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MEDCE-OH

TO : The Surgeon General

DATE: 16 December 1954

Chief, Preventive Medicine Division
FROM : Chief, Research & Development Division

SUBJECT: Medical Aspects of Nuclear Energy

1. The Army Medical Service is affected by the medical aspects of nuclear energy in two ways:

a. By the increased Army use of particle accelerators and radioactive materials.

b. By the introduction of the nuclear warfare concept.
The first is in the field of preventive medicine and the civilian counterpart is known as health physics. The second embraces a multitude of problems ranging from those connected with the treatment of mass casualties to the participation of weapons tests. Although certain basic knowledge is common to both aspects, much of the material in the latter category is highly classified.

2. In view of the small number of experienced personnel available, it is recommended that there be organized an independent and centralized unit in the Office of The Surgeon General. The purpose of this unit, to be known as the Nuclear Energy Office, is to coordinate all aspects in this field for The Surgeon General and to act as his representative to the General Staff, Technical Services and other Federal agencies both within and without the Department of Defense.

3. The Nuclear Energy Office as a staff organization should be divided into two sub-units:

a. Health Physics -- to set and keep current the maximum permissible exposures; to control procurement, use, and disposal of radioactive materials by setting and publishing standards; to act in a consultant capacity in shielding matters and in the design of isotope laboratories to reduce expenditure of modification funds; and coordinate the field activities of the Radiological Division of the Army Environmental Health Laboratory with the Staff activities of TSG.

b. Special Weapons -- to maintain contact with research and development in the field of nuclear warfare and radiological defense; to coordinate with and act as a consultant to existing divisions in this highly technical field; and to recommend a balanced program of effort in all phases of nuclear energy as it affects the AMEDS.

1 Incl
Staff Study with 5 Incls

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Preventive Medicine Div and
Research & Development Div
16 December 1954

SUBJECT: MEDICAL ASPECTS OF NUCLEAR ENERGY

1. PROBLEM

a. The use of radioactive materials in the Army is increasing, though the effects of ionizing radiation on biological tissue and the intact organism are in large part still unknown.

b. There is no organization or office in the Army Medical Service designated for the production of consistent and published policy on control of hazards from ionizing radiation under all conditions encountered.

2. ASSUMPTIONS

a. On the basis of experience over the last few months, the following assumptions are formulated for the purpose of this study:

(1) The use of radioactive materials within the Army will continue to increase and will, for the first time, include nuclear reactors.

(2) The Army Medical Service will continue to be responsible for the health of the command, treatment of the sick and other casualties, and as an advisor to commanders and,

(3) The Surgeon General will continue to be asked for advice by the General Staff and the several Technical Services concerning technical aspects of use and disposal of radioactive materials from the point of view of controlling exposure of personnel.(1)

3. FACTS BEARING ON THE PROBLEM

a. That ionizing radiation is hazardous to life and health has been known since the effects became apparent through the experience of the early medical and dental users of X-ray and of those dial painters ingesting radioactive isotopes. The Manhattan District utilized health physics personnel early in its history to control exposure to workers, and this control has continued to this day both in the activities of the Atomic Energy Commission and of those of its customers. Newspapers have reported exposure of Japanese, Marshalese, and Americans to airborne radioactive materials in significant amounts within the last few months.

b. Within the last few years, use of radioisotopes in clinical and diagnostic medicine and in research and development has increased within the Army. In addition, radiations produced by various means of particle acceleration have found increasing use in manufacturing arsenals. Press services carried an item concerning the negotiation of a contract for development and construction of an air-transportable "package" nuclear power plant prototype

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at Fort Belvoir under a 14 December 1954 dateline. Certain items of equipment have been adopted which contain sufficient radioactive material to be hazardous when stored in significant quantity. Disposal of radioactive materials can contaminate water supplies.

c. To cope with various facets of this ever-expanding problem, the following divisions of the Office of The Surgeon General have been active:

(1) Education and Training Division -- crystallization of doctrine in nuclear medicine (2);

(2) Medical Plans and Operations Division -- drafting of regulations and recommending authorized allowances for personal dosimetric devices;

(3) Personnel Division -- assignment of specialist personnel and planning;

(4) Preventive Medicine Division -- staff control of noncombat exposures such as establishing maximum permissible exposures; controlling procurement, use and disposal of radioactive materials within the Army; establishing criteria for monitoring personnel; classification of X-ray installations; construction planning and consultation; drafting certain regulations; and consulting with Research and Development Division, Professional Division and Dep Log on these matters;

(5) Professional Division (Chief Radiological Consultant) -- consultation on clinical use of radioisotopes, radiological research, personnel dosimetry and other matters pertaining to X-rays;

(6) Research and Development Division -- staff supervision of research under AW-6 technical objective, general consultation and

(7) Supply Division -- procurement of beta ray applicators and radiac sets.

