A Radiation Program in a State Health Department
The New Jersey Demonstration


Is one measure of our administrative competence an anticipatory awareness of potential public health hazards? Can we take rational steps to guard against such hazards before we know the full measure of their danger?

On August 30, 1954, the President of the United States signed the new atomic energy legislation and declared that it will speed the time when the atom "will be wholly devoted" to peaceful purposes. The new bill, for the first time, opens the door for development of a private atomic power industry within the United States. We can anticipate that in a relatively short period many of us will find in our respective areas new producers of nuclear energy. This has been an event carefully planned for in the national atomic energy activities. Referring to the provisions of the atomic energy bill, President Eisenhower stated, "These provisions carry into effect the 1946 policy declaration of the original atomic energy act, that the free competition in private enterprise should be strengthened... Programs undertaken as a result of this new law," the President declared, "will help us progress more rapidly to the time when this new source of energy will be wholly devoted to the constructive purposes of man."

The growth of the nuclear industry in this nation generally, as in the State of New Jersey, has already presented a problem of public health concern to those charged with responsibility for the preventive and constructive phases of public health administration. Out of this concern, under the caption of "radiological health," there has developed a series of activities, unique in concept, with which official health agencies have begun to concern themselves. The time we have been permitted in which to prepare ourselves is becoming short—how short, we could not know, until the forcefulness of President Eisenhower's most recent statement caused us to judge the state of readiness in which we find ourselves at the present time.

In the development of radiological health as a departmental program, the New Jersey State Department of Health has been among the first, so it seems desirable that our basic principles, objectives, and some of our achievements be presented at this time. Beginning in 1946 the Atomic Energy Commission permitted the distribution of an entirely new family of reactor-produced radio-active materials to authorized users for any purpose deemed by the commission to be in the public interest. Contingent with the sales of radioisotopes have been a series of requirements for radiological protection designed to safeguard individual and public health. We tend to accept without comment this approach by the Atomic Energy Commission to the distribution of potentially hazardous materials. However, be assured that this is a remarkably modern concept in
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The presence of nuclear power as a competitive process in the national industrial scene has been stifled, in a sense, by the extreme caution necessary to provide adequate radiological health safeguards. This problem is very real. If we are to encourage the optimal growth of this awe-inspiring new source of energy and simultaneously fulfill to the utmost our primary responsibilities as overseers of the environmental well-being of the nation, we must be capable of presenting a sympathetic but firm understanding of the problems generated by this expanding industry.

Every nuclear reactor produces radioactive material in direct proportion to its power capabilities. Coupled with this tremendous production and waste potential is the possible exposure to the injurious effects of ionizing radiation, not only of the industrial population that is required to operate this equipment, but also of every person who may come in contact with the resultant by-products. Geneticists and physicists warn us that our concern must be for future generations as well as for ourselves. Whether or not state and local health agencies prepare themselves to answer the many questions that result from the expansion of the nuclear industry, do not doubt that this expansion will take place. We should prepare as soon as is feasible to be in a position to function as effectively in this area in the future, as we have in other areas in the past. I certainly cannot advise one on how to acquire these capabilities rapidly and yet in a practical manner.

However, I can describe what has been done in the New Jersey State Department of Health to develop authority and competence.

The State of New Jersey, with a highly industrialized population exceeding five million, already has a radiation industry covering every existing use of sources of ionizing radiation, excepting that of a nuclear reactor itself. When, as an outgrowth of informational discussions relating to radiological safety in civil defense, requests for guidance were received by the State Department of Health from users of x-ray machines, radium, radioisotopes, etc., these requests were referred to the Bureau of Adult and Occupational Health, Division of Constructive Health, for action. This bureau, through its primary responsibilities, had previously demonstrated its ability to handle not only problems of occupational exposure to dangerous materials, but also related problems of outdoor environmental exposure resulting from certain industrial and community operations. The use of sources of ionizing radiation is essentially occupational. The clinical professions are occupations. There is, moreover, a most important coincident exposure of the general public which must also be taken into account. Our fundamental approach to the problem of radiological exposure is occupational, but the extension of our activity to provide for the concomitant environmental protection has followed naturally and necessarily.

It has been demonstrated that public health engineers, industrial hygienists,

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and public health physicians and nurses, already versed in the intricacies of developing sound occupational health programs, are able to adapt themselves to this new science. There should be no hesitation in the future in asking that each such staff member prepare himself to understand and apply radiological health principles. The public health administration of these principles is no different from that of any other official health responsibility. By providing currently employed individuals with the opportunity for extending their official activities into a field with which they have already become familiar, there appears to be no necessity for forming any entirely new governmental control agency. Radiological health is an important problem. Nevertheless, it is but one of many activities confronting modern health departments and should not be accorded any more special treatment than is requisite for proper development. A good program grows under the impetus of its own needs and potentials.

Our experience suggests that certain factors are essential to the development and success of a radiological health program:

1. Training for field and office personnel. This was accomplished by permitting every opportunity for attendance or participation in short training courses that have proved to be surprisingly abundant in New Jersey and adjacent areas. In addition, whenever possible, our related staff personnel accompanied more experienced radiation personnel during field activities in the state. These included salesmen, Atomic Energy Commission representatives, Federal Civil Defense associates, and many others with vested interests in the use or sale of sources of radiation.

2. Supportive legislation, to define the scope of authority to recommend radiological health controls wherever necessary. Incidentally, this also helped to support a budget request. This legal base was brought about in New Jersey by the Public Health Council of the State of New Jersey, exercising its existing power with the adoption, effective December 15, 1952, of Chapter VI, on Radiation, as part of the State Sanitary Code.

