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THREE MILE ISLAND NUCLEAR STATION
STATION HEALTH PHYSICS PROCEDURE 1670.11
Volume 1 Emergency Plans and Procedures
ON-SITE MEDICAL EMERGENCY (INJURED AND CONTAMINATED)
Table of Effective Pages

Page	Date	Revision	Page	Date	Revision	Page	Date	Revision
1.0	1/16/78	0	26.0			51.0		
2.0	1/16/78	0	27.0			52.0		
3.0	1/16/78	0	28.0			53.0		
4.0	1/16/78	0	29.0			54.0		
5.0	1/16/78	0	30.0			55.0		
6.0	1/16/78	0	31.0			56.0		
7.0	1/16/78	0	32.0			57.0		
8.0	1/16/78	0	33.0			58.0		
9.0	1/16/78	0	34.0			59.0		
10.0	1/16/78	0	35.0			60.0		
11.0	1/16/78	0	36.0			61.0		
12.0			37.0			62.0		
13.0			38.0			63.0		
14.0			39.0			64.0		
15.0			40.0			65.0		
16.0			41.0			66.0		
17.0			42.0			67.0		
8.0			43.0			68.0		
9.0			44.0			69.0		
20.0			45.0			70.0		
21.0			46.0			71.0		
22.0			47.0			72.0		
23.0			48.0			73.0		
24.0			49.0			74.0		
25.0			50.0			75.0		

Unit 1 Staff Recommends Approval

Approval _____ Date _____
Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval _____ Date _____
Cognizant Dept. Head

Unit 1 PORC Recommends Approval

C F Hartman Date 1-16-78
Chairman of PORC

PORC comments of _____ included
(date)

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Unit 2 PORC Recommends Approval

J F Colvin Date 1-16-78
Chairman of PORC

PORC comments of _____ included
(date)

By _____ Date _____

Approval NA Date _____
Mgr., Operational
Quality Assurance

Approval G P Miller Date 1-16-78
Approval G F Trudle Date 1-16-78
Unit Superintendent

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THREE MILE ISLAND NUCLEAR STATION

STATION HEALTH PHYSICS PROCEDURE 1670.11

ON-SITE MEDICAL EMERGENCY (INJURED AND CONTAMINATED)

1.0 INTRODUCTION

1.1 The Medical Emergency Procedure provides for several levels of treatment beased on the severity of the injury and the degree of contamination involved.

1.2 The first level of assistance will be given on-site, in the controlled area if the patient has significant contamination, or in the First Aid Room outside the controlled area if there is no significant contamination, and if the injury allows transportation to this room. In these facilities, initial evaluation of the severity of the injury will be made by first aid and medical personnel, and emergency treatment started. In many cases, it may be possible to provide complete treatment at these locations.

1.3 Meanwhile, the degree of radiation exposure and/or contamination will be assessed by radiation safety personnel, and decontamination begun, if necessary. All injuries occurring in the controlled area will be considered as contaminated until monitored and cleared.

1.4 If the severity of the injury requires more extensive or prolonged treatment, the patient will be transported to the second level of assistance. For conventional injuries (i.e., nonradiation related), the patient will be transported to Harrisburg General Hospital. For radiation related injuries, the patient will be transported to the Milton S. Hershey Medical Center where special facilities for treatment of contaminated patients have been provided (further information in Paragraph 3.0).

1.5 When the level of radiation exposure (both external or internal) required specialized evaluation and treatment, the patient will be transported to the thrid level of assistance, i.e., to a medical center appropriately staffed and equipped to evaluate and treat the patient completely. The specific center to be chosen will be determined in consulatation between the Station Medical Consultant and the medical staff of Radiation Management Corporation. If no suitable arrangement in the vicinity of the plant can be found, the patient will be admitted to the radiation medicine facilities at the Hospital of the University of Pennsylvania, Philadelphia. Transportation to the definitive care facility will be arranged in consulatation with Radiation Management Corporation.

1.6 Transfer from any level of assistance to the next higher will be effected only after medical evaluation (unless the urgency of the patient's condition requires immediate action) and will be under the control of the Station Medical Consultant called upon for assistance on-site. In such decisions, consulation with the specialists of Radiation Management Corporation can be sought.

2.0 PLANT EMERGENCY MEDICAL PROCEDURES

2.1 The emergency medical procedures will vary depending on the severity of the injury, and on the presence or absence of significant contamination.

2.2 The following categories of emergencies are distinguished:

2.2.1 Conventional (i.e., non-radiation related) injuries

(a) minor

(b) medical

2.2.2 External contamination without injuries.

2.2.3 External contamination with injuries.

(a) minor

(b) medical

2.2.4 External exposure

(a) without external contamination and injury

(b) with external contamination and/or injury

2.2.5 Internal contamination

(a) without external contamination and injury

(b) with external contamination and injury

2.3 Definitions

In the context of these procedures, the following definitions will apply:

2.3.1 Minor injury is an injury that at the time of the incident, does not require professional services beyond treatment of a "first aid" nature.

