

~~EXHIBIT 4~~
APPL Ex. 40

HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

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August 16, 1983

Roger E. Linnemann, M.D.
President
Radiation Management Corporation
3508 Market Street
Philadelphia, PA 19104

Dear Dr. Linnemann:

The Hospital of the University of Pennsylvania agrees to accept referrals for evaluation and treatment of radiation injuries from Radiation Management Corporation (RMC) and/or the nuclear power plants currently associated with RMC's Emergency Medical Assistance Program. The clinical management and decisions regarding the need for hospitalization and/or treatment shall be under the direction of Richard A. Cooper, M.D., whose decisions regarding same shall be final.

The Hospital of the University of Pennsylvania has and will maintain the clinical and medical capability which in the Hospital's judgement are necessary to treat persons injured as a result of overexposure to ionizing radiation. The Hospital does agree to make its clinical facilities and clinical capacity available for radiation injury victims referred to it by RMC and/or its participants in the Emergency Medical Assistance Program. However, under no circumstances will the Hospital's responsibility for patients commence until their arrival and admission at the Hospital. The Hospital will maintain a Radiation Emergency Coordinating Committee which will hold annual meetings to review accident cases and update knowledge regarding radiation injuries and procedures, and will hold annual training and drill sessions for staff in the care of radioactively contaminated patients and in the evaluation of over-exposure to radiation injuries. Radiation Management Corporation will assist the Hospital in maintaining its capabilities to handle radiation injuries by providing consultation and radiation laboratory support on a regular basis.

This agreement replaces and supercedes all previous contracts and understandings, which are hereby declared to be void and without effect. This agreement is effective August 1, 1983, for a period of one year, to be renewed automatically until and unless terminated by sixty days notice from the Hospital or RMC to the appropriate representative of the other party.

U. S. NUCLEAR REGULATORY COMMISSION

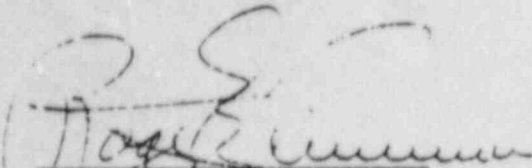
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Applicant Staff Intervenor
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Date: 7-23-84
Reporter: [Signature]

HUP

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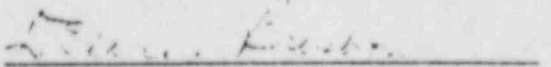
Roger E. Linnemann, M.D.
Radiation Management Corporation
August 16, 1983
Page 2

Please indicate your assent to the provisions of this agreement by signing as indicated below and returning a copy to the Hospital. Thank you very much.

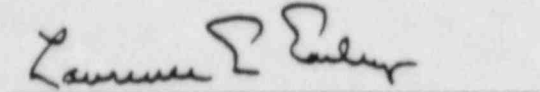


Roger E. Linnemann, M.D.
For Radiation Management
Corporation

Sincerely,



Delores Brisbon
For the Hospital of the University
of Pennsylvania



Laurence E. Earley, M.D.
Chairman
Department of Medicine

cc: Richard A. Cooper, M.D.

DECONTAMINATION AND TREATMENT
OF
THE RADIOACTIVELY CONTAMINATED PATIENT
AT
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

DECONTAMINATION AND TREATMENT
 OF
 THE RADIOACTIVELY CONTAMINATED PATIENT
 AT
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ADMISSION AND MANAGEMENT OF RADIATION INJURIES
AT
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

1.0 GENERAL

In 1970 the Hospital of the University of Pennsylvania (HUP) established a formal protocol for the admission and management of radiation casualties and designated a controlled area within the hospital (Room , Emergency Room) for the reception, decontamination and emergency treatment of such casualties. This action by HUP was taken in recognition of the expanding use of nuclear materials in industry, medicine and research in the Greater Delaware Valley. Though the incidence of serious radiation accidents is expected to remain low, it was realized that prudent planning clearly indicated the need for a centralized Radiation Medicine Center that would preclude the uneconomical proliferation of costly and infrequently required definitive care facilities in many hospitals throughout the area. Accordingly, with the assistance of Radiation Management Corporation (RMC), a corporation founded by eight mid-Atlantic public utility companies to manage their radiation emergency medical programs, the policies and procedures for the admission and management of radiation casualties at the Hospital of the University of Pennsylvania have been developed. This document expresses these policies and specifies the required procedures.

2.0 COMPOSITION AND RESPONSIBILITIES OF RADIATION EMERGENCY COORDINATING COMMITTEE, HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA (RECCHUP)

2.1 Composition

2.1.1 Chairman: President, Radiation Management Corporation - Medical Services.

2.0 COMPOSITION AND RESPONSIBILITIES OF RECCHUP (Continued)

2.1.2 Members: General Manager, Medical Services, RMC

Representative, Administration, HUP

Representative, Department of Medicine, HUP

Representative, Department of Radiology, HUP

Representative, Department of Nursing Service, HUP

Representative, Emergency Department, HUP

Representative, Department of Surgery, HUP

Representative, Radiation Safety Office, University of Pennsylvania

2.2 Responsibilities

2.2.1 Policy and Procedures

Written statements of policy and procedures for the admission and management of radiation casualties at HUP shall be prepared, distributed to involved individuals, tested periodically, and reviewed annually.

2.2.2 RECCHUP Meetings

The Committee will meet annually, at the call of the Chairman. Minutes will be maintained and distributed to the members. The Committee will consider such matters as affect HUP's status of preparedness to admit and treat radiation casualties, including availability of trained specialists, status of supplies and equipment, and status of training.

2.2.3 Availability and Response

The Committee shall assure that a trained staff is available at all times to respond to requests for consultation relating to, or for treatment of, radiation casualties.

NOTE: See Attachment J, "Radiation Emergency Telephone Directory"

3.0 CONSULTATION OR TREATMENT

3.1 General

Requests for consultation or treatment of radiation injuries may come from staff members of HUP, non-staff physicians, unannounced arrival of radiation casualties (emergency cases), and from industries and institutions having formal agreements with HUP and/or RMC for radiation medical support.

3.2 Cases Presented by Staff Members of HUP or Non-Staff Physicians

Staff members or physicians from the community having patients involved in radiation accidents will be referred to the Chairman, RECCHUP (President, RMC Medical). The Chairman, in consultation with RECCHUP members, will advise the physician in accordance with the procedures of this document.

3.3 Unannounced Arrival of Radiation Casualty at Emergency Room

Personnel on duty at the Emergency Room shall act in accordance with the instructions contained in a procedure entitled, "Quick SORT Procedure for Handling Any Radiation Victim". A copy of this procedure is appended to this document (Attachment A); a copy is also on file in the Emergency Room.

3.4 Inquiries or Requests for Assistance

Such inquiries or requests shall be directed to RMC by either telephone operator or the staff member receiving the inquiry or request. The telephone operators are in possession of a procedure entitled, "Procedure for Radiation Accident Emergencies--Switchboard Personnel", which contains explicit instructions concerning this matter. A copy of these instructions is appended to this document (Attachment B).

3.0 CONSULTATION OR TREATMENT (continued)

3.5 Referrals from Associated Industries and Institutions

3.5.1 Usual Procedures

Patients may be transferred from "Local Supporting Hospitals" to HUP for treatment of radiation injuries. These local supporting hospitals, by written agreement with the respective firms and institutions, provide fairly extensive medical emergency support for radiation accident cases. However, in the event that the patients' treatment requirements exceed the medical resources available at the local hospitals, the patient will be transferred to HUP. Under anticipated circumstances, such transfers will result from deliberations between the local hospital staff, the firm or institution medical director and the staffs of HUP and RMC. It is also anticipated that any patient transferred from a local hospital will have been decontaminated quite effectively. Accordingly, the patients in this category, although victims of radiation accidents, are not classified as "emergencies". It may or may not be necessary to admit them through the Decontamination/Treatment Room of the Emergency Room Complex.

3.5.2 Unusual Procedures

Radiation accident victims may be medically evacuated directly from the scene of the accident to HUP or a patient transferred from a local supporting hospital may present a radiation contamination problem to HUP, provisions of such unusual circumstances are required. The procedure for admitting radiation accident casualties who present a potential threat of radiation exposure or contamination are provided in Attachment C, "Admission of Radiation Accident Casualties" to this document.

4.0 HOSPITAL ADMISSIONS (See also Attachment C)

Every reasonable effort will be made to admit patients who present a contamination hazard through the Decontamination/Treatment Room of the Emergency Room Complex. Since this area is not continuously set up and staffed for admission of radiation casualties, advance notification of requirements for these facilities should be made. As used in this document, a contamination hazard will be assumed to exist if the radiation level emanating from a patient is detectable with a portable beta-gamma G.M. survey meter.

4.1 Preparation of Decontamination/Treatment Room

Upon notification of intent to admit a radiation casualty to HUP, RMC shall have the responsibility of supervising and assisting in the preparation of the Decontamination/Treatment Room of the Emergency Room Complex. This preparation will be accomplished in accordance with the procedure presented in Section 11.0, "Setup of Decontamination/Treatment Room", of this document.

5.0 RADIATION PROTECTION AND MONITORING OF ATTENDANTS

Attachments E & F to this document present specific operational procedures for personnel working in and supporting activities in the Decontamination/Treatment Room.

6.0 TELEPHONE DIRECTORY OF ESSENTIAL PERSONNEL

A directory of essential personnel is attached to this document (Attachment J). It shall be the responsibility of RMC to semi-annually verify that this directory is current.

7.0 AUDIT OF DECONTAMINATION/TREATMENT ROOM SUPPLIES AND EQUIPMENT

RMC shall conduct a semi-annual audit of the supplies and equipment maintained for use in the Decontamination/Treatment Room. Records of the findings of these audits shall be maintained. Findings that adversely affect the state of readiness of this procedure shall be

7.0 AUDIT OF RADIOSURGERY DECONTAMINATION SUITE SUPPLIES AND EQUIPMENT (Continued)

corrected immediately, if possible. Significant findings and those adverse findings which cannot be corrected immediately shall be brought to the immediate attention of the Chairman, RECCHUP. An inventory of supplies maintained for use in the Decontamination/Treatment Room is shown in Attachment H to this document.

