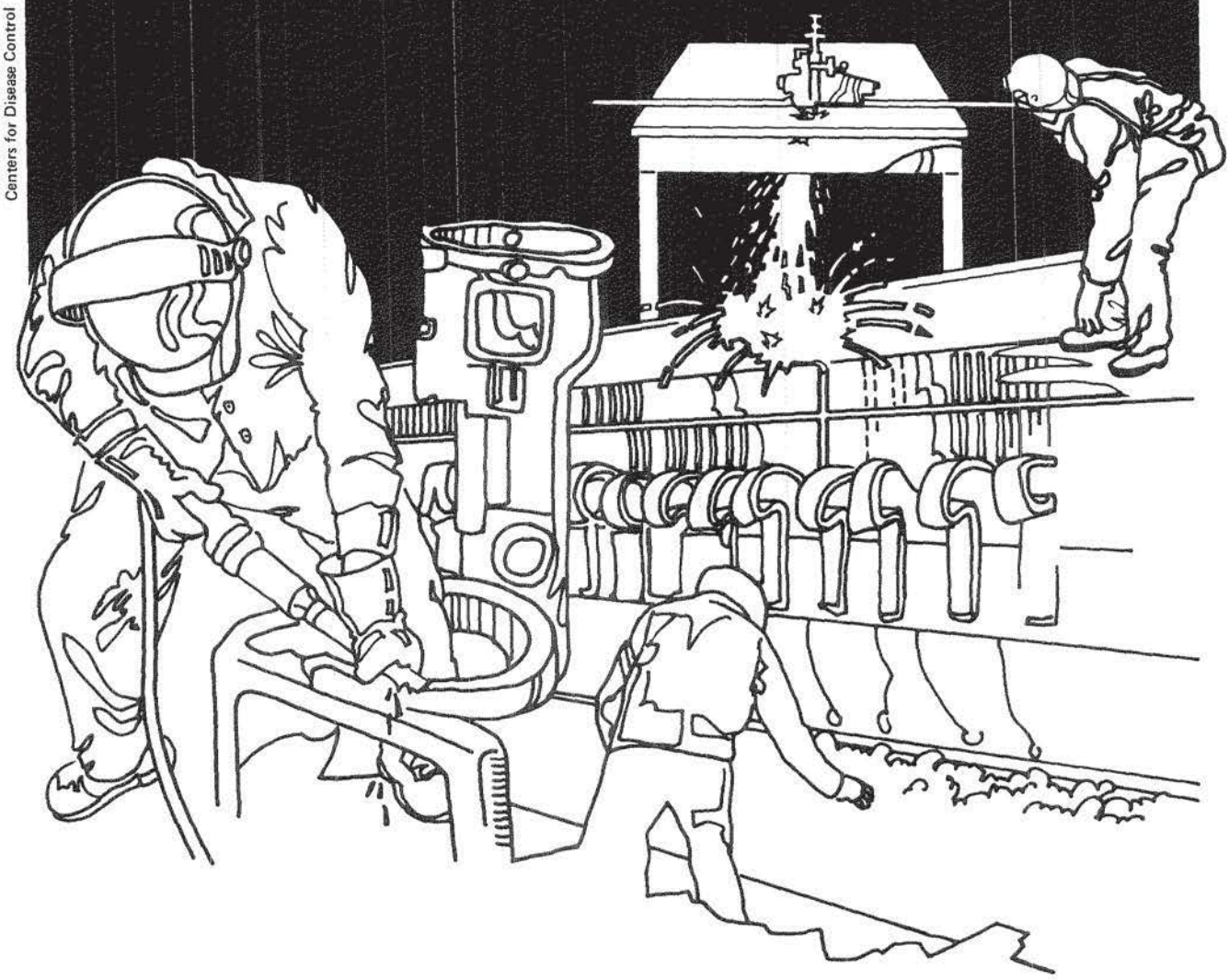
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES ■ Public Health Service
Centers for Disease Control ■ National Institute for Occupational Safety and Health

NIOSH



Health Hazard Evaluation Report

HETA 81-339-1053
VALLEY STATION POST OFFICE
VALLEY STATION, KENTUCKY

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.