2.3.2 Medical injuries are those that require prompt first aid and subsequent medical care.

2.3.3 Contamination: The presence of radioactive materials in amounts exceeding 1000 dpm/100 cm^2 Beta Gamma and/or 100 dpm/100 cm^2 Alpha.

2.3.4 External exposure: Exposure by a radiation source which is not in continuous contact with the body.

2.3.5 External contamination: Contamination on the skin and/or clothing;

2.3.6 Internal contamination: The presence of radioactive materials within the body as a result of inhalation, ingestion, or contamination of wounds.

2.3.7 Station Medical Consultant: as listed 1670.14.

2.4 General Policies

2.4.1 In case of critical injuries, first attention shall be given to lifesaving measures; decontamination is of secondary concern.

2.4.2 All injuries occurring in the controlled area will be managed as if contaminated, until monitored and cleared by radiation protection personnel.

2.4.3 All injuries shall be immediately reported to the immediate supervisor of the injured or in his absence to the Shift Supervisor/Foreman, by the injured employee or by the first person aware that an accident has occurred. If the injury occurs in the controlled area, radiation protection personnel and the Shift Supervisor/Foreman shall also be notified.

2.4.4 In all cases where exposure above maximum permissible levels has occurred, Radiation Management Corporation should be kept informed of the actions taken, or be consulted as to the best course of action.

2.5 Specific Procedures

2.5.1 Conventional (non-radiation related) injuries

2.5.1.1 Minor injuries shall obtain first aid, either locally, using first aid kits located in the plant, or in the First Aid Room. If there is any doubt as to the desirability of medical followup, the Cognizant Supervisor may consult with the TMI Safety Representative to obtain guidance. (See Emergency Telephone List, 1670.14).

2.5.1.2 Medical Injuries

Upon notification, the Cognizant Supervisor shall send a first aid man to the site of the accident, and arrange transportation to the First Aid Room if the patient's condition allows such transportation. He shall notify the Station Medical Consultant and/or the TMI Safety Representative as to the desirability of on-site medical aid and obtain ambulance assistance for transportation to Harrisubrg General Hospital. He shall notify this hospital of the impending arrival of the patient, specifically stating that no radiation injury or contamination has occurred.

2.5.2 External Contamination Without Injuries

2.5.2.1 (Radiation Protection Supervisor describes decontamination procedures as applicable)

2.5.2.2 If it appears possible that internal contamination has occurred, Radiation Protection Supervisor/Foreman will decide whether consulation, to obtain guidance as to the further evaluation of the internal radiation status, is necessary.

2.5.3 External Contamination with Injuries

2.5.3.1 Minor injuries shall be managed as if contaminated until monitored and cleared by Radiation Protection. If possible, wounds which are likely to be contaminated shall be flushed with copious amounts of water. If surveys indicate that wound decontamination has been ineffective, on-site assistance by the TMI Safety Representative and/or Radiation Protection Supervisor shall be sought, and if necessary, further guidance from Radiation Management Corporation obtained to determine the further course of action.

2.5.3.2 Medical Injuries

Upon notification, the Cognizant Supervisor shall secure the aid of first aid personnel, and immediately notify the Station Medical Consultant for on-site assistance, if necessary. If at all possible, the patient shall be brought to the Controlled Area First Aid Station for first aid and decontamination, and possible emergency treatment by the Station Medical Consultant. Ambulance assistance shall be acquired for transportation to Milton S. Hershey Medical Center. (See Emergency Telephone List, 1670.14).

The Station Medical Consultant shall evaluate the severity of the injury, perform initial treatment and wound decontamination (if indicated), and determine, in consulation with the Radiation Protection Supervisor/Foreman, the degree and significance of the residual contamination. If deemed necessary, he will consult with Radiation Management Corporation as to the further course of action. If possible, the patient shall be completely decontaminated before being transported to Milton S. Hershey Medical Center. If this is not possible because of an urgent need for hospital treatment, radiation protection personnel will ensure that ambulance attendants are properly protected, and accompany the patient to the hospital. The Shift Supervisor shall alert/notify the hospital of the possible/ impending referral of a contaminated patient (see paragraph 3.3).

2.5.4 External Exposure

2.5.4.1 External exposure without external contamination and without injury. Upon notification, the Shift Supervisor shall have the

patient transported to the Controlled Area First Aid Station and acquire as much information as possible to arrive at an estimate of the dose received by the patient. If it appears that the dose received was more than 25 rem to a substantial part of the body, or more than 250 rem locally, he should notify Radiation Management Corporation, and the Station Medical Consultant as to the further actions to be taken. If the dose received is likely to be below 25/250 rem, but above the maximum permissible dose as defined in 10CFR20, the further course of action may be determined in consultation with Radiation Managment Corporation. No immediate action is necessary.

