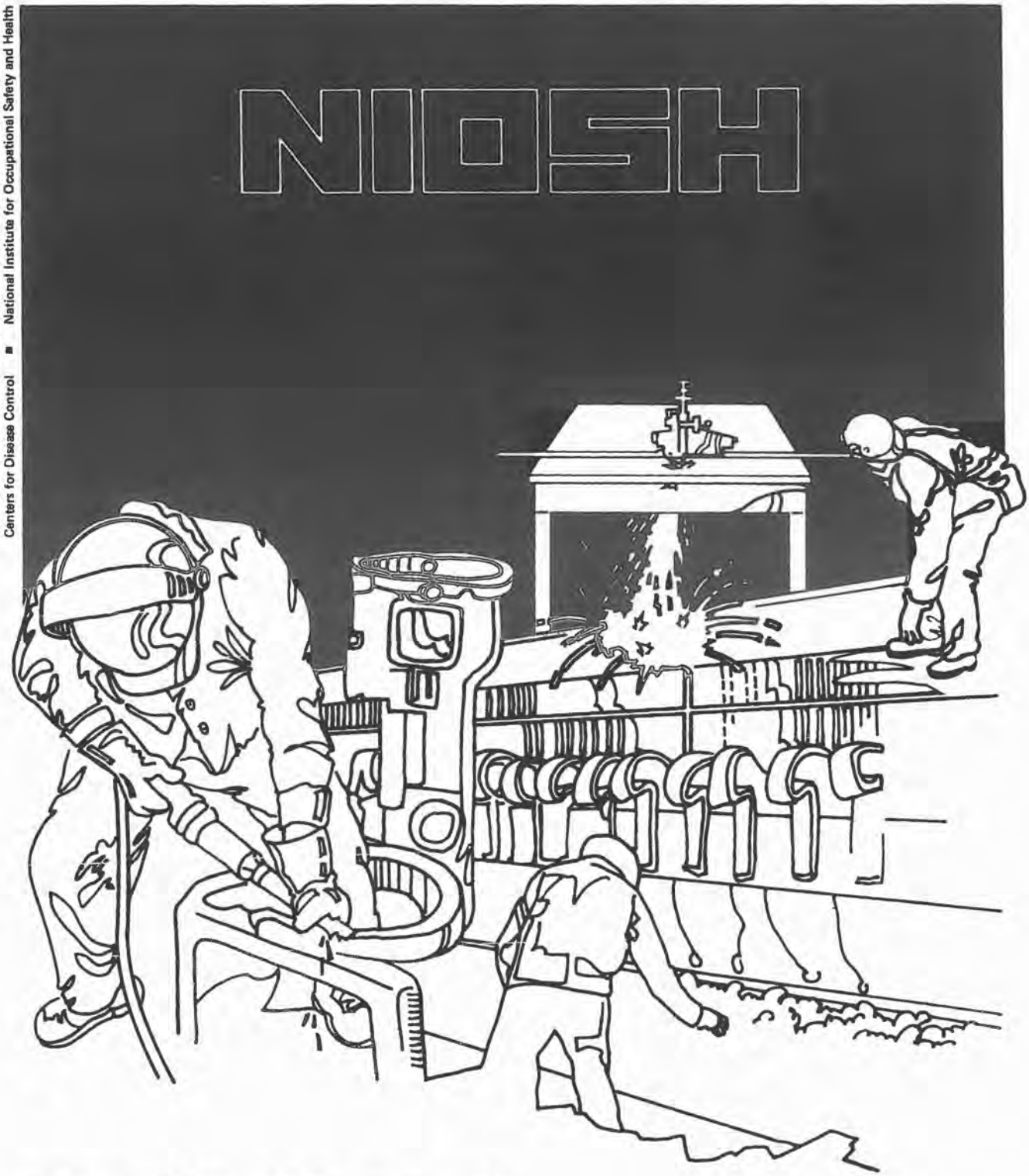
REFILE

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES ■ Public Health Service
Centers for Disease Control ■ National Institute for Occupational Safety and Health

NIOSH



Health Hazard Evaluation Report

HETA 81-011-1009
SAN CARLOS RESERVATION
GLOBE, ARIZONA

PREFACE

The Hazard Evaluations and Technical Assistance Branch of NIOSH conducts field investigations of possible health hazards in the workplace. These investigations are conducted under the authority of Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669(a)(6) which authorizes the Secretary of Health and Human Services, following a written request from any employer or authorized representative of employees, to determine whether any substance normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The Hazard Evaluations and Technical Assistance Branch also provides, upon request, medical, nursing, and industrial hygiene technical and consultative assistance (TA) to Federal, state, and local agencies; labor; industry and other groups or individuals to control occupational health hazards and to prevent related trauma and disease.

