

*Resubmitted
CW 310-49*

AR 40-582

ARMY REGULATIONS

No. 40-582

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 14 October 1958

MEDICAL SERVICE

EVALUATING AND REPORTING INTERNAL EXPOSURE TO RADIOACTIVE MATERIALS

	Paragraph
Purpose	1
Application	2
Definition	3
Standing operating procedures (SOP)	4
Reporting	5
Classification of isotopes	6
Overexposure	8
Post surgeon	9

1. Purpose. These regulations prescribe the minimum action to be taken in the event of an incident involving the internal exposure of personnel to radioactive materials, and the conditions under which the Surgeon General will be notified of such exposure of personnel. Such reports are for the sole purpose of insuring that the most prompt and appropriate medical attention is provided to personnel of the Army.

2. Application. These regulations are applicable to all commands, installations, and activities in the Department of the Army employing the radioactive materials listed in paragraph 15, AR 40-580, plus Plutonium 239, Radium 226, Thorium (natural), Uranium (natural), Uranium 233, and Uranium 234-Uranium 235. The provisions of these regulations are not intended to conflict with nor supersede established procedures in regard to the handling of nuclear weapons.

3. Definition. For the purpose of these regulations internal exposure is defined as that wherein there is reasonable evidence to suspect that radioactive material has been ingested, inhaled, or absorbed through the skin.

4. Standing operating procedures (SOP). Each installation where radioisotopes are employed shall develop and keep current an SOP to be implemented in the event of internal exposure to radioactive materials. The SOP shall prescribe the action covering at least the following:

- a. Evacuation of personnel from immediate area.
- b. Procedure for medical treatment and/or evacuation of suspected contaminated individuals. See paragraph 7 for instructions relative to urine collection and handling.
- c. Personnel decontamination.
- d. Collection and decontamination of film badges worn by contami-

TAGO 1992B—Oct. 450180*—58

nated individuals. Film packets shall be shipped to Lexington Signal Depot, Ky., by air mail special delivery. Lexington Signal Depot will be alerted that the film packets are arriving.

4. Assessing extent of contamination.

7. Property decontamination.

5. Reporting. Commanders of installations and off-post activities where radioisotopes are employed, will designate the post surgeon or his representative, or in the absence of AMEDS personnel, another appropriate individual who will notify The Surgeon General, Department of the Army, Washington, D. C., ATTN: MEDIC, by telegraphic means immediately after it has been determined

to be used in lieu of or to supplement DA Form 255 (Accident) and is it to be used to fix responsibility for an accident. This notification is in addition to reports required of holders of byproduct material licenses by paragraph 20.403, 10CFR20. In the event that a radioisotope in Group III, paragraph 6a (3) is involved, The Surgeon General, Department of the Army (Preventive Medicine Division) will be notified immediately by telephone because of the urgency of the treatment within 24 hours. Telephone notifications will be confirmed by telegraphic notifications. Notifications of hazardous exposure to radioactive material will include the following (exempt report, par. 17k, AR 385-15):

- a. Approximate time and the date of incident.
- b. Strength of source, element, chemical and physical form.
- c. Number of individuals contaminated or overexposed or suspected of being contaminated or overexposed. Include a statement indicating the treatment rendered (or that no treatment has been rendered).
- d. Extent of individual contamination as determined by immediate monitoring.

6. Classification of isotopes. a. The degree of the hazard resulting from exposure to an isotope is dependent upon its action in the human body. To ascertain the extent of the possible hazard, representative isotopes are divided into three groups as follows:

- (1) Group I—Slight hazard
Na²⁴, K⁴², Cu⁶⁴, Mn⁵², As⁷⁴, As⁷⁷, Kr⁸⁵, Hg¹⁹⁷
- (2) Group II—Moderately dangerous
C¹⁴, P³², Na²², S³⁵, Cl³⁶, Mn⁵⁴, Fe⁵⁹, Co⁶⁰, Sr⁹⁰, Cb⁹⁶, Ru¹⁰³, Ru¹⁰⁶, Te¹²⁷, Te¹²⁹, I¹³¹, Cs¹³⁷, Ba¹⁴⁰, La¹⁴⁰, Ce¹⁴¹, Pr¹⁴³, Nd¹⁴⁷, Au¹⁹⁸, Au¹⁹⁹, Hg²⁰³, Hg²⁰⁸
- (3) Group III—Very dangerous
H³, Ca⁴⁵, Fe⁵⁵, Sr⁹⁰, Y⁹¹, Zr⁹⁵, Ce¹⁴⁴, Pm¹⁴⁷, Bi²¹⁰

shall be shipped to Lexington Signal
delivery. Lexington Signal Dep
s are arriving.
ation.

