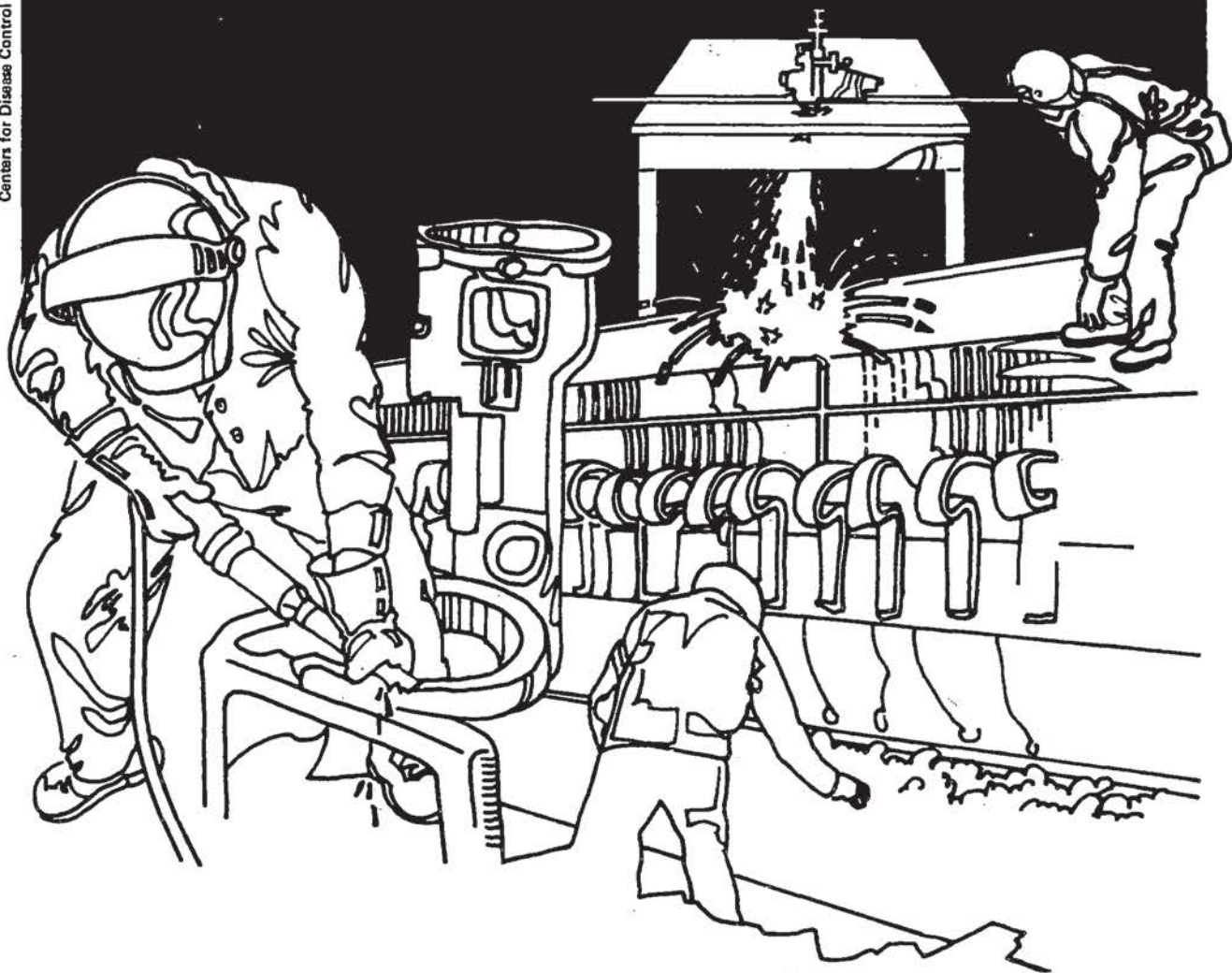


NIOSH



Health Hazard Evaluation Report

HETA 82-034-1121
McALPIN'S DEPARTMENT STORE
CINCINNATI, OHIO

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.

Mention of company names or products does not constitute endorsement by the National Institute for Occupational Safety and Health.

I. SUMMARY

In August, 1981, the National Institute for Occupational Safety and Health (NIOSH) received a request from the United Union of Roofers, Waterproofers and Allied Workers to evaluate the tear-off operations of old coal tar pitch and petroleum pitch roofs. Concern was expressed over worker exposures to dusts during tear-off operations. Previous evaluations of coal tar pitch tear-offs indicate excessive worker exposures to coal tar pitch dust, measured as the cyclohexane soluble fraction and to polynuclear aromatic hydrocarbons (PNAs), both considered carcinogens, and reported phototoxic effects among workers.^{1,2,3}

On November 2, 1981, NIOSH conducted an evaluation of a roof tear-off at McAlpin's Department Store, Cherry Grove Shopping Center, Cincinnati, Ohio. The tear-off involved the manual removal of an old petroleum pitch roof. Approximately 10 workers were involved in the manual prying, scraping and hand removal of the petroleum pitch roof surface.