8.0 PUBLIC RELATIONS

Radiation accidents are a rare and newsworthy event. Consequently, they will draw considerable public attention. Therefore, to avoid unnecessary alarm, misinterpretation, and misunderstanding, it is imperative that correct and concise information be given. All information concerning the patient and the accident should be funneled through a committee of the following responsible individuals:

Chairman, RECCHUP
Primary Care Physician
Public Relations Office, HUP
Medical Director & Public Relations Department
of company involved.

The information on the radiation accident should be channeled by the committee members and others involved through the HUP Public Relations Department as the central spokesperson for news dissemination to the media. The Public Relations Department will check out the information to be released with members of the committee. The channeling of information through Public Relations is a step toward the objective of assuring uniformity of information distributed.

9.0 AMENDMENTS AND REVISIONS

The Secretary, RECCHUP, will submit recommendations for amendment and/or revision of this document to RECCHUP in consequence of evaluations made during implementation of its provisions, or, as a result of his review of the document. He shall conduct an annual review of the document and report his findings to RECCHUP during its first meeting of each calendar

9.0 AMENDMENTS AND REVISIONS (Continued)

year. He shall issue copies of approved amendments and revisions to individuals or departments identified in paragraph 10.0.

10.0 DISTRIBUTION

Copies of this document and all subsequently published amendments and revisions shall be distributed by the Secretary to the individuals and departments shown below:

Radiation Management Corporation (4 copies)
Each Member of RECCHUP
Emergency Room Area
Department of Medicine
Department of Surgery
Department of Radiology
Department of Nursing Service
Radiation Safety Office, University of Pennsylvania

Issued

for RECCHUP

11.0 SET UP OF DECONTAMINATION/TREATMENT ROOM

11.1 General

The Radiation Emergency Area (REA) is located in the Emergency Room Complex. The Decontamination/Treatment Room is Room . A supply cart (which contains health physics supplies) is located in the foyer of the Emergency Room Entrance. Refer to Diagram I for REA set-up.

Step 1

- a. Clear out all Decontamination/Treatment Room of all supplies.
- b. Lay floor covering (Herculite) throughout the REA. The pre-cut color pieces are marked as to proper location.

1) Yellow Herculite, 3 pieces

- a. Treatment Room
- b. Inside hallway from treatment room to foyer
- c. Outside hallway to ambulance entrance

2) Green Herculite

- a. Buffer zone

Note: It is layed down after patient has been delivered and ambulance attendants have exited

3) White Herculite

- a. Use for patient exit only

Step 2

- a. Attach decontamination table top to gurney and place 30 gallon yellow water receptacle under drain.
- b. Place a 30 gallon yellow water receptacle with plastic liner in Decontamination/Treatment Room.

Step 3

- a. Move supply cart to Buffer Zone. See Diagram I for proper location.
- b. Erect stanchion and attach warning rope and signs. See Diagram I for proper locations.

Step 4

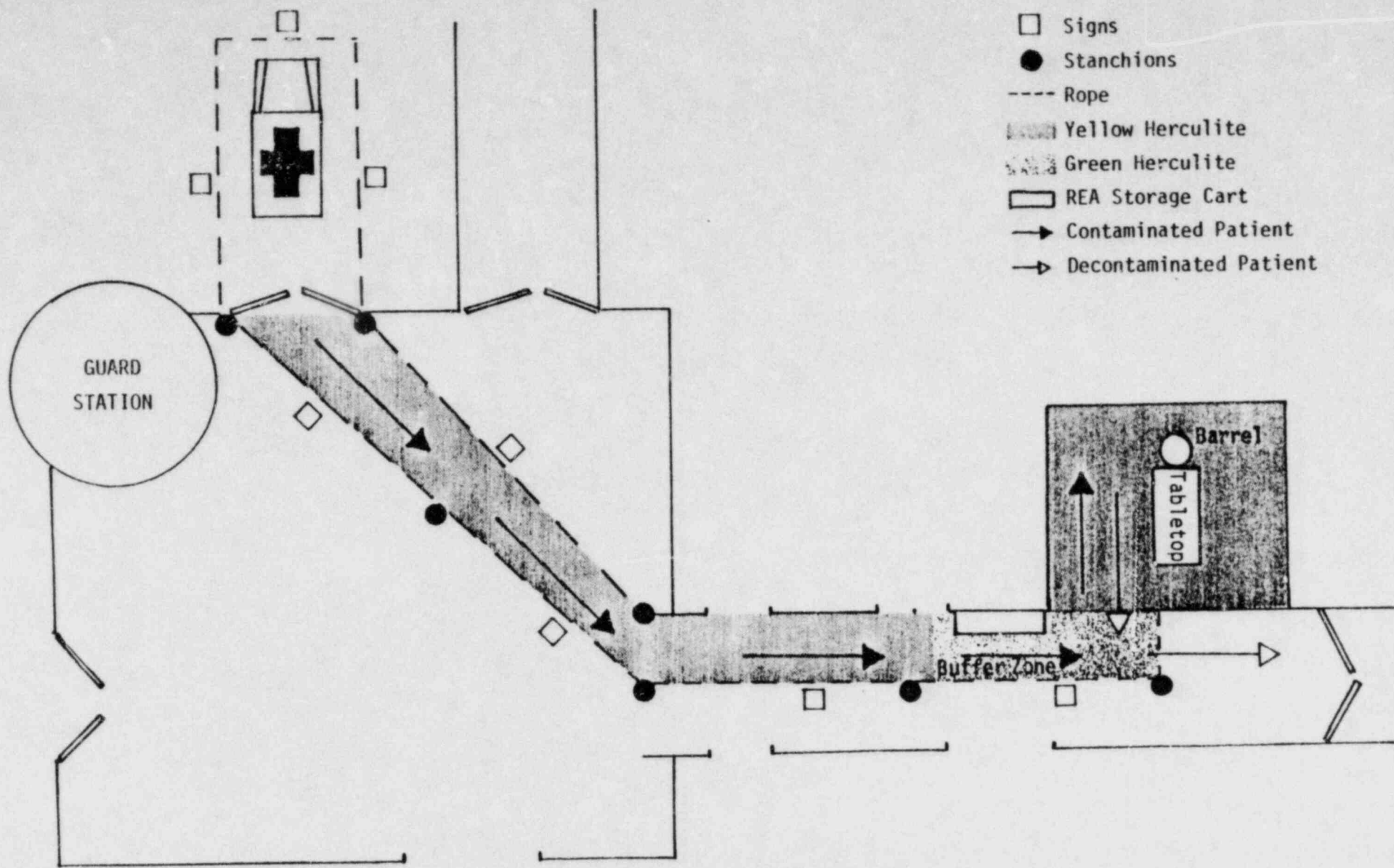
- a. Attach hose with showerhead to faucet and adjust water temperature (luke warm).

Step 6

- a. Leave Decontamination and Sample Taking Kits in supply cart. These supplies can be handed into the Treatment Room when needed.
- b. Protective clothing packs and dosimetry should remain in the supply cart. The clothing should be donned as the personnel enter the Decontamination/Treatment Room.

Step 7

- a. After patient has been placed on decontamination table top and the ambulance attendants have exited, the green Herculite should be placed over yellow Herculite. Start at the end (right hand side as you face the room) and roll toward main entrance. The length of the green Herculite is approximately 15'.
- b. After patient has entered the Decontamination/Treatment Room, erect a rope barrier between the treatment room and hallways. Place a step-off pad on the floor between the doorway.



RADIATION EMERGENCY AREA
 HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA

ATTACHMENT A

QUICK SORT PROCEDURE FOR HANDLING ANY
RADIATION ACCIDENT VICTIM

ATTACHMENT A

Quick SORT Procedure for Handling Any
Radiation Accident Victim at the
Emergency Room Unloading Dock

1. Ascertain whether the patient is CONTAMINATED (Use GM Tube)
 - A. If so ... Admit the patient to Decontamination/Treatment Room, Room
 - B. If not ... Admit to normal Emergency Room
 - C. If in doubt ... Admit patient to Decontamination/Treatment Room
2. Treat traumatic injury
3. If contaminated, decontaminate with soap and water (in Decontamination/
Treatment Room)
4. Call for assistance
 - Radiation Management Corporation (215) 243-2990 EMERGENCY
(215) 243-2950 GENERAL BUSINESS
 - Department of Radiology
 - DAY: (215) 662-3000
 - NIGHT: (215) 662-2222; ask PAGE Operator for On-Call Radiologist

ATTACHMENT A (continued)PROCEDURE FOR ADMISSION OF UNANNOUNCED ACCIDENT
BY EMERGENCY ROOM PERSONNELAdmission

Guidance is provided for the unannounced arrival of accident patients under two circumstances: (1) Emergency Room personnel become aware of the patient's status as a "radiation accident patient" before the patient has been removed from the ambulance; and (2) the patient has been brought into the Emergency Room before his status as a "radiation accident patient" has been determined.

Patient Still in Ambulance

If general medical condition warrants, sustain patient in ambulance, instruct driver, attendants, and Emergency Room personnel who have been in contact with the patient to stay in the vicinity of the ambulance (but not inside the ambulance).

Clear an area of about 8 feet around ambulance and keep unnecessary personnel and vehicles away. Attend to patient's medical condition as required. Use surgical gloves and mask. If immediate lifesaving measures are not necessary, observe patient from a distance. All equipment and supplies used to attend to patient MUST stay in the vicinity of the ambulance. DO NOT carry anything back to the Emergency Room.

