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ELMIRA POSTAL FACILITY
ELMIRA, NEW YORK

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I. SUMMARY

On December 29, 1986 the National Institute for Occupational Safety and Health (NIOSH) received a request to evaluate a possible cancer cluster among employees of the Elmira postal facility, Elmira, New York. The facility was built on a landfill in 1973-74 and employees were concerned that the landfill's contents may have contained carcinogenic substances.

On March 3-4, 1987, a NIOSH medical officer conducted a site visit of the facility. During this visit the following information was ascertained: 1) background information on the building's construction, the landfill, and prior investigations of the landfill by the State's Department of Environmental Conservation; 2) demographic information on all employees who ever worked in the building since it opened in 1974 (current, retired, and temporaries), and 3) a list, compiled by an Elmira postal employee and supplemented by the postal facility's personnel director, of the employees thought to have cancer. The list of Elmira postal facility employees was then cross-referenced with New York State's tumor registry to confirm and supplement the list of cancer cases provided by the employee.

NIOSH examined the possibility of an excess number of cancer victims by comparing the actual number of cancer cases (as described in the preceding paragraph) to the expected number of cancer cases. The expected number was generated using the NIOSH Life-Table Analysis System (LTAS) to calculate age- and cause-specific person-years at risk (PYAR), which were then applied to published rates of age- and cause-specific cancers.

Nineteen cancers were identified in 18 people (14 men, and 4 women); the expected number of case was 7.2. The 19 cancers were: 6 lung, 3 colon (rectal/sigmoid), 3 bladder, 2 prostate, 1 breast, 1 lymphoma, 1 pyriform sinus, 1 urethra, 1 tongue. Thirteen (68%) of the cancers had a latency period of less than 10 years. For this analysis, latency was counted as date of first employment to date of diagnosis. Ten to 20 years after exposure to a critical dose of a carcinogen is considered the typical latency period for a solid tumor, such as the ones diagnosed in this cluster, to develop.

Although the number of cancers observed was more than expected, we cannot conclude that these are occupationally related for the following reasons: 1) the latency time of the type of tumors observed was relatively short; and 2) the tumors observed were of several different types, which are not known to have the same etiology.

Although more cases of cancer were observed than expected among employees of the Elmira Postal Facility, we are unable to conclude that they were caused by working in the building.

KEYWORDS: SIC 4311 (U.S. Postal Service). Cancer, cancer cluster.

II. INTRODUCTION

On December 29, 1986, the National Institute for Occupational Safety and Health (NIOSH) received a request to investigate a possible cancer cluster among employees of the Elmira, New York postal facility. The Post Office was built on a landfill in 1974, and employees were concerned that the landfill's contents may have caused cancer among the workforce.

III. BACKGROUND

Construction for a new postal facility in Elmira, New York began in 1973, with completion and occupation occurring in June 1974. The construction site had previously been used as a landfill with records of who and what was dumped lost during a flood in 1972. Fearing the dumping of toxic chemicals within the landfill, concerned employees prompted the New York State's Department of Environmental Conservation and the New York State's Gas and Electric Company to investigate. Between 1985 and 1986 the state agency and utility company sampled many areas surrounding and within the building for methane gas. One sample outside the building detected a trace amount of methane gas. No samples were taken to evaluate for the presence of toxic chemicals.

The mail facility has six job crafts: clerks, letter carriers, mail handlers, supervisors, maintenance personnel, and vehicle maintenance. The approximate number of employees within the various crafts is shown in Table 1.

IV. METHODS

The Personnel Director of the Elmira postal facility supplied NIOSH with the identities and certain demographic information on the 262 current employees and the 332 former employees (retirees and temporaries). The information included each individual's name, race, sex, social security number, date of birth, date of first employment, date of last employment, and work histories. We considered all employees who were not known to have cancer at the time of their initial employment in the new building to be "at-risk" for developing a cancer after that date. We used the NIOSH Life-Table Analysis System (LTAS)¹ to calculate age-specific person-years at risk for the 594 individuals who had ever worked at the facility. By multiplying the PYAR times the cancer incidence rates published by the the National Cancer Institute's SEER Program,² we generated expected number of new cancer cases.