HETA 81-011-1009
December 1981
San Carlos Reservation
Globe, Arizona

NIOSH INVESTIGATOR:
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I. SUMMARY

On October 6, 1980 the Indian Health Service (IHS) requested that the National Institute for Occupational Safety and Health (NIOSH) advise on the dangers of occupational exposure to chrysotile asbestos to workers in mines and mills from the nearby reservation of San Carlos. To evaluate the possible hazard, NIOSH undertook a proportional mortality study (PMR) and a cross-sectional medical survey. The results of the PMR showed that 41% of the deaths in miners and millers were from alcohol-related diseases, and none were from lung cancer. For the cross-sectional survey, a short occupational questionnaire combined with a consent form was administered to 431 surviving Apaches; however, less than 30% agreed to participate. Although the poor response obviated a cross-sectional medical study, it was agreed that the interested responders will be offered chest X-rays and pulmonary function tests (PFT's) when the Arizona Center for Occupational Safety and Health is conducting a community survey. Other surveillance recommendations were made to the IHS.

From the investigation, we are unable to add any information on the carcinogenicity or fibrogenicity of chrysotile asbestos. It should, however, be presumed as carcinogenic and fibrogenic as other types of asbestos fibers. We urge the Indian Health Service to continue medical surveillance of workers at the San Carlos Clinic and to initiate or continue health education on the dangers of alcohol abuse.

KEYWORDS: American Indians, chrysotile asbestos, alcohol abuse, proportional mortality study.

II. INTRODUCTION

Following an investigation by the Arizona Department of Health Services (ADHS) [1] of levels of asbestos fibres in trailer court homes near Globe, Arizona, the IHS became concerned that the Apaches who worked for the chrysotile asbestos mines and mills might also be having adverse health effects. They, therefore, requested on 10/6/80 that the National Institute for Occupational Safety and Health (NIOSH) assess the risks and make recommendations.

III. BACKGROUND

In March 1970 a survey was conducted by the Public Health Service, Bureau of Occupational Safety and Health. As part of that survey, 61 men from Globe, Arizona, participated. The population from which the sample was selected, or the means of sampling, are not known. X-rays and PFT's were performed and a questionnaire was administered. No report was ever issued.

IV. EVALUATION METHODS

Two possible methods for assessing the risk to the workers were available: a mortality study and a cross-sectional medical survey.

A. Mortality Study

Despite certain limitations, a proportional mortality is a relatively effective alternative to a standard mortality study. Accordingly, a list of all employees, past or present, from the only currently operating (September, 1980) mining corporation was obtained. This gave a total of 920 names and from this list 481 Apaches were identified from records held by the Bureau of Census, IHS, in San Carlos. All but 50 men were known to be alive at the time of the study. Death certificates were obtained for 44 of the 50 (88%). The cause of death was coded by a qualified nosologist and the results were compared with the U.S. white population. The results are shown in the table. The U.S. white male population was chosen for comparison initially. Had there been a possible excess of pulmonary deaths, the rates would have been compared with the U.S. Indian rates.

B. Medical

The major pathological effects of asbestos are asbestosis and cancers [2]. A latency of at least 15 years would be expected before clinically detectable findings would be produced. Records were not available from the company to identify men with the requried latency and so a short occupational questionnaire was combined with a consent form and administered by Community Health Representatives. It is unknown how many from the list of 431 Apaches were contacted.

V. RESULTS

A. Proportional Mortality Study

From the death certificates themselves it was known that 9 of the deaths coded as "all digestive system" were due to alcohol intoxication as were the cirrhosis deaths. Thus, 18 out of 44 (41%) deaths were related to alcohol abuse. Some of the accidental deaths were also secondarily attributable to alcohol. The findings were statistically significant ($p < 0.01$).