HETA 81-339-1053
February 1982
Valley Station Post Office
Valley Station, Kentucky

NIOSH INVESTIGATOR:
Paul L. Johnson, IH

I. SUMMARY

On June 1, 1981, the National Institute for Occupational Safety and Health (NIOSH) received a request from the Postmaster, Louisville, Kentucky, Main Post Office to conduct an environmental survey at the Valley Station Postal Facility. The requestor stated that a number of persons had developed medical problems while working at Valley Station and that the employees had concern about the environmental safety of the facility. Valley Station Post Office employs 31 persons who sort, separate, package and distribute mail. On August 3, 1981, NIOSH conducted a health hazard evaluation to determine if the mail sorting area contained toxic exposures. Area airborne and bulk dust samples were collected for asbestos, fibrous glass and various metal analysis. The area was also screened for carbon monoxide and organic contaminants. Nondirected medical questionnaires were administered to 16 employees to correlate signs and/or symptoms with workplace exposure(s).

The environmental results indicate that all air and dust samples contained trace amounts of aluminum, silica, iron, calcium, sulfur, potassium, barium, titanium and magnesium. These elements are not considered uncommon when found in trace amounts in a workplace environment. The two samples obtained to determine nuisance dust concentrations (0.02 and 0.04 mg/M^3) were both well below the current (15 mg/M^3) nuisance dust standard. A fibrous glass - mineral wool combination was found in the ceiling tile sample. No asbestos or fibrous glass could be confirmed in any of the air or bulk dust samples. Carbon monoxide and organic vapor concentrations were each less than 5 ppm (a normal background concentration).

Results from the nondirective medical questionnaires indicate various past medical disabilities. However, no indication of a clustering of any one health problem was noted. Only two workers of those interviewed (one with an ulcer and one with a twisted knee) thought that their problems could be job related.

Based on the data obtained in this investigation NIOSH has determined that there was not a health hazard at the Valley Station Post Office. Dust particles are generated during the normal operations at the facility, however; such particles are common air contaminants and would not normally cause health problems, at concentrations found. Fibrous glass was found in the ceiling tile but not in the air or dust samples. Asbestos could not be confirmed in any of the collected samples. Recommendations to further reduce dust levels by improving work practices are contained in Section VII of the report.

KEYWORDS: SIC 4311 Asbestos, fibrous glass, Post Office, sorting and packaging mail.

II. INTRODUCTION

In June, 1981, NIOSH received a request for a health hazard evaluation of the Valley Station Post Office, Valley Station, Kentucky. The request was initiated by the Managing Postmaster of the Main Post Office located in Louisville, Kentucky. The requestor asked NIOSH to evaluate the Valley Station mail sorting area for potential airborne exposure(s). The requestor was concerned about a relatively large number of employees who had developed medical problems while working at the Valley Station facility. NIOSH responded to the request by sending two industrial hygienist to the site on August 3, 1981 to evaluate the workplace environment.

III. BACKGROUND

Valley Station Post Office, a 7900 sq. ft. concrete block, flat roof building is located approximately 8 miles southwest of Louisville, Kentucky. The facility was built in 1962. Employees at the station consist of 1 supervisor, 4 clerks, 22 regular and 4 rural carriers. In general the employees work one 8-hour shift each day (carriers spend approximately 3 hours in the building per day). Duties performed by the employees include sorting, separating, and packing mail for distribution.

Events of significance that took place at the Post Office and contributed to normal upkeep include; (1) spraying for termites - summer of 1976, (2) installation of a new heating and air conditioning system in 1980 (3) painting of the suspended ceiling in 1981 to prevent deterioration.

IV. METHODS AND MATERIALS

The strategy used during the investigation consisted of evaluating existing conditions by personal observation, and area air sampling, evaluating potential sources of exposure such as the ceiling tile, and by analyzing bulk dust samples (from areas not cleaned for several months).