Immediately request assistance from Radiation Management Corporation, Department of Radiology, and/or Radiation Safety Officer. Then:

- +Request of Security that the Ambulance Entrance be set up as a Radiation Emergency Area;
- +Admit patient to Decontamination/Treatment Room, Room

ATTACHMENT A (Continued)Patient Still in Ambulance (continued)

- Clear every person out of Room before bringing patient in.
- Instruct driver to stay with ambulance until a radiation survey has been made.
- Bring necessary equipment and supplies to treat patient from Emergency Room to Decontamination/Treatment Room, Room . All equipment, supplies and personnel entering Room MUST stay there until arrival of radiation monitoring personnel. Establish a guard at the door. Pass Emergency Room supplies and equipment into Room ; but DO NOT allow personnel and equipment to come out.
- Personnel attending patient in Room should stand next to patient, only as long as necessary to perform lifesaving measures. At all other times, stand about five to eight feet back and observe patient.

Radiation Status Discovered After Admission to Emergency Room

- Immediately secure the entire area through which the patient has passed or is located. Keep all personnel and equipment in the area. DO NOT allow anyone or anything to leave.
- Establish a control point through which necessary personnel and equipment pass into restricted area.
- Make arrangements to admit other patients to uninvolved area of Emergency Room through an alternate route.
- Attend to patient's emergency medical condition as required. Use surgical gloves, mask and gown when treating patient. If immediate lifesaving measures are not necessary, observe the patient from a distance (five to eight feet). Immediately call:
(See Telephone Directory, Attachment J)
 - Radiation Management Corporation (215) 243-2990
 - Department of Radiology DAY: (215) 662-3000
NIGHT: (215) 662-2222 Ask PAGE Operator for On-Call Radiologist
 - Radiation Safety Office (215) 243-7187

ATTACHMENT B

PROCEDURE FOR RADIATION ACCIDENT EMERGENCIES
SWITCHBOARD PERSONNEL

ATTACHMENT B

PROCEDURE FOR
SWITCHBOARD PERSONNEL

Procedure for Radiation Accident Emergencies

1. Complete Data Information Sheet, seen on next page.
2. Instruct party to wait, if at all possible, for a return call from Emergency Room Nursing Supervisor, who will provide party with admission instructions.
3. Call Radiation Management Corporation (215) 243-2990
 - +Tell them you have a radiation emergency;
 - +Give them the data you obtained from caller; and
 - +Instruct them to call this person immediately.
4. If caller must dispatch patient to Hospital of the University of Pennsylvania immediately, instruct him to bring patient to the Emergency Room Entrance and wait in the ambulance for further instructions.
5. Check back with caller after 15 minutes to see if he received assistance and instructions.

ATTACHMENT B (Continued)

DATA INFORMATION SHEET

From Caller

Date and Time of Call _____

Person Calling:

Name: _____

Address: _____

Telephone Number: _____

Accident:

Location: _____

Date and Time: _____

Type: _____

No. of Patients: _____

From Telephone Operator

Whom did you Notify
at Emergency Room? _____

Time of Notification: _____

Did You Check Back
with caller? _____

When?: _____

ATTACHMENT C

ADMISSION OF RADIATION ACCIDENT
CASUALTIES

ATTACHMENT C

ADMISSION OF RADIATION ACCIDENT
CASUALTIES

Unannounced Admission

The procedure to be followed in the event that a victim of a radiation accident arrives unannounced at the Emergency Room is presented in Attachment A of this document.

Announced Arrival of Radiation Accidents

RMC will have received notice of an accident with actual or suspected radiation exposure of personnel; on receipt of such notice, RMC will have sent out its Radiation Emergency Medical Team (REM-Team) to the site of the accident, or will have established a line of communication with the medical personnel attending the patient.

From this moment on, the REM-Team physician is responsible for coordinating the transportation of the patient to HUP.

Further action involving HUP will take place in five phases: the ALERT Phase, the NOTIFICATION Phase, the ARRIVAL Phase, the CLEAN-UP Phase, and the DEFINITIVE CARE Phase.

THE ALERT PHASE

As soon as possible the REM Team physician will alert HUP of the possible referral of (a) patient(s) indicating the most probable arrival time and the nature and extent of the patients' injuries.

The REM-Team physician will alert the Department of Medicine member of RECCHUP (or an alternate) and this member, will, in turn, alert other staff members of HUP as indicated below. If the REM-Team physician is unable to contact the Department of Medicine RECCHUP member (or an alternate), he will alert the RECCHUP member representing HUP Administration, who, in turn, will alert other

ATTACHMENT C (Continued)

THE ALERT PHASE (Continued)

involved members of HUP as indicated below. The RECCHUP member receiving the alert call from the RMC Team physician will assure that as many essential individuals are alerted as may be necessary to cope with the situation described (Attachment J).

Responsibilities of Alerted Personnel

Surgery:	assure availability of an anesthesiologist and other surgeons.
Nursing:	assure availability of nursing personnel, equipment & supplies "ear-marked" for use in Decontamination/Treatment Room.
Administration:	Alert HUP Security, and University of Pennsylvania Security, Safety and Maintenance Departments.
Radiology:	assure availability of physicians, physicists, radiobiologists and Radiation Safety Officer (RSO).
Medicine:	assure availability of consultation and hospital laboratory support.
RMC:	stand by ready to set up the Decontamination/Treatment Room in the Emergency Room Complex.

THE NOTIFICATION PHASE

As soon as it has been decided that (a) patient(s) will be referred to HUP for observation or treatment, notification will be given by the REM Team physician. This notification shall contain the following information:

- number and names of patients;
- estimated time of arrival;
- description of injuries;
- degree and type of contamination;
- special needs for equipment and/or personnel.

The REM Team physician will notify the RECCHUP member who had previously been alerted. He will notify such essential individuals (Attachment J) as may be necessary to receive and treat the incoming patient(s).

ATTACHMENT C (Continued)

THE NOTIFICATION PHASE (Continued)

Responsibilities of Notified Personnel

RMC:

- +Supervise and assist in the setting up of the Decontamination/Treatment Room in Emergency Room Complex.
- +Appoint a person to the control point. The duties of this person are as follows:
 - +Restrict access to personnel authorized entry by the attending physician or the nursing supervisor;
 - +Assure that the personnel entering the Decontamination/Treatment Room are wearing protective clothing and personnel dosimeter;
 - +Maintain a record showing name of person entering Decontamination/Treatment Room, personnel dosimetry number, and time of ingress and egress from Decontamination/Treatment Room;
 - +Assure that no person or thing is allowed to leave the Decontamination/Treatment Room (after the radioactively contaminated patient is admitted) until they or it have been monitored and found to be "clean", i.e., free of detectable radioactive contamination.

Administration:

- +Assure that the Security Department is instructed to perform the following duties:
 - +Clear vehicle access to the REA Entrance;
 - +Post guards at Emergency Entrance;
 - +Contact Security, Safety and Maintenance Departments, University of Pennsylvania, to assist in any preparation of Murphy Field for arrival of helicopter (if necessary).

ATTACHMENT C (Continued)

THE NOTIFICATION PHASE (Continued)

Administration (Continued):

→Alert Public Relations, Plant Operations, Housekeeping and such departments as may become involved.

Surgery:

→Request surgeons and anesthesiologists to go to Emergency Room Conference Room for briefing;

→Assure that required equipment is ready for use.

Radiology:

→Assign staff member to go to Emergency Room to assist in preparation of area and to assist in radiological matters, including diagnostic X-rays.

Emergency Room Charge Nurse:

→Obtain notification that a radiation injured patient admission is impending and/or a patient arrives at the Emergency Room for treatment;

- 1) Obtain the necessary medical supplies and take to the Decontamination/Treatment Room;
- 2) Insure that a stretcher is brought to the REA and left outside the Buffer Zone. It will be used for patient exit;
- 3) Assign nurse to work in the REA;
 - a) At least one nurse in the Decontamination/Treatment Room.
 - b) One nurse in the Buffer Zone.
 - c) One nurse outside Buffer Zone.

Medicine:

→Assign a department representative to assist in the briefing at the Emergency Room Conference Room and be available for consultation and laboratory support (e.g., chromosome analysis).

ATTACHMENT C (Continued)

THE ARRIVAL PHASE

Security & Safety Departments, University of Pennsylvania

Helicopter Arrival: As soon as the helicopter lands, notify the Medical Director, HUP, secure the area around the helicopter, assist in movement of the patient to HUP; and hold the helicopter and crew until they have been cleared by a radiation survey.

Physician in Charge: The physician will don protective clothing and wait in the Decontamination/Treatment Room for the arrival of the patient. After the ambulance attendants have placed the patient on the decon table top, the physician in charge will ascertain the medical status of the patient. The Radiation Safety Officer and/or RMC will evaluate the radiation and contamination status of the patient, ambulance personnel and the ambulance. He will advise the physician on radiation safety precautions to be followed.

Ambulance Attendants and Litter Bearers: The ambulance attendants and litter bearers will return to the ambulance with their equipment and wait until they have been monitored. If contamination is found they will be instructed regarding decontamination and they will be re-surveyed prior to leaving the hospital.

Only persons and equipment necessary for patient care and treatment will be permitted in the Decontamination/Treatment Room.

NOTE: After the arrival of the contaminated patient, all persons or items leaving the Decontamination/Treatment Room will be monitored for radioactive contamination at the control point. Persons or items found to be contaminated will be decontaminated before leaving the REA. Should there be a number of patients, the Emergency Room hallway (see Diagram I) will be used as the triage area.

ATTACHMENT C (Continued)

THE ARRIVAL PHASE (Continued)

In this instance, the warning rope and stanchion will be moved to a position that will enclose the entire hallway area. Attending personnel will don protective clothing prior to entering the area.

ATTACHMENT C (Continued)

THE CLEAN-UP PHASE

After the patient has been moved from the Decontamination/Treatment Room to the main hospital, attending personnel will proceed with removal of protective apparel, personnel monitoring and decontamination in accordance with procedures given in Attachment E.

RMC will decontaminate equipment and facilities in the Decontamination/Treatment Room and will collect and dispose of non-salvageable items.

As soon as convenient, following clean-up activities, all personnel who are involved in the care or treatment of the patient will attend a post-accident conference. The conference will cover such subjects as:

- Medical review of the event;
- Operational review of the event;
- Exposures incurred by attending personnel;
- Requirement for bioassay of attendant personnel; and
- Recommendation for future handling of the radiation casualties.