None of the above personnel are engaged exclusively in the nuclear energy field, and in only two positions (Chief Radiological Consultant, Professional Division and Chief, Special Projects Branch, Research and Development Division) are personnel possessing sufficient technical background routinely assigned. In practice, however, Dep Log and some technical services have called on various individuals, particularly in Preventive Medicine Division, to state the views of The Surgeon General.

d. Two field units routinely are requested to assist in matters involving nuclear energy and its effects. They are the Army Environmental Health Laboratory where one qualified officer is doing the field work in connection with the industrial-type problems. At the Army Medical Service Graduate School, there are assigned two senior qualified officers, who, in addition to their other duties, receive various tasks of a staff nature.

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e. Due to the diversity and complexity of problems and classification regulations in this field, there are a comparatively small number of individuals qualified by training and experience to develop policy and doctrine pertaining to The Surgeon General's responsibility in this area.

f. Few policies on various aspects of the problem have been published for field guidance by The Surgeon General and, for example, no policy on maximum permissible exposures for combat or noncombat conditions has been announced. This is in contrast to some 15 handbooks prepared by the National Committee on Radiation Protection on subjects exclusive of nuclear weapons.

g. Dep Log has stated that a requirement exists for AR 40-____, "Control of Hazards to Health from Noncombat Use of Radioactive Materials" and has directed The Surgeon General to submit a final draft of this by 5 February 1955.(3)

h. The problems in the general field of non-tactical control of exposure are presented in detail.(4) Excluding diagnostic and therapeutic uses of radiation, the remaining problems are not easily characterized, but would include items such as treatment of mass casualties, development of methods of testing food and water contamination for field use to include specifications of instruments and procedure, recommending combat exposures, both one-time and intermittent, and those problems received from the Armed Forces Special Weapons Project.

4. DISCUSSION

a. The present organization and procedure with respect to the medical aspects of ionizing radiation is not considered adequate to meet the requirements. If this is so in fact, then two alternatives present themselves:

(1) To augment the Preventive Medicine Division with a qualified health physicist and necessary clerical assistance to perform staff supervision over the radiological safety aspects. Additionally, it would seem advisable to add more qualified personnel to other division(s) to staff for the other, operational-type functions.

(2) To form a single unit, outside of the present divisional structure, to act in a staff capacity for all matters involving interaction between man and ionizing radiation other than diagnostic or therapeutic.

b. The advantages of the first course are essentially administrative in nature and such action would certainly improve the ability to meet Army Medical Service responsibilities in this field. The disadvantages, however, appear to greatly outweigh the advantages. Disadvantages include:

(1) Lack of unanimity in policy;

(2) Creation of small administrative units subject to intermittent operation due to sickness, leave, travel, and transfer;

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(3) Requirement for close delineation of function in order to make certain that all problems are assigned and covered; and

(4) Requirement for duplication of experienced personnel.

c. Creation of a separate office has obvious administrative disadvantages, but has the following advantages:

(1) It provides a central source of information to The Surgeon General and his staff;

(2) A representative is thus designated to represent The Surgeon General in nuclear energy matters before members of the General Staff, other Technical Services, and outside agencies;

(3) Experienced personnel are better utilized in that officers with different backgrounds and experience can complement one another;

(4) Policy will be uniform;

(5) If assignments are staggered, operation will be continuous;

(6) Personnel will be more efficient in that they can concentrate their efforts and thinking in a broad field, unhampered by unrelated additional duties;

(7) Competence of personnel will be retained and enhanced in a specialized field for which a desperate need will develop upn the advent of hostilities in which nuclear weapons play a part in tactics or strategy.

5. RECOMMENDATIONS

a. It is recommended that an independent unit be organized within the Office of The Surgeon General for the purpose of centralizing all matters pertaining to nuclear energy as they pertain to the Army Medical Service other than actual diagnosis or therapy of patients by radiological means.

b. Suggested name of this unit is the Nuclear Energy Office. It is suggested that two sub-units be formed, Health Physics Unit, and Special Weapons Unit. Strength of the office will depend upon availability of personnel and speed with which results are desired.

5 Incls
1. Disposal Radioactive Waste
2. Cryst Doctrine Atomic Med
3. Dep Log Corres re Proposed AR
4. Health Hazards fr Radiation
5. Newspaper Clipping re A Power

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