The area air samples were collected on AA filters (0.8u pore size) by using MSA battery operated vacuum pumps calibrated at 2.0 liters per minute (NIOSH Method 309-1) and analyzed for metals and fibrous dust by Transmission Electron Microscopy (TEM)/Energy Dispersive X-ray Spectrometry (EDX). The bulk dust (collected from vents and light fixtures) and ceiling tile samples were analyzed for asbestos and fibrous glass by suspending a sample portion in ethanol during ultrasonic agitation, and then placing an aliquot of the suspension on a carbon coated TEM grid. The samples were then scanned at 10,000X and 50 particles were analyzed for elemental composition by EDX. The bulk sample residues were also examined on slides by polarized light microscopy for additional conformation. Carbon monoxide and organic vapors were monitored by use of direct reading instruments placed at various locations. While the samples were being collected, the NIOSH industrial hygienists obtained information from employees via nondirective questionnaires. Those interviewed included 3 clerks and 16 carriers (63% of the station workforce).

V. RESULTS AND DISCUSSION

Asbestos and fibrous glass were not present in any of the air or dust samples at the lower limits of detection for the methods used. It should be noted that many small fibers were observed by TEM/EDX, but they could not be confirmed as asbestos.

The area airborne total dust samples (Table II) resulted in concentrations which were less than one percent of the current legal (15 mg/M^3) standard. Other materials found in the air and dust samples (Table I) include; magnesium, aluminum, calcium, silicon, iron, sulfur, titanium, barium, and potassium. These substances are commonly found in a work environment.

The ceiling tile contained a mineral wool-fibrous glass combination, however fibrous glass was not found in the air or dust samples. Therefore, NIOSH concluded that the ceiling tile was not a source for fibrous dust emission(s).

The light fixture bulk dust samples contained a cellulose, wood and paper fiber combination along with an assortment of various metal particles (dusts).

Carbon monoxide and organic vapor concentrations, obtained by direct reading instruments, were each less than 5 ppm, which is within normal background levels.

The nondirective medical questionnaires resulted in reports of a number of past medical problems among the workers. The age of those interviewed ranged from 31 to 58 years, mean age 44 years. The number of years worked at Valley Station ranged from 3 to 25 years, average 11.1 years. Of those interviewed 47% reported medical complications. However, as noted in Table III no clustering of any one health problem is indicated. Only two persons (one with an ulcer and one with a twisted knee) reported that they thought that their problems could be job related.

To obtain information concerning the 1976 termite control spraying the Kentucky Department of Natural Resources and Environmental Protection (KDNREP) was contacted. Investigators from KDNREP suggested that 0.5 to 1% chlordane/heptachlor was and still is a common mixture used by exterminators for termite control and when used properly should not present health problems. Both chlordane and heptachlor are contact poisons which are retained from the manufacturer in a solid form. Therefore, when treating a building by spray application a carrier solvent such as petroleum distillates must be used. Many of the carrier solvents have offensive odors, however they are considerably less toxic (than chlordane and/or heptachlor) and the odors usually dissipate quickly.

VI. CONCLUSIONS

On the basis of the results from the environmental samples, no health hazard was believed to exist from exposure to asbestos, fibrous glass, carbon monoxide or organic vapors. All contaminants detected during the evaluation were well within the current legal (OSHA) limits. Many of the substances detected are common air contaminants and do not normally cause health problems.

The results from the interviews and questionnaires do not indicate a relationship between workplace findings and mentioned medical problems nor can the health problems be associated with a specific substance.

VII. RECOMMENDATIONS

1. Employees should be encouraged to continue with good housekeeping procedures such as dusting (with a damp cloth) and vacuuming. Such cleaning procedure will help minimize the generation of airborne dusts.

2. An air handling system as that used by Valley Station is not an exhaust system but an air circulation unit for heating and cooling. If filters on such a system are cleaned and/or changed regularly they will help remove airborne dust (as the unit operates).