Following the post-accident conference, RMC will submit a complete report of events to RECCHUP, regulatory authorities, and to the Medical Director or consultant of the company responsible for the accident.

ATTACHMENT D

EMERGENCY TREATMENT OF
RADIATION ACCIDENTS

ATTACHMENT D

EMERGENCY TREATMENT OF RADIATION ACCIDENTS

GENERAL

Emergency treatment of radiation accidents may have to be given before contact with or arrival of specialists having expertise in evaluation and management of these accidents. In this case the management of the patient should take place in the following order:

- Resuscitation and Stabilization
- Initial Decontamination
- Evaluation of Radiation Status
- Initial Treatment of Radiation Injury

RESUSCITATION AND STABILIZATION

Since radiation injury is not immediately life-threatening, primary attention should always be directed to traumatic life-threatening injuries -- maintenance of airway, arrest of bleeding, treatment of shock and control of pain.

DECONTAMINATION

Concomitantly with the procedure above, or as soon as possible, the patient should be decontaminated. In the initial decontamination

- Remove all clothing;
- Obtain samples of contamination (skin smears, tissue fluids, etc.);
- Survey with a G-M tube and note levels of contamination on Patient Status Record Sheet and on Patient Data Sheets. (See Attachment L.);
- Remove obvious dirt and debris; bathe, if necessary while protecting wounds;
- Repeat surveying and sampling as necessary;

ATTACHMENT D (Continued)

DECONTAMINATION (Continued)

- Flush wounds with copious amounts of sterile water and/or saline;
- Flush orifices with water or saline. Do not allow patient to swallow;
- Stop with initial decontamination when activity levels are measured in the few thousand counts/minute
- See Attachment E for details on decontamination and sample taking.

EVALUATION OF RADIATION EXPOSURE STATUS

History:

- When did the accident occur?
- Source of accident?
- Type of radioisotopes involved?
- How long was patient in accident environment? Where was he in relation to radiation source? Was there airborne contamination? Was the patient wearing breathing apparatus? Was there surface contamination? Any skin broken? Was source in contact with body? Was the patient wearing dosimeters?

Dose Evaluation: This will require the assistance of persons knowledgeable in radiation. This assistance can be by someone on location or by telephone. In any case, gather as much of the following information as possible:

- Dose rate (gamma, X-ray, neutrons, etc.) as measured by instruments in accident environment;
- Surface and air contamination in accident environment;
- Radiation exposure reading on patients' and others' dosimeters (TLD, film badge, "pencil" dosimeter);
- Level of residual contamination (beta, gamma) on patient using survey meter (mark areas on Patient Data Sheets -- See Attachment L.);
- Neutron exposure? Collect metal objects, hair or nails; and
- Calculation of dose to the patient and to attendants.

ATTACHMENT D (Continued)

Clinical Picture: A good estimation of the severity of the patient's external, total body exposure can be obtained by observing the following clinical symptoms and signs:

- Nausea and vomiting ... 100R*
 - Beginning within 2 hours — >400R
 - Beginning after 4 hours <200R
 - None within 24 hours < 75R
- Erythema ... >300R (total body); >600R (surface contact)
- Diarrhea ... >400R
- CNS symptoms ... >2000R to the head
- Serial lymphocyte count within 48 hours ...
 - 1200/mm³ good prognosis
 - 300-1200/mm³ guarded prognosis
 - 300/mm³ poor prognosis

*Roentgens, air exposure.

INITIAL TREATMENT OF RADIATION INJURY

Detailed Decontamination: It is particularly important at this stage to remove high level contamination caused by penetrating missiles or splinters in wounds.

Overexposure: Since overexposure to radiation results in a slowly unfolding course over a long period of time, there is little in the way of specific treatment in the initial stage of the disease. Treatment is symptomatic and consists of making the patient comfortable and allaying his fears. He may require antiemetics, fluids, sedatives and analgesics.

Order CBC with differential stat, at 4, 8 and 12 hours. Obtain blood sample (10 cc heparinized blood) for chromosome analysis. Keep sample chilled in ice water.

Internal Contamination: Except in a few instances, there is also little to offer in the way of specific treatment in the initial stages.

ATTACHMENT D (Continued)

INITIAL TREATMENT OF RADIATION INJURY (Continued)

Internal Contamination (Continued): Generally, specific treatment to eliminate any absorbed radioactivity requires rather detailed and complex analyses, including bioassay of excreta and blood, and whole body counting. Begin 24 hour urine collections and 72 hour fecal collections. Arrange for whole body count as soon as patient's condition warrants. Arrange for thyroid uptake study for I-131.

If it has been determined that an appreciable amount of radioactivity has been ingested (which is seldom the case), a stomach lavage, emetics ($ZnSO_4$) or cathartics (10% $MgSO_4$) may be indicated.

If it has been determined that the patient absorbed considerable amounts of ...

Tritium (3H)..... force fluids
Radioiodine give Lugol's solution or other thyroid-blocking agent immediately

PRINCIPLES OF RADIATION PROTECTION

Certain precautions to minimize exposure to attendants are necessary when dealing with a patient who has external contamination, specifically:

- Always wear surgical scrub suits, masks, caps and gloves;
- Use the radiation shield in unknown or high levels of patient contamination (greater than 5R/hour gamma radiation) when treating patient;
- As few attendants as necessary should be in the same room with patient;
- Only in the performance of emergency treatment and initial decontamination should attendants be next to patients. At all other times, e.g., while evaluating the patient, attendants should stand at least five to eight feet from the patient and observe him from a distance;
- Rope off and control the area in which the patient is being treated. ALL persons, equipment and supplies that enter this area MUST stay there until Radiation Emergency Teams arrive to assist in the monitoring and decontamination of people and equipment;

ATTACHMENT D (Continued)

PRINCIPLES OF RADIATION PROTECTION (Continued)

Suggested permissible levels of attendant exposure in the course of treating a patient are:

- to 5R routine treatment and decontamination
- to 25R emergency treatment and decontamination
- to 100R lifesaving treatment and decontamination

To estimate attendant exposure, pass the probe of the G-M survey meter with the beta window closed 6" above the patient. If the reading is 5R/hour, an estimate of attendant exposure would be 5R; treatment should take one hour, if performed without a shield. With a shield, the dose will be reduced by approximately 80%.

Experience shows that it is extremely unlikely that an accident would be so severe that an attendant would receive an exposure of even 5R. In high radiation fields personnel may be rotated in order to minimize the exposure to any single individual. It is also suggested that anticipated exposures over 5R should be on a voluntary basis.

INITIAL BIOASSAY SAMPLES

Each of the following bioassay samples should be obtained as soon as possible and labeled with name, date, time and type of specimen. Avoid cross-contamination of samples from external sources of contamination or from other samples.

→ Blood:

- (1) 10 cc for radiobioassay
- (2) 5 cc (heparinized) for chromosomes; keep samples chilled in a glass of ice;
- (3) 10 cc oxylated for hemogram and differential*
- (4) 10 cc for:
 - (a) chemistries;
 - (b) electrolytes

*differential - repeat t.i.d. for 3 days or more frequently if clinical condition warrants.

ATTACHMENT D (Continued)

INITIAL BIOASSAY SAMPLES (Continued)

- + Hair, nails, metals from neutron-exposed patient;
- + Urine:
 - (1) first urine;
 - (2) 24 hour urine for several succeeding days
- + Feces, total sample for several succeeding days;
- + Sputum;
- + Vomitus;
- + Tissue and tissue exudates (note location);
- + Irrigation fluids (note location); and
- + Filter paper or cotton smears of orifices, wounds, skin areas (note locations).

ATTACHMENT E

PROCEDURE FOR THE
USE OF PROTECTIVE CLOTHING AND DOSIMETERS

ATTACHMENT E

To prevent personnel from becoming contaminated with radioactive material, protective clothing essentially consisting of the same items normally used by surgeons in the operating room, i.e., a scrub suit, surgical gown, latex gloves and a surgical mask and cap, augmented by shoe covers and a vinyl apron will be issued at the Control Point. All work past the Control Point requires protective clothing, independent of the degree of contamination present on the patient or his clothing.

Each person entering the Decontamination/Treatment Room should don two (2) vinyl aprons. After gross decontamination is completed, the outer surgical gown, gloves and apron are removed. Wound care and decontamination will then be attended to.

Removal of Contaminated Protective Clothing

Upon completion of their activities in the Decontamination/Treatment Room, personnel will proceed to the rope between the Decontamination/Treatment Room and the Buffer Zone (Diagram I). They will remove their protective clothing and personnel dosimeter in the following order:

- (1) dosimeters;
- (2) tape (if any);
- (3) surgical gowns (turning them inside-out);
- (4) headwear;
- (5) mask;
- (6) footwear;
- (7) gloves.

ATTACHMENT E (Continued)

Clearance Procedures

After having removed protective apparel, each person who occupied the Treatment Area will be monitored by health physics technician or by the Control Point nurse.

If no contamination is found, personnel may proceed to the change area and put on their normal clothing. After a final check at the Control Point they will be cleared to enter the uncontrolled area.

If contamination is found they will remain in the Decontamination/Treatment Room and will be instructed to decontaminate themselves. A health physicist technician will guide them through the decontamination and re-survey them.

Use of Dosimeters

Dosimeters will be supplied at the Control Point to all personnel entering the Decontamination/Treatment Room.

Dosimeters are of three types:

1. Direct reading dosimeters ("pen-dosimeters") to monitor exposed dose on a continuing basis. These must be recharged to read "zero" before they are distributed to each attendee.
2. Badge dosimeters - to form a permanent record of exposure.
3. Ring dosimeters - to form a permanent record of finger exposure.

Dosimeters are to be worn in the following manner:

- At the neck line, clipped under the protective clothing;
- On the ring fingers of hands, under the gloves, with detecting element at palm surface.

Upon leaving the Decontamination/Treatment Room the wearer shall surrender his dosimeter to the Control Point attendant, who will record the reading and number of the pen dosimeter and retain the badge and ring dosimeters for later processing.

The Control Point attendant must assure that the records clearly show the serial number of each dosimeter and period of time worn by each individual who occupied the Decontamination/Treatment Room.