f installations and off-post activi
t, will designate the post surgeon
nce of AMEDS personnel, another
notify The Surgeon General
ton, D. C. ATTN: MEDICAL
y after it has been determined.

ment DA Form 285 (Accident) nor
: for an accident. This notification
l of holders of byproduct material
FR20. In the event that a radio
6a (8) is involved, The Surgeon
y (Preventive Medicine Division)
lephone because of the urgency of
telephone notifications will be con-
s. Notifications of hazardous ex-
ill include the following (exempt

e of incident.
hemical and physical form.
aminated or overexposed or sus-
verexposed. Include a statement
(or that no treatment has been

ation as determined by immediate

. The degree of the hazard result-
dependent upon its action in the
tent of the possible hazard, rep-
to three groups as follows:

As⁷⁷, Kr⁸⁵, Hg¹⁹⁷
gerous
n⁶⁴, Fe⁵⁹, Co⁶⁰, Sr⁹⁰, Cb⁹⁸, Ru¹⁰⁶,
Tl²⁰¹, Ba¹⁴⁰, La¹⁴⁰, Ce¹⁴¹, Pr¹⁴³, Nd¹⁴⁷,

Ce¹⁴⁴, Pm¹⁴⁷, Bi²¹⁰

TAGO 1992B

Isotopes not listed should be classed according to their biologic half-
lives, energy of radiation, and action in the human body. If the
action within the human body is not known with reasonable certainty,
the isotopes should be classed according to the best determination
which can be made and assigned to a group classification which will
provide an appropriate margin of safety.

b. Hazardous exposure should be considered a definite possibility
when the following amounts of the listed isotopes are involved in
any operation, maintenance, storage, transport, accident, fire or other
incident:

Group II—50 millicuries

Group III—5 millicuries

7. Urine collection and handling. a. Where there is reason to
believe that an individual has been internally contaminated with ra-
dioactive material, a 24-hour urine sample will be initiated as soon as
possible. A 24-hour urine sample is defined as follows:

All urine voided in a 24-hour period will be considered a 24-hour sample. For
example, if urine is voided at 0800 and discarded, then the sample will consist
of all urine voided and collected from that time up to and including 0800 the
following day.

b. Samples will be collected in polyethylene bottles (preferably 2½
liters), appropriately identified as to name of individual and inclu-
sive dates of sampling. The average amount of urine excreted per
individual per day is 1.5 liters. It is recommended that a number of
bottles be stocked by installations using radioisotopes to cover an
emergency, based on the average number of individuals involved in
any one operation involving the use of isotopes. Benzoic acid will be
used as a preservative in the ratio of 1 gram of Benzoic acid per liter
of urine.

c. A 3- by 5-inch index card or tag will be attached to the bottle
with the following information:

- (1) *Front.*
Name, grade, and service number
Date of incident
Inclusive dates of collection
Suspected isotope

- (2) *Reverse.*

A 24-hour urine sample will be collected as follows:

- (a) Wash hands *before* collecting a portion of the sample.
- (b) Void urine at 0800 (or any other convenient time)
and discard it. Do not collect it in the bottle.

TAGO 1992B

(e) Collect all urine from that time up to and including the corresponding hour the following day. ALL URINE MUST BE COLLECTED. LOSS OF SIGNIFICANT AMOUNT MAY RENDER THE SAMPLE USELESS.

d. Samples will be held by the post surgeon pending disposition instructions from The Surgeon General. When so directed samples will be forwarded by the most expeditious means to the following:

Commanding General
Walter Reed Army Medical Center
Washington, D.C.

TO: Director
Walter Reed Army Institute of Research
Walter Reed Army Medical Center
ATTN: Department of Biophysics

8. **Overexposure.** If an overexposure to ionizing radiation has been received or radioactive material has been ingested, inhaled, or absorbed through the skin, an appropriate entry will be made on DD Form 1141 in accordance with AR 40-431. A brief description of the condition or act which resulted in the overexposure will be attached to the individual DD Form 1141 (Record of Exposure to Ionizing Radiation).

9. **Post surgeon.** Since the post surgeon is responsible for the clinical management of each case, the foregoing instructions are not to be interpreted as restrictive with regard to such management.

(AG 729.3 (21 Feb 58) MEDCA)

By Order of *Wilber M. Brucker*, Secretary of the Army:

MAXWELL D. TAYLOR,
General, United States Army,
Chief of Staff.

Official:

HERBERT M. JONES,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army: C.

To be distributed as needed to all installations, activities located off an installation, and to all units and headquarters down to and including divisions, and units and headquarters of comparable size.

NG: State AG (3).

USAR: None.

TAGO 1992B