This chapter is as follows:

Regulation 1—Application of chapter
(a) X-ray machines and all other sources of radiation shall be shielded, transported, handled, used and kept in such manner as to prevent all users thereof and all persons within effective range thereof from being exposed to excessive dosage of radiation. Owners or users of sources of radiation shall not expose themselves or permit others within effective range to be exposed contrary to regulations which may be promulgated by the State Department of Health relative to sources of radiation.

(b) Every incident of exposure to radiation in violation of the aforementioned regulations or of this Chapter shall be considered a separate offense.

The simplicity and brevity of this chapter, and its wide latitude for interpretation and enforcement, make it a powerful instrument for radiological health control. Easily adopted departmental regulations that are amended readily, relating only to those sources of radiological health hazard demanding immediate attention, may be promulgated, while the broader powers of the department in the entire field of radiological health remain unaffected.

To date, the only departmental regulations which have been issued are those relating to fluoroscopic shoe-fitting machines. There was an urgent need for these regulations, since the owners and employees of retail shoe stores are completely lacking in any professional training which might enable them to devise a system of self-regulation.

3. Preparation of a concise declaration outlining proposed activities in the field of radiological health. This is stated in our "Radiological Health Pro-
gram,” formally approved on May 19, 1954. The findings of our earliest exploratory field activities were utilized to develop a realistic program.

4. Ability to impart authoritative radiological health information and specialized advice to all interested parties. Informational activities extend through the gamut of preparing Occupational Health Bulletins, speaking before professional, municipal and civic groups, lecturing before college classes, discussing radiation problems with insurance carriers and industrial management, to assisting labor union organizations in understanding the safe use of radiation sources. Leadership in disseminating information and providing unbiased guidance can only be continued by constant effort to develop contacts and to expand technical competence.

A congenial relationship has grown within the past year between our program personnel and those having radiological health responsibilities in federal organizations and neighboring states and municipalities. Through this group, sponsored by the Regional Public Health Service Office in New York City and known as the “Regional Coordinating Conference on Radiological Health,” we have been able to increase our alertness to radiation problems in an exponential manner.

The Radiological Health Program in New Jersey has crystallized within the past three years. We were fortunate in receiving assistance in this period of rapid growth from the U. S. Public Health Service in the form of assigning trained personnel to us. A public health physician experienced in local health problems and atomic medicine was loaned for one year. A sanitary engineer trained in nuclear physics has been in charge of the program activities for two years. State personnel are now taking over these duties.

We have not contemplated, and are not attempting, rigid regulatory controls of all sources of ionizing radiation. Thinking in terms of public health administration, public health practice and, last but not least, public health education, a tremendous task remains to be done. This includes the establishment of standards essentially designed for official health agencies. These may be stated somewhat in the following fashion:

**Administrative Standards**

Objective: To define in detail the extent to which public health administration of radiological health controls is desirable and feasible. To assist in the wise expenditure of limited funds and the allocation of personnel with relatively brief radiological experience, we must provide a guide for public health administrators which will enable them to concentrate upon the problems within their jurisdictions which are significant from the public health viewpoint. Many radiation problems involve the public health administrator only in terms of health education; others require regulatory standards, inspection, and strict control.

**Educational Standards**

Objective: To suggest methods and provide information concerning in-service training in radiological health for public health and allied professional health personnel. There appears to be available at the present time a number of training services; additionally, there are local, state, and professional personnel whose backgrounds have prepared them to receive this training. We should be in a position to correlate this information, even to the extent of establishing a register of qualified training centers, and to suggest cooperative training projects on an exchange basis. Especially in the local health agencies
and the clinical professions, radiological health is not a full-time occupation. For this reason, we should not encourage the separation of radiological health from all other health activities, but rather should encourage the integration of radiological health activities within existing functional frameworks. It has been our experience, for instance, that the professional societies are not only willing to indoctrinate individuals or groups within their memberships, but are easily qualified to perform this duty if proper guidance is available.

**Regulatory Standards**

Objective: To establish methods of contacts and provide information for self-regulation by qualified groups or professions. Two attitudes are found among officials concerning the public health hazards connected with the use of radiation sources. One is the “police” type of control—the strict supervision by codes, ordinances, regulations, licensing acts, etc., of anything and everything that may possibly cause persons to be exposed to radiation. We are aware of the difficulties engendered by the interpretation and enforcement of these acts when they refer to highly technical subjects. The other attitude stems from an awareness of the fact that many uses of radiation are capable of self-regulation to a marked degree, for example, the administration of radiation for therapeutic purposes. The effectiveness of this second attitude is based upon the establishment of mutual confidence and rapport with the professional and industrial groups who commonly utilize radiation sources. That these groups, acting with governmental assistance, have achieved a lasting result is demonstrated in the publications of the American Standards Association, the International Commission on Radiological Protection, the National Radiation Protection Committee, the American Conference of Governmental Industrial Hygienists, and others. The recommendations formulated by these organizations provide not only the foundation for governmental regulation, but also for self-regulation. It would be unwise to attempt to discourage this trend.

Our basic principles, throughout, are relatively simple in statement: (1) That we desire to promote the most desirable management of radiation sources for the protection and improvement of the public health, and (2) that radiation exposure serving no useful purpose is unnecessary.

Perhaps we are too optimistic about our future abilities to assist constructively the citizens of New Jersey in the improvement of personal and public enjoyment of their modern environment, however it may develop. Perhaps we have done too little in some respects in the past, or have done too much in other respects. It may be that many of the radiological health problems confronting us now cannot be resolved by public health personnel alone. However, they will be solved by reference to other health, legal, and industrial problems, with the assistance and support of respective experts in these fields. Based on past experience, I do know that acting effectively together our goal to make a safer world will be reached.