ATTACHMENT F

PROCEDURE FOR
PATIENT DECONTAMINATION AND SAMPLE TAKING

ATTACHMENT F

General

These procedures cover the use of the Decontamination and Sample Taking Kits. The kits provide all the necessary items for the decontamination of a radioactively contaminated patient and the collection of specimens of this contamination.

The collection of specimens is a prerequisite for a thorough evaluation of the medical and radiation status of the patient. It should be performed in conjunction with patient decontamination.

Attachment G provides a parts list for each of the two kits. There is also a parts list in each kit. Following use, the lists should be consulted for replenishment. The intended use of several of the items is indicated on the parts list.

Patient Decontamination Procedures

Principles

The objectives of decontamination are:

1. to prevent injury caused by the presence of radioactive substances on the body;
2. to prevent the spread of contamination over and into the patient; and
3. to protect attending personnel from becoming contaminated themselves or (in extreme cases) from being exposed to a source of radiation.

Although decontamination should be started as soon as possible, primary attention should be given to the alleviation of life-threatening conditions created by traumatic injury.

Decontamination is essentially the physical removal of radioactive dirt from the skin, wounds, or body orifices. Most decontaminants contain detergents

ATTACHMENT F (Continued)

Patient Decontamination Procedures (Continued)

or other chemical agents to facilitate this removal. Therefore most decontaminants are suitable for decontamination of the intact only, i.e., are not appropriate for wound cleansing or irrigation of body orifices.

Decontamination is performed in the following manner:

1. from the highest level of contamination to the lowest;
2. starting with the simplest procedure (e.g., soap and water) to more complicated procedures;
3. with due regard to contamination of wounds, body orifices, etc. (see below for specific guidelines).

Usually, the effect of decontamination is greatest in the earliest stages, i.e., most of the radioactive material is removed during the first decontamination effort. Continued decontamination may show diminishing effectiveness. At some point a decision has to be made to either accept some residual contamination, or proceed with the use of more potent decontaminants (more specific guidelines are seen below).

Steps to be Taken for Decontamination

In some cases decontamination may have been started before the patient arrives at Piersol Rehabilitation Suite. It can be expected that the residual contamination is minor and/or that serious contamination is localized, e.g., around and in a wound. Before decontamination, the following steps should be taken:

1. judge whether the patient's medical condition requires immediate intervention; stabilize wound, if necessary, and redress for later decontamination;
2. obtain a briefing from the radiation physicists as to the contamination status of the patient, the exposure of the patient, and as to the

ATTACHMENT F (Continued)

Steps to be Taken for Decontamination (Continued)

- specific measures to be taken by attending personnel with regard to their protection;
3. remove all clothing and monitor the patient with the radiation survey instrument by scanning the entire body (holding the probe about two inches from the skin), and record the findings on the Patient Data Sheets. Patient sampling should be done at this point - nasal swabs, skin swipes, hair, nails, blood samples, etc.;
 4. perform a gross decontamination (see Decontamination Procedures which follow);
 5. clean up room and remove outer garments from attendants;
 6. proceed with wound survey and decontamination;
 7. complete detailed decontamination of patient;
 8. transfer patient to "clean" area of hospital.

Decontamination Procedures

General

Two general rules apply to the performance of decontamination:

1. check the effectiveness of the technique applied by monitoring periodically; and
2. avoid the spread of radioactive materials from the area being decontaminated to areas of lesser contamination by covering the adjacent area.

Except when prohibitive degrees of contamination are present on/in any of the locations listed below, decontamination is performed in the following order:

1. high-level intact skin;
2. body orifices and adjacent skin;

ATTACHMENT F (Continued)

Decontamination Procedures (Continued)

3. wounds and adjacent skin;
4. low-level skin areas.

Decontamination of Skin

1. take smear sample of area (see "Sample Taking Techniques and Indications", page F7);
2. protect adjacent area if indicated by covering with towels;
3. cleanse skin area; wash thoroughly with Turco soap and tepid water, using either cotton balls, preop sponges or surgical brushes; cover area with a good lather; rinse off after two to three minutes with copious amounts of running water; monitor; record results.
4. if contamination persists, repeat step (3) once
5. if contamination still persists, try gentle application of clorox or hydrogen peroxide. NOTE: Avoid any of these entering wound or body openings. Repeat a few times using new cotton balls; remove decontaminants with water; monitor; record results.
6. after complete decontamination dry skin and apply Nivea cream to abraded or injured areas.
7. if residual contamination is present, consult with radiation specialists to decide whether further efforts are indicated; if it is decided to accept residual contamination, dry the skin and apply colloidon or Dermoplast, mark the area involved and record;
8. collect all materials used and place in separate labeled containers.

NOTES:

In case of serious contamination around a wound, rapid removal of the bulk of radioactivity can be obtained by shaving. In case of serious contamination of hair or under nails, clip nails, remove hair and scrub thoroughly and repeatedly with intermittent surveying.

ATTACHMENT F (Continued)

Decontamination of Body Orifices

1. take samples of activity in nostrils, ear canals, and other orifices as indicated (see "Sample Taking Techniques and Indications", page F7);
2. decontaminate area surrounding orifices;
3. gently clean orifices using wetted swabs;
4. if nose swab indicates significant radioactivity in nasal cavity, use nasal blows and nasal irrigation;
5. collect all materials used and label containers.

Decontamination of Wounds

1. use aperture drape to isolate the contaminated wound;
2. survey and take samples of wound (see "Procedures for Sample Taking, page F6);
3. decontaminate skin adjacent to wound;
4. depending on surface and depth of wound, irrigate wound with sterile saline, dab with gauze pads soaked in sterile saline to cleanse wound; collect all materials used and place in separate labeled containers;
5. remove obviously necrotic and devitalized tissue surgically; keep all tissue specimens removed;
6. repeatedly monitor wound; record result on patient record sheet;
7. if contamination persists, consult with RMC to determine further course of action;
8. if wound is clean, treat wound as necessary.

ATTACHMENT F (Continued)

Procedures for Sample Taking

Principles

The objectives of collecting specimens from a radioactively contaminated patient are as follows:

1. to evaluate the amount and composition of the radioactive contaminants on and in the body;
2. to obtain data with regard to the patient's exposure to external radiation; and
3. to supply information on the biological injury inflicted by the irradiation.

To meet these objectives, the following types of specimens are collected routinely:

1. materials containing the external contaminant (swabs, smears, tissue samples, contaminated cleansing fluids, etc.);
2. specimens containing internal contaminant (feces, urine, sputum, etc.);
3. in case of neutron irradiation...materials in which neutron induced radioactivity may be present (gold rings, buttons, hair, nail clippings); and
4. hematological specimens (whole blood in heparinized, oxalated, and uncoated tubes; blood smears).

As the analysis of radioactive samples with regard to their composition is only possible in samples with a relatively high radioactivity, care should be taken to collect and store these samples separately from the usually bulky samples with rather low radioactivity (such as cleansing fluids, drapes, towels, etc.).

ATTACHMENT F (Continued)

Procedures for Sample Taking (Continued)

A sample which is not identifiable as to its source (location, time taken) may be practically worthless; therefore, take care to properly collect, store, and mark all samples.

Sample Taking Techniques & Indications

External Contamination:

Before decontamination, the following samples shall be obtained:

1. Skin Smears: use Nucon smear pads, moisten with a few drops of water, and smear a skin area of about 100 cm² (4"x4"), if possible, by allowing sticky side of the smear to adhere to gloves and rubbing the smear pad over the surface to be sampled; place smear on record paper, record location and time and area smeared, if other than 100 cm² and place in envelope.
2. Take samples of nails, hair and collect metallic objects (rings, watches, glasses, belt buckles, etc.).
3. Wound Samples: use either one of the following methods:
 - for large wounds with visible blood or wound fluid -- obtain a few cc using an eye dropper or syringe; transfer to bottle and label;
 - for superficial wounds -- rub gently with cotton swab; return to tube and label;
 - for wounds with visible dirt or debris -- remove with cotton tip or use tweezers; transfer sample to small glass vial and label.

Internal Contamination

1. Body Orifices: wet Q-tip with a few drops of water; swab, and store in waterproof envelope and label.
2. In all cases where internal contamination is expected: collect urine and feces in containers supplied, and record time of voiding.

ATTACHMENT F (Continued)

Sample Taking Techniques & Indications (Continued)

External Exposure:

In all cases where a total body exposure is suspected:

1. obtain 10 cc of oxalated blood for complete blood count and differential;
2. obtain 10 cc of heparinized blood for chromosome analysis;
3. obtain 10 cc blood for electrolytes and chemistries.

Record time these samples were taken.