To determine the actual number of cancer cases, a list of potential employees with cancer was compiled by a postal employee and supplemented by the Personnel Director. This list was then cross-referenced with New York State's tumor registry by employee name, gender, social security number, and date of birth. This matching protocol not only confirmed the cancer diagnosis, but also allowed identification of the specific tissue type.

V. RESULTS

Nineteen cancers were identified among 18 postal employees (14 men, and 4 women). The number of expected cancers was 7.5. The 19 cancers were: 6 lung, 3 colon (rectal/sigmoid), 3 bladder, 2 prostate, 1 breast, 1 lymphoma, 1 pyriform sinus, 1 urethra, 1 tongue. Thirteen of the 19 (68%) cancers were diagnosed in employees with a latency period of 10 years or less. The number of expected deaths for each of the cancer sites where more than 2 cases were observed was: 1.1 lung, 0.5 colon, and 0.4 bladder.

VI. DISCUSSION

Although the number of cancers observed was more than expected, we cannot conclude these are occupationally related for the following reasons: 1) the latency time (exposure and promotion periods) was relatively short; and 2) the tumors observed were of several different types, which, in general, are not regarded as being causally related.

1. Latency Periods

Three important concepts in cancer epidemiology are initiation, promotion, and latency periods. The initiation period is the time from exposure to a carcinogenic substance to the generation of the first cancer cell. The initiation period for different substances varies from a few months (as in radiation exposures from Atomic bomb survivors) to decades (as in ultraviolet light exposure from the sun). Once the first cancer cell has been "induced", it requires a promoting period in which the cancerous cells multiply and grow until they are clinically detected. The latency period is a sum of the initiation and promotion periods (the time between onset of exposure to a carcinogen and the clinical detection of resulting cancers). The latency period varies for different cancers; for solid tumors such as the ones identified in this cluster (lung, colon, bladder, prostate, breast, etc.) 10 to 20 years is typical, and sometimes as long as 50 years is required.³ Fourteen of the 20 (70%) cancers had a latency period of 10 years or less making these cases, on the whole, unlikely to be due to a Elmira postal facility exposure.

2. Tissue Specific Tumors

Most carcinogenic substances are known to cause only 1 or 2 different tumor types. Ten different types of tumors were identified in this cluster. The overall excess of cancer cases found in this evaluation provides no evidence for a specific agent. There was no single cancer in such excess as to suggest something was present in the workplace causing the disease.

VII. CONCLUSION

Although more cases of cancer were observed than expected among employees of the Elmira Postal Facility, we are unable to conclude that they were caused by working in the building.

VIII. REFERENCES

1. Waxweiler, RJ, et al. A modified life-table analysis system for cohort studies. *Journal of Occupational Medicine*, 25: 115-124, 1983.
2. National Cancer Institute, Division of Cancer Prevention and Control. 1987 Annual Cancer Statistics Review: Section III Incidence Data, 1981-1985: Table III.38. NIH Publication No. 88-2789; February, 1988.
3. Frumkin, Howard. Occupational Cancers. In R. McCunney (ed.). Handbook of Occupational Medicine. Boston/Toronto: Little, Brown & Co., 1988.

IX. AUTHORSHIP AND ACKNOWLEDGEMENTS

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X. DISTRIBUTION AND AVAILABILITY

Copies of this report are temporarily available upon request from NIOSH, Hazard Evaluations and Technical Assistance Branch, 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.

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

Table 1

CURRENT EMPLOYEE DISTRIBUTION BY CRAFT
 ELMIRA POSTAL FACILITY
 ELMIRA, NEW YORK
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<u>CRAFT</u>	<u># of employees</u>	<u>(%)</u>
Clerks	141	(54)
Letter Carriers	60	(23)
Mail Handlers	24	(9)
Supervisors	18	(7)
Maintenance	14	(5)
Vehicle Maintenance	<u>5</u>	<u>(2)</u>
TOTAL	262	100%