2.5.4.2 External exposure with external contamination and/or injury shall be handled in the following order of priority:

a. first aid to medical injury
b. decontamination
c. evaluation of external exposure
d. Consulatation with the Station Medical Consultant shall be sought if necessary.

2.5.5 Internal Contamination

2.5.5.1 Internal contamination without external contamination and/or injury. Internal contamination resulting from inhalation or injestion shall be evaluated by the Radiation Protection Supervisor/ Foreman. If it appears that personnel involved are exposed to higher concentrations than the applicable MPC's as listed in 10CFR20, the Radiation Protection Supervisor/Foreman shall determine - if deemed necessary, in consulatation with

Radiation Managment Corportation - whether invivo counting, bioassay of excreta, and/or medical treatment is indicated.

2.5.5.2 Internal contamination with external contamination and/or injury shall be handled in accordance with paragraph (2.5.2), (2.5.3), and/or (2.5.5.1) above.

3.0 MILTON S. HERSHEY MEDICAL CENTER

3.1 Milton S. Hershey Medical Center has agreed to accept contaminated patients for emergency medical and surgical treatment, and for subsequent observation and/or treatment if the capabilities of this hospital allow such subsequent care.

3.2 In order to handle contaminated patients safely, without disrupting other hospital operations, Milton S. Hershey Medical Center will convert an emergency room and adjacent area to a Radiation Emergency Area. Procedures for this conversion, and for the implementation of the hospital radiation emergency plan, have been prepared and are known to all hospital personnel involved in the handling of a radiation accident victim.

3.3 The Hospital Radiation Emergency Plan provides for two stages of involvement:

a. an alerting stage, initiated by the plant Shift Supervisor in case of a possible referral to the hospital;

b. a notification stage, initiated by the plant Shift Supervisor or the Station Medical Consultant in case a contaminated patient(s) will actually be transferred to the hospital.

3.4 All communications with the hospital concerning the possible or actual referral of a patient from the plant to the hospital shall be directed to the Nursing Supervisor, Emergency Room, will then

alert or notify the other key personnel involved, in order to implement the hospital Radiation Emergency Procedures.

3.5 The patient shall be admitted to the hospital via Emergency entrance. No other entrances shall be used.

3.6 The Radiation protection personnel who accompanies the patient will coordinate the radiation safety measures in the Radiation Emergency Area, in consultation with the radiation safety officer of the hospital, until he is relieved by another health physicist of Radiation Management Corporation or another company health physicist.

3.7 The ambulance or company vehicle, and their occupants, who brought the patient to the hospital will remain at the Emergency entrance until released.

4.0 RADIATION MANAGEMENT CORPORATION

4.1 Arrangements have been made with Radiation Management Corporation for medical assistance and consultation in the event of radiation emergencies.

4.2 RMC has avilable, on a round-the-clock basis, a Radiation Emergency Medical Team (REM-Team) consists of an experienced physician, health physicist and technician, and has portable medical and health physics equipment to conduct the initial evaluation of patients and the radiation environment.

4.3 Radiation Management Corporation maintains, in conjunction with the Hospital of the University of Pennsylvania, complete facilities for the definitive evaluation and treatment of all types of radiation accident patients. These facilities include:

4.3.1 Medical treatment facilities at the Hospital of the University of Pennsylvania, Philadelphia, which have available:

a. Physicians, nurses, and auxiliary medical personnel trained in the care of radiation accident victims;

b. A Radiosurgery Decontamination Sutie to perform major surgery on radioactively contaminated patients while protecting attendants from unnecessary exposure to radiation;

c. A Radiation Exposure Treatment Suite for the treatment of a severly overexposed patient. This capability includes reverse isolation, bone marrow transplantation, and white blood cell transfusion, in addition to the various medical specialities available in a large medical center.

4.3.2 Evaluation laboratory facilities, located in the University City Science Center, Philadelphia, have the following capabilities:

a. Film and TLD - evaluation

b. Radiobioassay of excreta and tissue samples

c. Whole Body Counting (mobile)

d. Chromosome analysis

e. Phantom mock-up

f. Neutron activiation analysis

5.0 TRANSPORATION PLAN

5.1 Transportation of a casualty from Three Mile Island Nuclear Station to Milton S. Hershey Medical Center or Harrisburg General Hospital may be arranged by Station vehicle or by utilizing the services of Londonderry, Bainbridge, or Middletown Township Ambulance Service (see 1670.14). Members of these squads are indoctrinated in the procedures to follow in handling radiation contaminated patients and are periodically retrained in the procedures. The vehicles are well equipped with the standard emergency supplies and equipment,

but special protective coverings and shielding for this purpose are available in the Controlled Area First Aid Station. All vehicles used for this purpose will not be released for further service until monitored and cleared.

5.2 Transportation of the patient to a facility for specialized treatment may be by highway vehicle or by aircraft. If the former is used, the plan as outlined in Section 5.1 will be followed. If an aircraft is desired, this can be arranged through Radiation Management Corporation.