ATTACHMENT G

PARTS LIST FOR DECONTAMINATION AND SAMPLE TAKING KITS

ATTACHMENT G

DECONTAMINATION KIT

	<u>Quantity</u>
<u>Skin Decontamination</u>	260
Absorbent balls, extra large	1
Sponge-holding forceps	2
Plastic beaker, large	6
Preop Sponges	10
Surgical Scrub brushes	1
Wash bottle (for localized contamination)	1
<u>Decontaminants (Skin only)</u>	
Turco decon soap, bottle (for first decon effort; general)	1
Clorox, bottle (for second decon effort)	1
Hydrogen peroxide (H ₂ O ₂), bottle* (for third decon effort)	1
<u>Wound Cleansing</u>	50
Gauze pads, sterile	8 pair
Sterile Surgical Gloves, assorted sizes	1
Solution bowl, plastic	1
Syringe, 50 cc	100
Cotton-tipped applicators	1
Aperture Drape	

*shelf life - 3 years

ATTACHMENT G (Continued)

DECONTAMINATION KIT (Continued)

<u>Decontaminants (Wounds)</u>	<u>Quantity</u>
Saline solution, normal*, sterile bottle	1
Betadine Solution, Providone-Iodine, bottle	1
<u>Treatment Agents</u>	
Nivea cream, jar	1
Colloidin, bottle	1
Potassium Iodide*, bottle	1
<u>Miscellaneous Materials</u>	
Prep kit	1
Scissors, heavy duty, HARE paramedic	1
Patient Radiation & Medical Status Anatomical Diagrams	12
Plastic bags, assorted sizes (to hold decon materials after use)	8
Tissue paper, box	1
Notebook	1
Pencils	2
Finger-Nail Clippers	1

*shelf life = 2-3 years

ATTACHMENT G (Continued)

SAMPLE TAKING KIT
(for one patient)

<u>Sample Type</u>	<u>Sampling Instrument</u>	<u>Quantity</u>
Nasal	swabs	4
Aural	swabs	4
Oral	swabs	4
Skin Folds	swabs	4
Swipes	Nucon smear	25 slots
Hair	small container	4
Nails	small container	4
Metallic Objects	medium container/ plastic bags	2 small 2 large
Blood	10 cc vacutainers	2 heparinized (green) 1 oxalated (gray) 1 sterile (red)
Urine (24-hour)	2000 cc plastic container	1
Feces	fecal container	2
Wound Exudate	swabs eyedropper & bottle	4 2
Tissue	containers	2 small 2 medium
Vomit	fecal container	2
Irrigation fluids	100 cc plastic bottle	2

- (10) Envelopes
- (50) Labels
- (2) Pens.....(1) grease; (1) writing
- (1) Scissors
- (1) Tweezers
- (1) Clippers

ATTACHMENT H

RADIATION EMERGENCY
STORED SUPPLIES & EQUIPMENT

ATTACHMENT I

EARMARKED SUPPLIES & EQUIPMENT

ATTACHMENT I

EARMARKED SUPPLIES & EQUIPMENT

Earmarked supplies and equipment necessary for stabilization of the patient will be brought from the Emergency Room.

ATTACHMENT J

RADIATION EMERGENCY TELEPHONE DIRECTORY

ATTACHMENT J

RADIATION EMERGENCY TELEPHONE DIRECTORY

	<u>Office</u>	<u>Home</u>
<u>Hospital of the University of Pennsylvania</u>		
<u>Emergency Room</u>		
Main number	(215) 662-3920	
Sheldon Jacobson, M.D. (Chief)	(215) 662-6963	527-6199
Howard Henze (Administrator)	(215) 662-3903	543-2247
<u>Nursing Service</u>		
Main number	(215) 662-2604	
Nadine Landis, R.N.	(215) 662-2614	EV-6-3411
Mary Rieser, R.N.	(215) 662-2603	EV-6-2441
<u>Department of Radiology</u>		
Harold Goldstein, M.D.	(215) 662-3049	625-0271
Abass Alavi, M.D.	(215) 662-3069	642-0248
<u>Department of Surgery</u>		
Henry Berkowitz, M.D.	(215) 662-2028	MU-8-7662
<u>Department of Medicine</u>		
Richard Cooper, M.D.	(215) 662-3910	664-1284
<u>Department of Pathology</u>		
Peter Howell, M.D.	(215) 243-8061	LO-6-7243
	(215) 243-8066 (Lab)	
	(215) 662-2271	
<u>Administration</u>		
Administrator's Office	(215) 662-3957	
<u>Radiation Safety Office</u>		
John Thomas	(215) 243-7187	(215) 688-8646
	(215) 662-2677	
<u>Security Department, HUP</u>		
<u>Security, University of Pennsylvania</u>		
Helicopter Clearance (Campus police)	(215) 243-7297	
Safety Office	(215) 243-6921	
<u>Fire & Safety</u>		
Frank Esposito		(215) 533-7678

ATTACHMENT J (Continued)

RADIATION EMERGENCY TELEPHONE DIRECTORY

Radiation Management Corporation

Emergency Number (24 hours)
General Business Number

(215) 243-2990
(215) 243-2950

ATTACHMENT K

LOCATION OF MANUALS

ATTACHMENT K

LOCATION OF MANUALS

Radiation Management Corporation	Copy #1,2
James T. Brennan, M.D.	Copy #3
Robert N. Sawyer, M.D.	Copy #4
<u>Hospital of the University of Pennsylvania</u>	
Richard A. Cooper, M.D. (HUP Hematology)	Copy #5
Paula Levine (HUP Administration)	Copy #6
Peter C. Nowell, M.D. (HUP Pathology)	Copy #7
John Thomas (HUP R.S.O.)	Copy #8
Mary Rieser (HUP Nursing)	Copy #9
Nadine Landis (HUP Nursing)	Copy #10
Harold Goldstein (HUP Radiology)	Copy #11
Sheldon Jacobson, M.D. (HUP Emergency Services)	Copy #12
Gene Cayten, M.D. (HUP Surgery)	Copy #13
Emergency Room Area	Copy #14
Radiation Emergency Supply Cart	Copy #15
Department of Medicine	Copy #16
Department of Surgery	Copy #17
Department of Radiology	Copy #18
Department of Nursing	Copy #19
Radiation Safety Office, University of Pennsylvania	Copy #20

ATTACHMENT L

PERSONNEL DOSIMETRY LOG

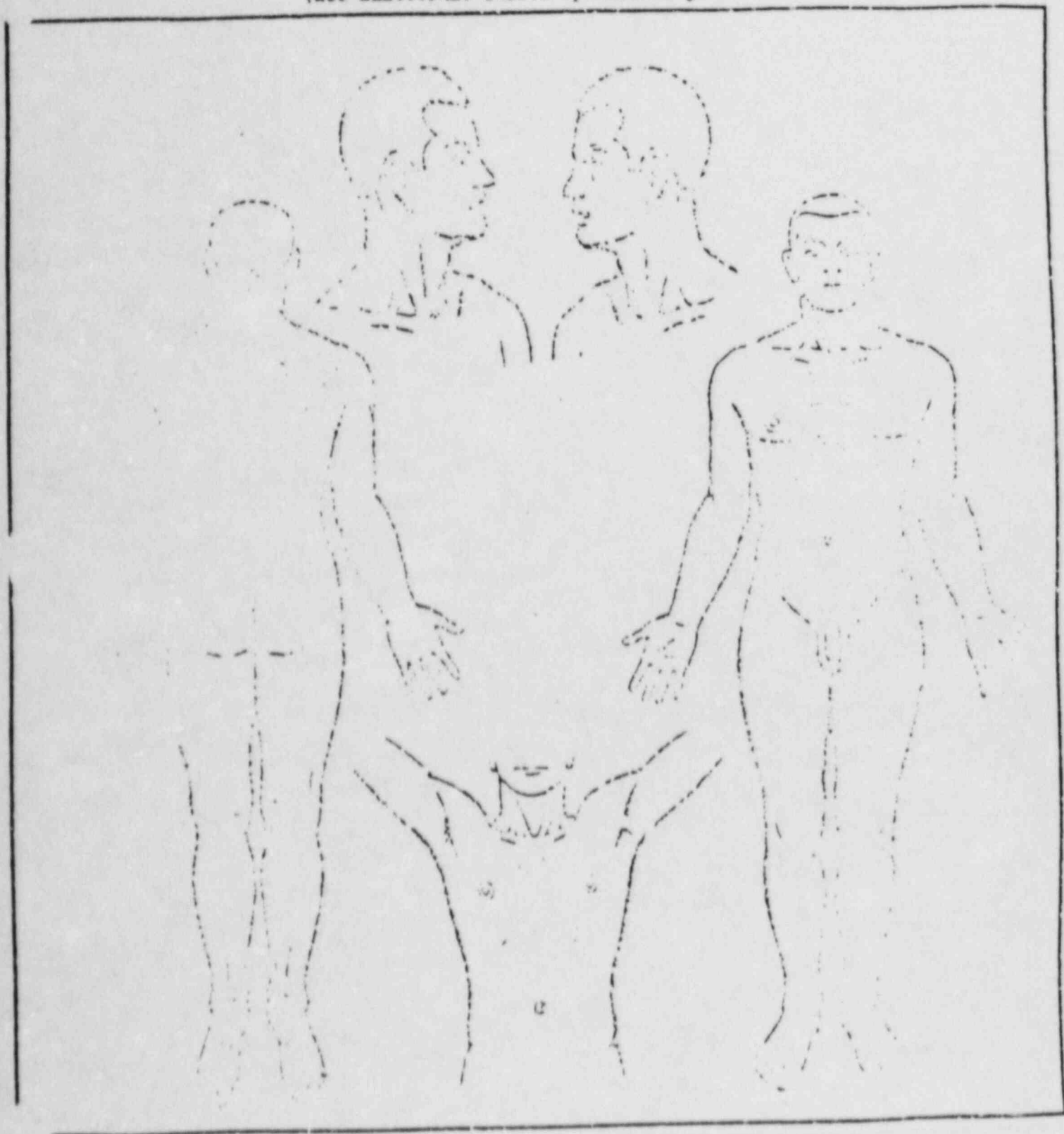
AND

PATIENT DATA SHEETS

INDICATE CONTAMINATED AREAS AS TO LOCATION, DEGREE OF CONTAMINATION,
DECON EFFORT

INDICATE LOCATION OF WOUNDS

(use additional sheets if necessary)



