

Radiation Control Activities in a Local Health Department

M. R. ZAVON, M.D.

C. A. WILZBACH, M.D.

WHAT can be done to control ionizing radiation in this day of increasing awareness of its hazards? More specifically, what can be done by a local health department already burdened with all the work it can handle and besieged by cries on every side for funds for additional programs?

The Cincinnati Board of Health has met this question with a series of activities aimed at reduction of exposure to radiation. The program thus far, only a bare beginning, has been conducted with a minimum in budget, personnel, and equipment, but we believe it has proved worthwhile.

Accidental Contamination Incidents

In Cincinnati in 1952 a radium capsule, used for instrument calibration, fractured in the ordinary course of operation. By the time the situation became fully understood an entire three-story building had become contaminated, and the 220-odd employees had to be examined for possible radiation exposure. With the exception of contamination of the building there were no serious effects from this accident, but it did serve to alert the health department to the need for greater awareness of the presence and potential hazard of sources of ionizing radiation.

A fire in this same building a year later raised the specter of danger to firemen fighting the fire. As a result, with the help of the Atomic Energy Commission and the cooperation of the Public Health Service, a course on radiation for firefighters was held in Cincinnati in 1953.

In 1954 a quarter curie of polonium was spilled at a local industrial plant, and the health department assisted in the cleanup operation. Occasional calls for assistance in monitoring X-ray installations were answered, but no regular program was developed.

Development of a Program

In 1955 it became evident that an organized program of radiation control was needed. A physician with previous experience in radiation protection work, who had been hired part time as director of occupational health services, commenced the radiation control program with minimum equipment.

Two steps were taken initially. One, the State health department was asked to forward copies of radionuclide authorization reports from AEC. Two, a survey was begun of shoe-fitting fluoroscopes in use in the shoe stores of the city. Each shoe fluoroscope was inspected, and a form containing some 35 items completed. The owner was advised verbally and in writing of any glaring defects, and at the conclusion of the survey the findings were presented to the Cincinnati Board of Health. The survey, conducted by one man who had other responsibilities as well, took approximately 1½ years. In all, 34 machines were surveyed.

Dr. Zavon is director of occupational health services, Cincinnati Health Department, and assistant professor of industrial medicine at the Kettering Laboratory of the University of Cincinnati. Dr. Wilzbach is health commissioner of Cincinnati.

"Radiological Health Practice" (24 pages, self-cover, 65¢ per copy) has been prepared and published by the Program Area Committee on Radiological Health, American Public Health Association. Complimentary copies are being distributed to State health officers and State sanitary engineers.

From the experience in this survey we concluded that the cost of inspecting these machines routinely would be prohibitive. In addition, putting what amounted to a health department seal of approval on shoe-fitting fluoroscopes seemed a dubious practice in the face of the unnecessary radiation exposure that they represent. At two meetings with the shoe dealers we discussed the situation. Shortly thereafter the shoe dealers requested the board of health to ban the use of these machines. The board did so by passing a regulation having the standing of a city ordinance or a State law.

At this point we decided that the radiation program would benefit from outside assistance and support. Consequently, the board of health appointed a Radiation Advisory Committee, consisting of technically qualified persons from industry, labor, medicine, dentistry, and public health. The health commissioner, the director of occupational health services, and the chief of the bureau of air pollution control are ex officio members. From the committee has come advice as to procedure and priorities.

About the same time that the advisory committee was formed another major step in the control program was initiated. Working with and through the Cincinnati Dental Society, the city undertook to alert the local dental profession to the need to reduce radiation exposure for themselves and their patients to the minimum consistent with diagnostic needs. A talk to the dental society was followed by a short article in its journal. This in turn was followed by an offer to arrange for proper coning and filtration for all dental X-ray machines. Approximately 50 percent of the membership of the dental society accepted the offer.

Arrangements were made with the two largest local dental suppliers to install aluminum filters on any dental machine for a fixed maximum fee or to furnish the necessary filters to

the dentist for him to install. The added filtration was to bring the total to the 1.5 mm. recommended in the National Bureau of Standards Handbook 60 (1955).

At this writing the installation of filters is nearing completion. When it is finished, the city will arrange through the dental society for a film badge service for those dentists who wish it. Use of a film badge for 13 weeks should enable us to gain some idea of the radiation exposure of the dentist and his assistants. If indicated, office surveys and corrective action can then be undertaken.

We are now facing the question of requiring registration of all radiation sources in order to determine their location. Already working closely with the fire department, the health agency has organized a list of known radionuclide users and has advised on procedures for handling fires where radiation may be a factor. The fire department in turn has held short courses for its personnel. Other city departments and other members of the board of health are cooperating in the further development of a radiation control program. The program will be integrated into our regular operating programs insofar as possible, and regular personnel will be trained to do a continuing job.

Additional activities will be necessary in the development of a well-rounded program, but there are limitations imposed by political boundaries which can be overcome only if State authorities take action. The bureau of air pollution control in the Cincinnati Department of Public Safety has long conducted routine air monitoring for radiation, but the confines of a city are too narrow for effective control of radiation in air or water. Nevertheless, we believe that municipal departments with responsibility for air and water must be as aware of radiation sources as they would be of any other contaminant.

Cincinnati's program in radiation control, by using existing facilities and cooperating agencies wherever possible, has developed and grown without significant additional expenditures. We believe that much can be done by cities of our size, 500,000, and smaller ones, to limit or reduce exposure to radiation with available facilities and staff.