Personal breathing zone total dust samples were collected on 9 workers using glass fiber/silver membrane filters at a flowrate of 1.5 liters per minute. A bulk sample of the tear-off dust was collected to be analyzed for cyclohexane solubles and PNA content.

Analyses of the bulk dust indicated 0.07 milligrams of cyclohexane solubles per milligram of bulk material. No PNAs were detected (limit of detection - 0.05ppm) in the bulk samples. The cyclohexane soluble fraction of the total particulate collected in the breathing zone samples ranged from 0.09 to 2.3 milligrams per cubic meter (mg/M^3) Table 1. No recommended exposure level has been established for cyclohexane solubles associated with petroleum pitch. In addition, at least one study indicates that petroleum roofing pitch is non-carcinogenic.⁴ No PNA analyses were performed on the personal samples as none were detected in the bulk material.

Employees reported no work related health complaints.

Results of this study suggest that workers are exposed to higher levels of cyclohexane solubles during petroleum pitch tear-offs (Range 0.09 - 2.3 mg/M^3) than during coal tar pitch tear-offs (Range N.D. to 0.50 mg/M^3).^{1,2} However, workers on petroleum pitch tear-offs are not exposed to PNAs nor do they report any work related symptoms (phototoxic effects).

Based on the data collected during this study, workers were not exposed to PNAs during the petroleum pitch roof tear-off nor were they experiencing any work related health problems. Good work practices, however, indicate that exposure to petroleum pitch dust be kept as low as possible until more information is available on possible health effects resulting from exposure. Recommendations for reducing exposure are made in Section II of this report.

KEYWORDS: SIC 1761 (Roofing and Sheet Metal Work), petroleum pitch, PNAs, cyclohexane solubles.

VII. RECOMMENDATIONS

1. Workers should stay upwind of pitch dust whenever possible.
2. Water should be used to thoroughly wet and dampen the surface of the roof prior to and during tear-off operations.
3. Workers should shower and wash thoroughly with soap and water at the end of each work shift. Clean work clothes should be worn daily.

VIII. REFERENCES

1. Tharr, D.G. "Health Hazard Evaluation Determination Report No. 81-432-1105." National Institute for Occupational Safety and Health, Cincinnati, Ohio (1982).
2. Hervin, R.L. and Emmett, E.A. "Health Hazard Evaluation Determination Report No. 75-194-324." National Institute for Occupational Safety and Health, Cincinnati, Ohio (1976).
3. Hervin, R.L. and Emmett, E.A. "Health Hazard Evaluation Determination Report No. 75-102-304." National Institute for Occupational Safety and Health, Cincinnati, Ohio (1976).
4. Emmett, E.A., Bingham E. and Barkley, W. "A Carcinogenic Bioassay of Certain Roofing Materials", American Journal of Industrial Medicine 2:59-64 (1981).

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X. DISTRIBUTION AND AVAILABILITY OF REPORT

Copies of this report are currently available upon request from NIOSH, Division of Standards Development and Technology Transfer, 4676 Columbia Parkway, Cincinnati, Ohio 45226. After 90 days, the report will be available through the National Technical Information Service (NTIS), 5285 Port Royal, Springfield, Virginia 22161. Information regarding its availability through NTIS can be obtained from NIOSH Publications Office at the Cincinnati address. Copies of this report have been sent to:

1. Director of Safety and Health, United Union of Roofers, Waterproofers and Allied Workers, Washington, D.C.
2. Schriber Sheet-Metal and Roofing Company, Dayton, Ohio
3. NIOSH, Region V
4. OSHA, Region V

For the purpose of informing affected employees, copies of this report shall be posted by the employer in a prominent place accessible to the employees for a period of 30 calendar days.

TABLE I

Cyclohexane Soluble Fraction of Total Particulates

McAlpin's Roof Tear-Off
Cincinnati, Ohio

November 11, 1981

Tear-Off Worker	Sampling Period	Cyclohexane Soluble Concentrations (mg/M ³)
A	8:06 - 13:45	0.09
B	8:02 - 16:28	2.3
C	7:57 - 16:28	0.14
D	8:04 - 16:33	0.20
E	8:06 - 16:25	0.09
F	8:05 - 16:33	0.08
G	8:01 - 16:05	1.0
H	8:06 - 16:25	0.26
I	8:00 - 16:05	0.11