VIII. AUTHORSHIP/ACKNOWLEDGEMENTS

Report Prepared by:	Paul L. Johnson Industrial Hygienist Industrial Hygiene Section
Field Assistance:	Richard R. Gorman Industrial Hygienist Industrial Hygiene Section
Originating Office:	Hazard Evaluations and Technical Assistance Branch Division of Surveillance, Hazard Evaluations and Field Studies Cincinnati, Ohio
Report Typed by:	Jackie Woodruff Clerk/Typist Industrial Hygiene Section

IX. DISTRIBUTION AND AVAILABILITY OF 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), 5285 Port Royal, Springfield, Virginia 22161. Information regarding its availability through NTIS can be obtained from the NIOSH Publications Office at the Cincinnati address. Copies of this report have been sent to:

1. Safety Manager, Main Post Office, Louisville, Kentucky

2. MSC Manager Postmaster

3. NIOSH, Region IV, Atlanta, Georgia

4. OSHA, Region IV, Atlanta, Georgia

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

QUALITATIVE ANALYSIS OF DUST AND MATERIAL SAMPLES

VALLEY STATION POST OFFICE
VALLEY STATION, KENTUCKY
HETA 81-339

August 1981

Sample Number	Sample Type	Materials Present*	Comments
A-1	Area air	Mg, Al, Ca, Si, Fe	No asbestos or fibrous glass observed
A-2	Area air	Al, Si, S, Ca, Ti, Fe	One nonasbestos - Mg-Fe fiber was observed but could not be identified
C-I	Ceiling tile	Ba-S, Ca-Si	A mineral wool, fiberglass combination
D-1	Dust from light fixture	Si, S, K, Ca, Al, Fe	Cellulose wood fibers and many small fibers resembling chrysotile were observed
D-2	Dust from light fixture	Si, S, Mg, Ca, Al, Fe Ti	Cellulose, wood and paper fibers were present and many small fibers resembling chrysotile were also observed
V-1	Dust from vent	Fe, S, Al, Fe, Si, K, Fe	No fibers observed
V-2&3	Dust from vent	Al, Si, K, Ca, Fe, Ti	No fibers observed
V-4	Dust from vent	Si, Al, Si, K, Fe, Ti	No fibers observed

* Magnesium (Mg), Aluminum (Al), Calcium (Ca), Silicon (Si), Iron (Fe), Sulfur (S), Titanium (Ti), Barium (Ba), and Potassium (K)

TABLE II

RESULTS OF TOTAL DUST SAMPLES

VALLEY STATION POST OFFICE
VALLEY STATION, KENTUCKY
HETA 81-339

August 1981

Location	Sample Type	Sample Volume (liters)	Sample Period	Dust Concentration	OSHA Total Dust Standard
Post 7279	Area	560	12:05/4:45	.04 mg/M^3[1]	15 mg/M^3
Post 7284	Area	574	11:58/4:45	.02 mg/M^3	15 mg/M^3

1) mg/M^3 - milligrams per cubic meter

2) Limits of detection were referenced as 0.01 mg per sample

TABLE III

SUMMARY OF REPORTED MEDICAL PROBLEMS AND DEATHS

VALLEY STATION POST OFFICE
VALLEY STATION, KENTUCKY
HETA 81-339

August 1981

Medical Problems Reported	Frequency
Stomach/ulcer	1
Knee/cyst	1
Gallbladder	1
High blood pressure	1
Hardening of arteries	1
Vein tumor in foot	1
Open heart surgery	1
Tubes replaced in heart	1
Intestinal blockage	1
Twisted knee	1
Deaths	
Cancer	1
Heart Attack	1

DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
ROBERT A. TAFT LABORATORIES
4676 COLUMBIA PARKWAY, CINCINNATI, OHIO 45226

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

Third Class Mail

U.S. MAIL

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF HHS
HHS 396

12
1-blank