No lung cancer deaths were reported and the only malignancy death was due to leukemia.

B. Medical

A total of 117 (or less than 30%) agreed to participate and of these, only 37 (that is, 10% of the total) had adequate latency (greater than 15 years since first exposure). The poor response rate suggested that selection bias would be unknown and the results uninterpretable. In addition, the small number of participants would insure a low power which means that a falsely negative study would be likely. The cohorts used in Quebec [3] and in the study of asbestos insulation workers [4] were approximately 15,000 participants.

VI. CONCLUSIONS

The Proportional Mortality Ratio (PMR) indicates that no deaths due to lung cancer occurred but that 41% of deaths could be directly attributed to alcohol abuse. The absence of asbestos-related morbidity should not be taken as evidence against the hazard of chrysotile asbestos but may more reflect the small size of the study, the inadequate latency between exposure and follow-up, and the effects of a major competing risk -- alcohol.

Inadequate response rates ruled out the possibility of a cross-sectional medical study.

VII. RECOMMENDATIONS

1. The Arizona Center for Occupational Safety and Health (ACOSH), as part of a study of the community residents in Globe, will examine all 117 Apaches who agreed to participate in an occupational study. Those men who participate in the ACOSH survey should be given regular (yearly) X-rays and pulmonary function tests (PFT's) and any exhibiting pneumoconiosis should be treated appropriately [6]. Each man diagnosed with pneumoconiosis should also be told not to work further with asbestos or asbestos-products and an effort to discourage smoking should also be made.

2. For those men known to have worked with asbestos but not volunteering for the study, their hospital charts should be flagged and they should be offered X-rays and PFT's at any subsequent visit to the San Carlos Clinic and participate in the surveillance from then on.

3. If not already obvious, any preventive measures on alcohol-related problems should be revived or initiated.

VIII. REFERENCES

1. Morbidity and Mortality Weekly Report. Asbestos exposure-Globe, AZ. Vol 29 No 2. Jan 18, 1980.

2. Becklake, MR. Asbestos-related diseases of the lung and other organs: their epidemiology and implications for clinical practice. Am. Rev. Resp. Dis. 114:187, 1976.

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5. Seivers, ML. Cigarette and alcohol usage by SW American Indians. Am. J. Pub. Health 58(1):71, 1966.

6. Occupational Safety and Health Administration. Preliminary suggestions for follow-up care of workers with asbestosis. Department of Labor. 1980.

IX. AUTHORSHIP AND ACKNOWLEDGEMENTS

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Throughout this investigation many people from IHS, ACOSH, ADHS, and NIOSH contributed time and enthusiasm and their help was much appreciated.

X. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this report are currently available, upon request, from NIOSH, Division of Standards Development and Technology Transfer, Publications Dissemination, 4676 Columbia Parkway, Cincinnati, Ohio, 45226. After 90 days the report will be available through the National Technical Information Service (NTIS), Springfield, Virginia, 22161.

Copies of the report have been sent to:

a. Director, Indian Health Service
b. Director, Arizona Department of Health Services
c. Director, ACOSH
d. Area Director, IHS, Phoenix

RESULTS OF PROPORTIONAL MORTALITY STUDY FOR 44 APACHE WORKERS.

DESCRIPTION	O	E	O/E	X^2	P
ALL MALIGNANT DEATHS	1	6.74	0.15	5.97	< 0.05
ALL DIGESTIVE DISEASES	10	2.37	4.22	26.29	< 0.01
ALL CIRCULATORY SYSTEM	5	9.47	0.45	5.35	< 0.05
ALL RESPIRATORY	1	1.47	0.68	0.15	> 0.05
CIRRHOSIS	9	1.51	5.95	38.81	< 0.01
CHRONIC NEPHRITIS	2	0.20	10.16	16.64	< 0.05
ALL EXTERNAL CAUSES	14	17.01	0.82	1.25	> 0.05
ALL ACCIDENTS	9	11.49	0.78	0.92	> 0.05
(MOTOR VEHICLE ACCIDENTS)	(5)	(6.7)	(0.75)	(0.59)	(>.05)
SUICIDE	5	3.25	1.54	1.04	> 0.05
RESIDUAL	2				

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