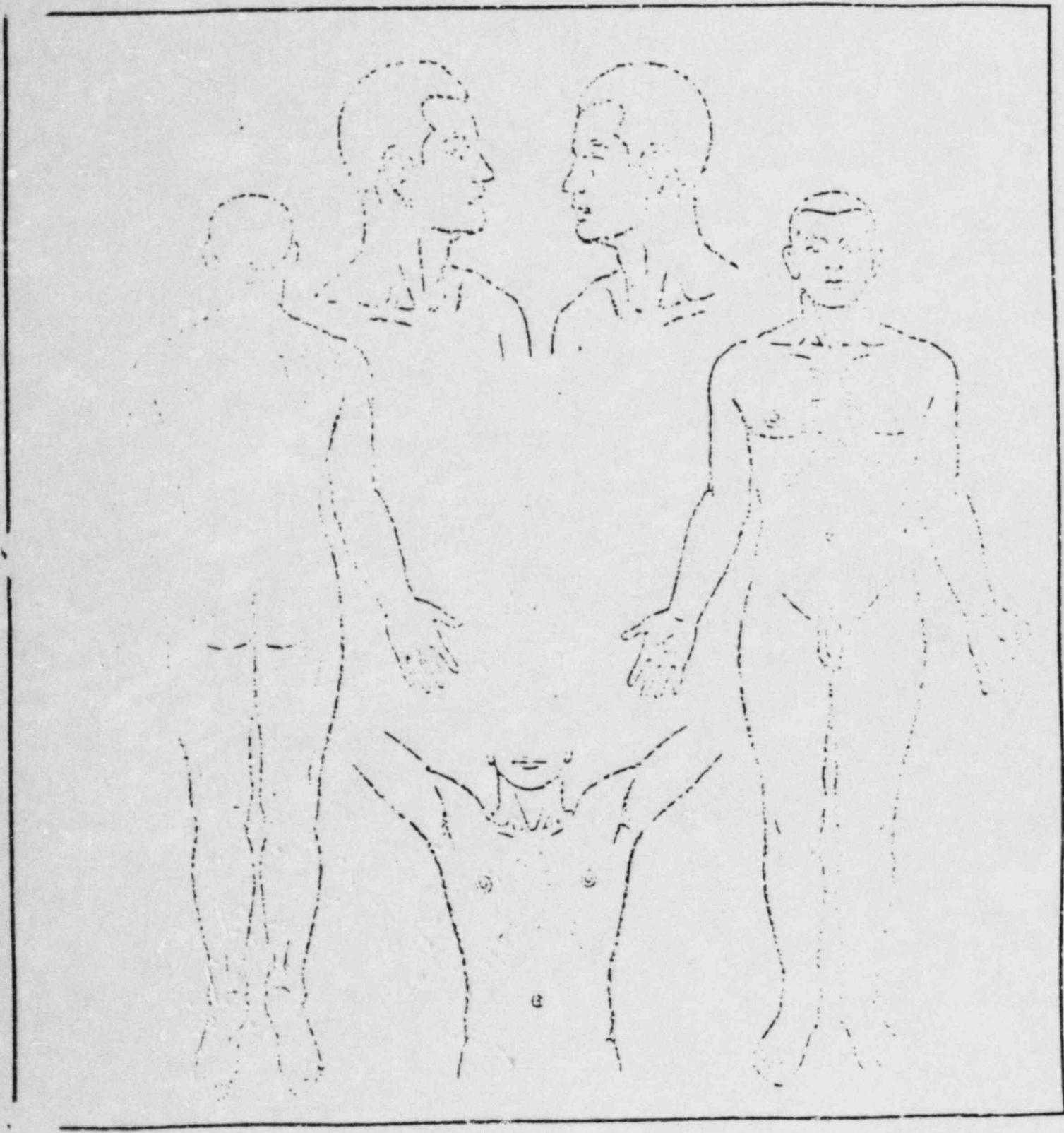
TYPE OF METER USED: _____
(Indicate model and number)

DISTANCE SKIN-TO-PROBE: _____ 1n.

INDICATE CONTAMINATED AREAS AS TO LOCATION, DEGREE OF CONTAMINATION,
DECON EFFORT

INDICATE LOCATION OF WOUNDS

(use additional sheets if necessary)



Annex I to Attachment J

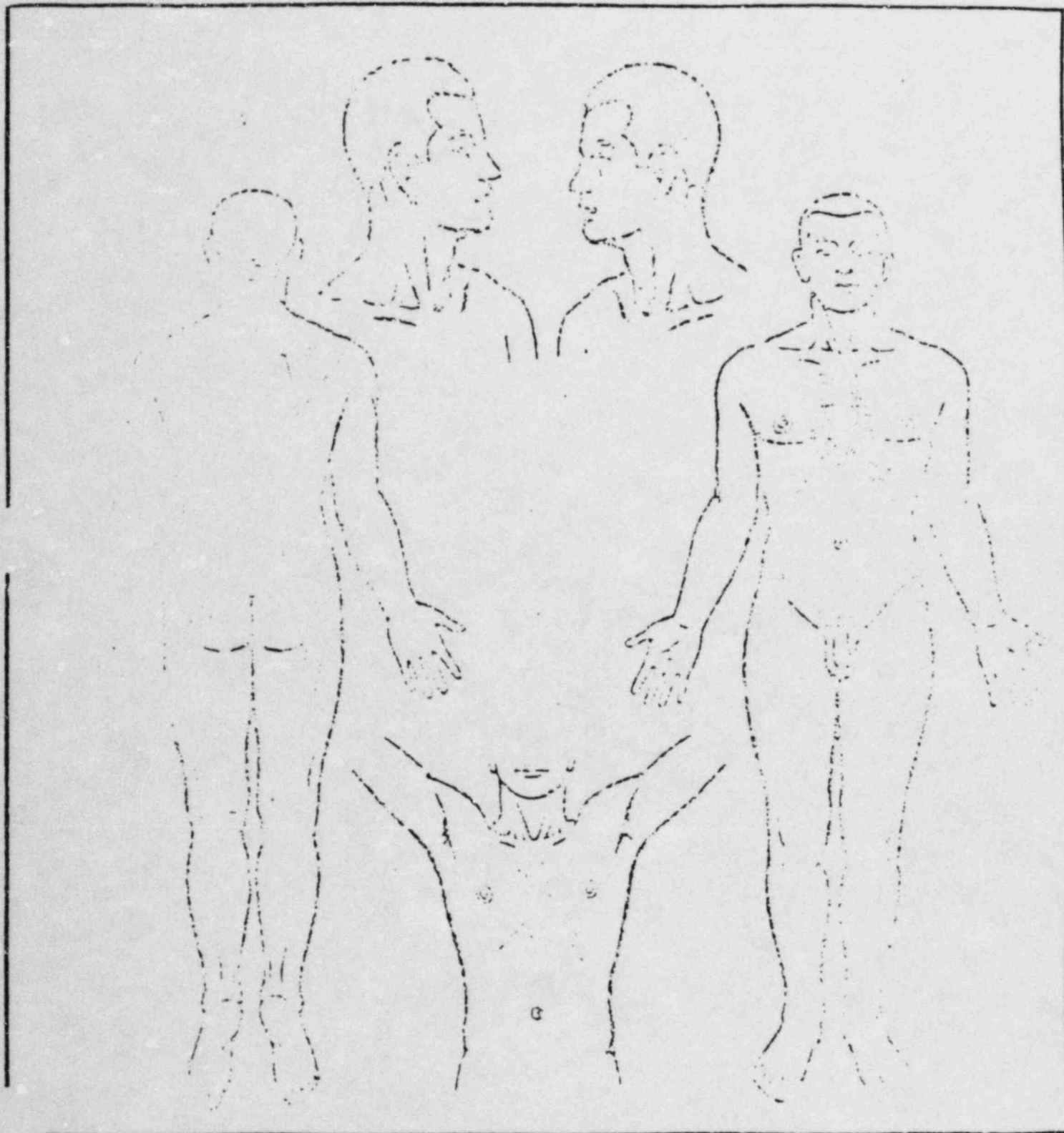
TYPE OF METER USED: _____
(Indicate model and number)

DISTANCE SKIN-to-PROBE: _____ in.

INDICATE CONTAMINATED AREAS AS TO LOCATION, DEGREE OF CONTAMINATION,
DECON EFFORT

INDICATE LOCATION OF WOUNDS

(use additional sheets if necessary)



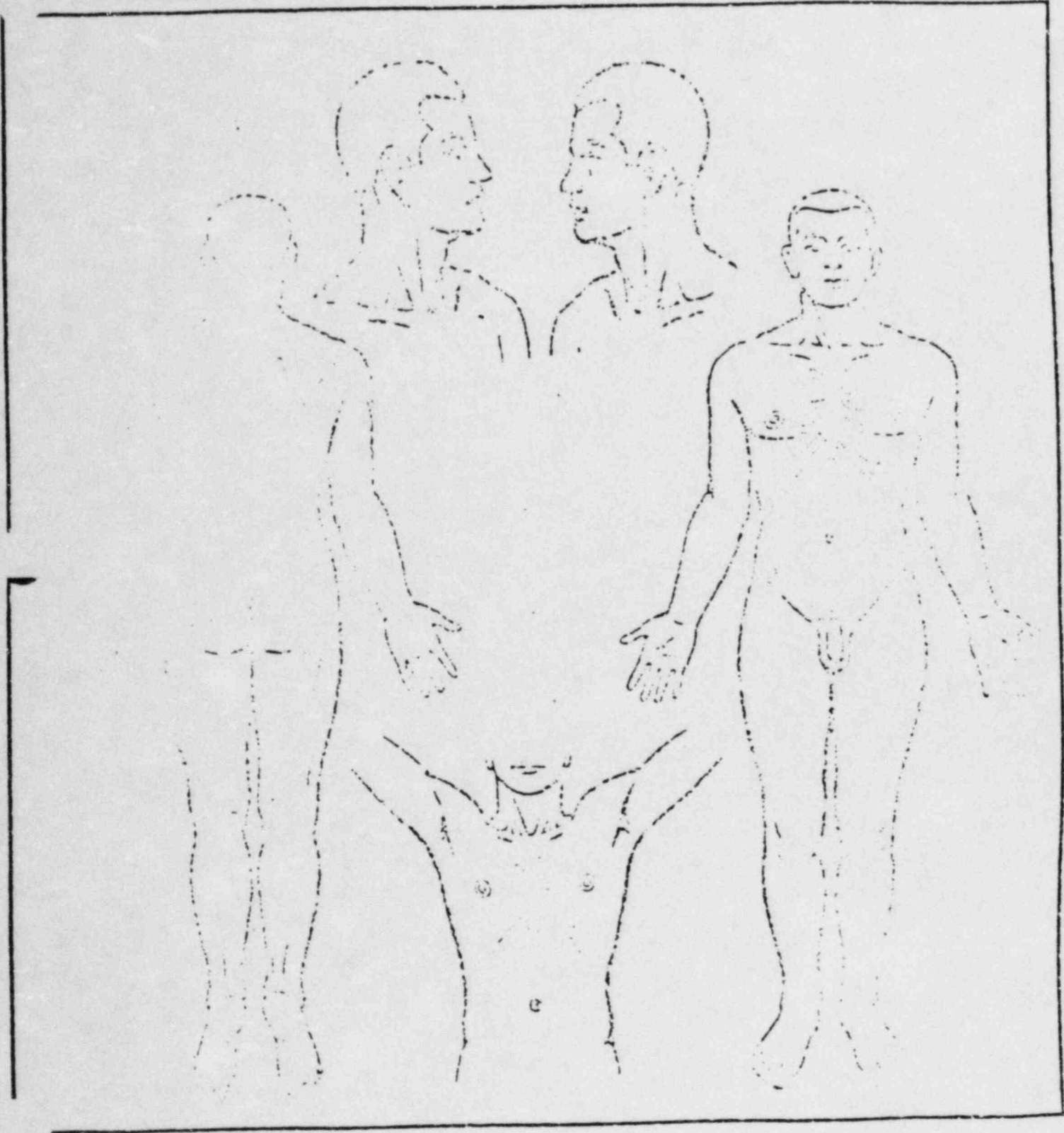
TYPE OF METER USED: _____
(Indicate model and number)

DISTANCE SKIN-to-PROBE: _____ in.
L-3

INDICATE CONTAMINATED AREAS AS TO LOCATION, DEGREE OF CONTAMINATION,
DECON EFFORT

INDICATE LOCATION OF WOUNDS

(use additional sheets if necessary)



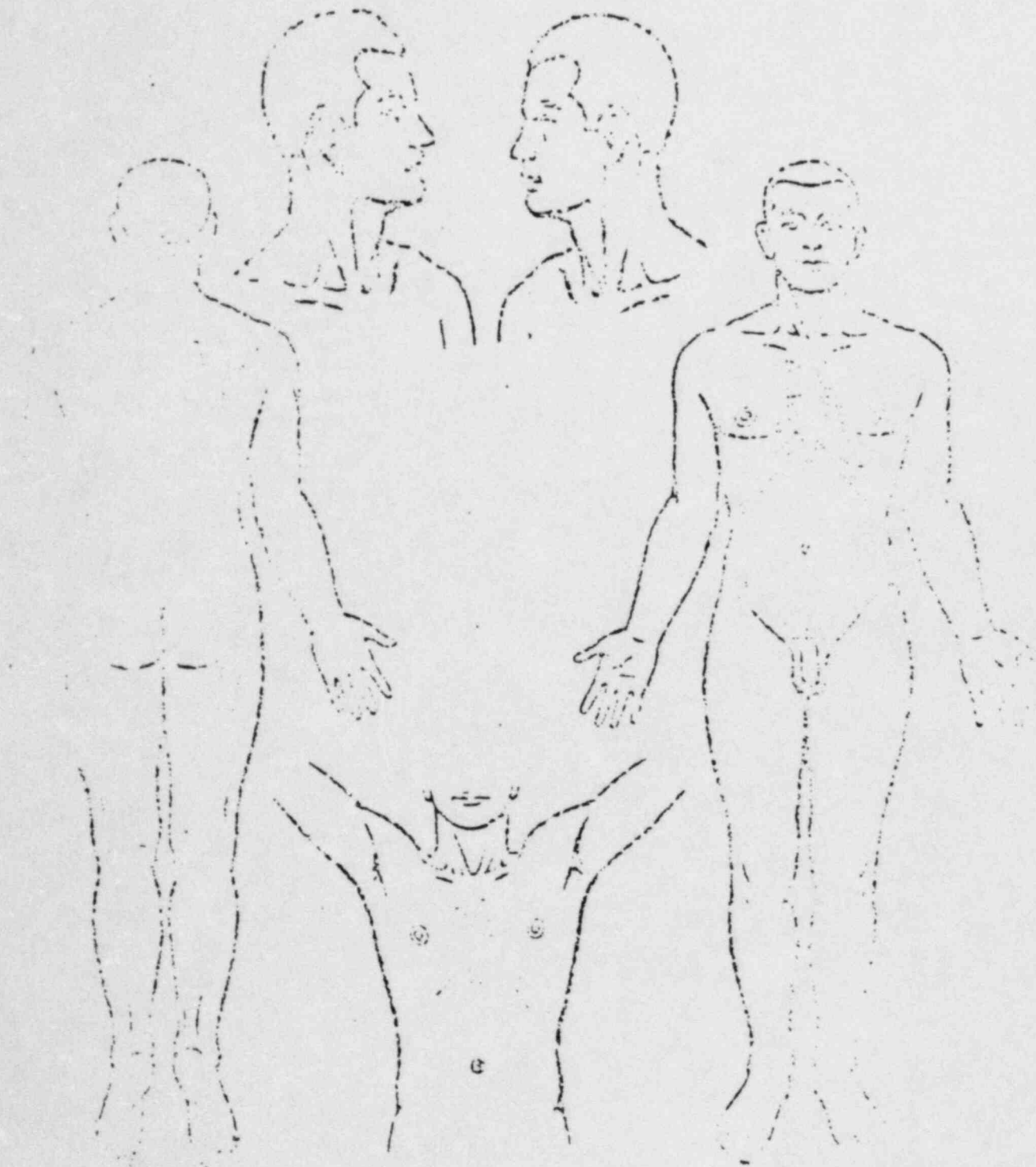
TYPE OF METER USED: _____
(Indicate model and number)

DISTANCE SKIN-to-PROBE: _____ in.

INDICATE CONTAMINATED AREAS AS TO LOCATION, DEGREE OF CONTAMINATION,
DECON EFFORT

INDICATE LOCATION OF WOUNDS

(use additional sheets if necessary)



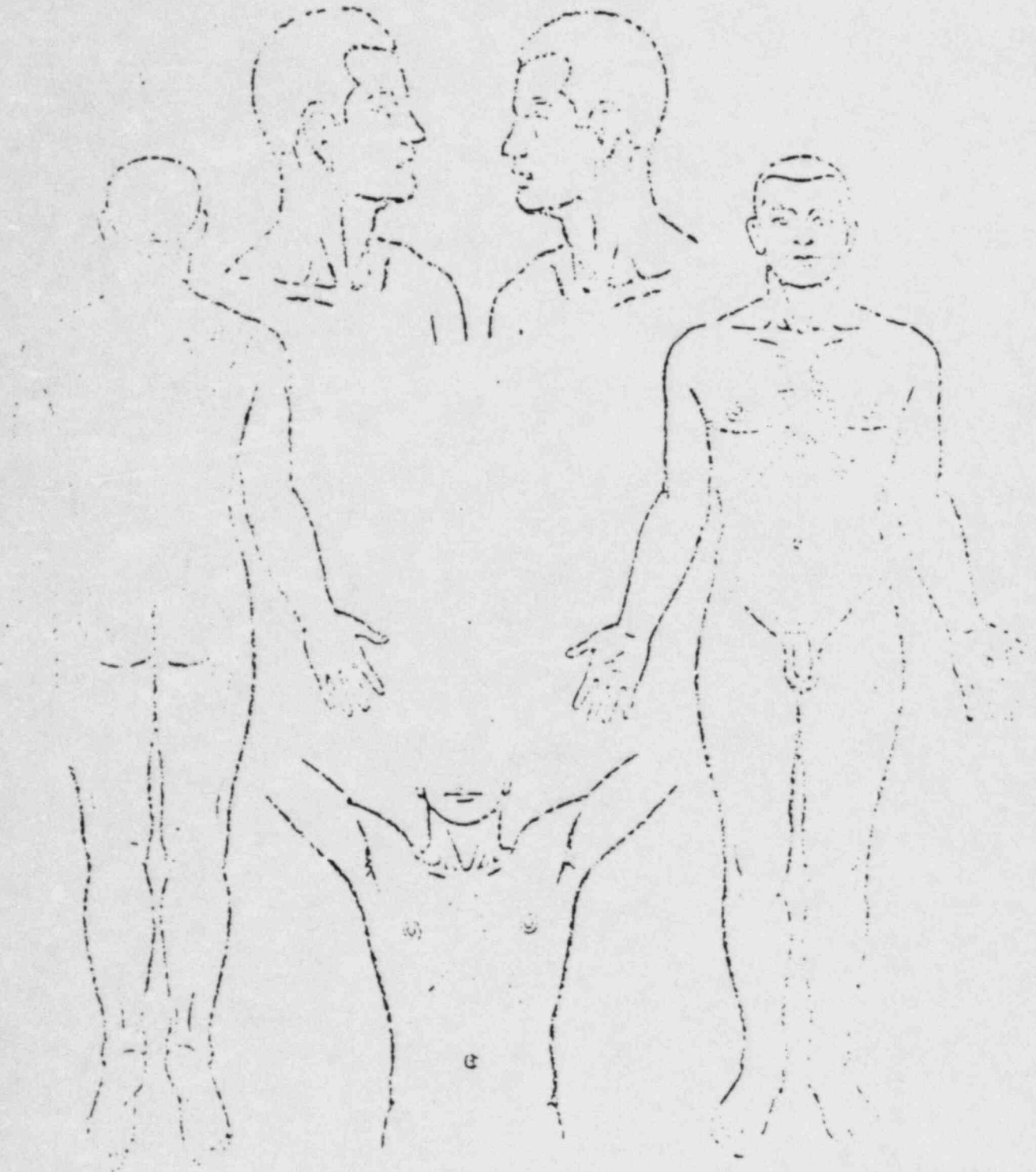
TYPE OF METER USED: _____
(Indicate model and number)

DISTANCE SKIN-TO-PROBE: _____ 1n.

INDICATE CONTAMINATED AREAS AS TO LOCATION, DEGREE OF CONTAMINATION,
DECON EFFORT

INDICATE LOCATION OF WOUNDS

(use additional sheets if necessary)



TYPE OF METER USED: _____
(Indicate model and number)

DISTANCE SKIN-to-PROBE: _____ in.

ATTACHMENT M

AUDIT REPORT