Mar. 07, 2003

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132 - 132 - OSC COORDINATOR: EMERGENCY PLAN-POSITION SPECIFIC PROCEDURE

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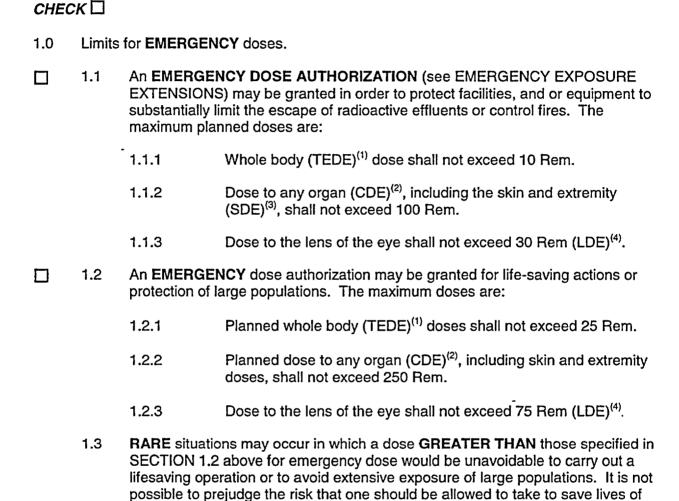
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NOTE:

EMERGENCY EXPOSURE EXTENSION REQUEST FORM and POTASSIUM IODIDE TRACKING FORM can be found in the TAB Listing at the front of the procedure.

## PROTECTIVE ACTION RECOMMENDATION (PAR) GUIDE



The sum of the Effective Dose Equivalent resulting from the exposure to external sources and the committed effective Dose Equivalent incurred from all significant inhalation pathways during the early phase.

others, therefore no upper limit has been established.

- The Committed Dose Equivalent to the thyroid from radioiodine.
- (3) Shallow Dose Equivalent.
- (4) Lens Dose Equivalent.

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CHECK	

2.0 For any **EMERGENCY EXPOSURE OR ACCIDENTAL OVEREXPOSURE**, the assessment actions in step 2 of the EMERGENCY EXPOSURE EXTENSIONS must be performed.

#### 3.0 PROTECTIVE ACTIONS

- ☐ 3.1 Potassium Iodide
  - 3.1.1 For emergency workers entering areas where a committed dose equivalent, (CDE)<sup>(2)</sup>, to the thyroid from radioiodine could be 25 Rem or greater, the **Consulting Radiological Physician** should provide input concerning the administration and cessation of KI intake. (See Emergency Telephone Directory for telephone number.)
  - 3.1.2 For thyroid exposures that are strongly expected to exceed 25 Rem, (CDE)<sup>(2)</sup>, KI doses of 130 mg (100 mg iodine) per day should be administered.

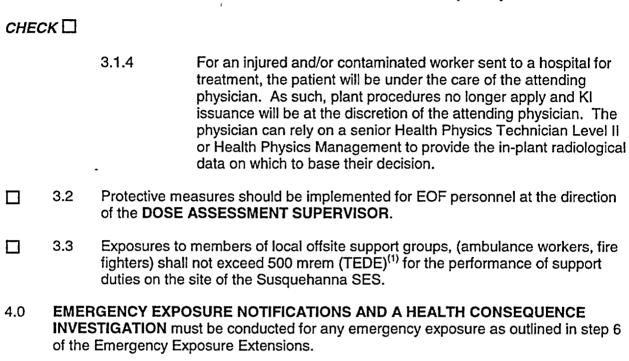
Unless the EMERGENCY DIRECTOR or RECOVERY MANAGER instructs personnel to do otherwise, the Ki tablets should generally be taken <u>as soon as possible</u> after thyroid exposure exceeding 25 Rem (CDE)<sup>(2)</sup> is projected.

NOTE:

Stable lodine (KI) is most effective when administered immediately prior to exposure to radioiodine. Significant blockage of the thyroid dose can be provided by administration within one or two hours after uptake of radioiodine.

Onsite issuance of KI for iodine prophylaxis requires the approval of the EMERGENCY DIRECTOR. Issuance to EOF and FIELD EMERGENCY MONITORING/SAMPLING TEAM personnel requires the approval of the RECOVERY MANAGER when the EOF has relieved the TSC of emergency management activities. The EMERGENCY DIRECTOR will approve issuance prior to that time. These approvals must be documented on the POTASSIUM IODIDE (KI) TRACKING FORM.

The Committed Dose Equivalent to the thyroid from radioiodine.



The sum of the Effective Dose Equivalent resulting from the exposure to external sources and the committed effective Dose Equivalent incurred from all significant inhalation pathways during the early phase.

## **EMERGENCY EXPOSURE EXTENSIONS**

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1.	Fill out the attached EMERGENCY EXPOSURE EXTENSION REQUEST Form.				
2.	. Review the following factors:				
		Rescue personnel should be volunteers or professional rescuers.			
		Other considerations being equal (e.g., skill, potential need for person on another mission) personnel above the age of 45 are preferred.			
		Rescue personnel should be familiar and briefed with the consequences of exposure.			
		Women capable of reproduction should not take part in an effort requiring EMERGENCY exposure.			
		Use of personnel with high lifetime cumulative exposure should be discouraged.			
		All reasonable measures must be taken to control contamination and internal exposure.			
		Exposure under these conditions shall be limited to once in a lifetime.			
		For exposures greater than 25 Rem whole body (TEDE), the persons undertaking any emergency operation in which the dose will exceed 25 Rem to the whole body (TEDE) should do so only on a voluntary basis and with full awareness of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects. See the following two tables for general information concerning Health Effects & Cancer Risks.			

### **EMERGENCY EXPOSURE EXTENSIONS**

### CHECK

Health Effects Associated with Whole Body Absorbed Doses Received Within a Few Hours (a)

Whole Body Absorbed Dose (rad)	Early Fatalities <sup>(b)</sup> (percent)	Whole Body Absorbed Dose (rad)	Prodromal Effects <sup>(c)</sup> (percent affected)
140	5	50	2
200	15	100	15
300	50	150	50
400	85	200	85
460	95	250	98

(a) Risks will be lower for protracted exposure periods.

(b) Supportive medical treatment may increase the dose at which these frequencies occur by approximately 50 percent.

(c) Symptoms (nausea, vomiting) which occur within a few hours after exposure to large doses of radiation and which usually precede more serious health effects.

Approximate Cancer Risk to Average Individuals from 25 Rem Effective Dose Equivalent Delivered Promptly

Age at Exposure (years)	Approximate Risk of Premature Death (deaths per 1,000 persons exposed)	Average Years of Life Lost if Premature Death Occurs (years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

- 3. Review the **HEALTH PHYSICS AND ALARA CONSIDERATIONS DURING EMERGENCIES** which is attached.
- 4. Obtain appropriate approval signatures as outlined in the table below.

EXTE	NSION		
FROM mrem (TEDE)	TO mrem (TEDE)	APPROVAL	ACTIONS
4000	<25000	ED and RPC/RM and DASU	ALARA REVIEW AND APPLY EMERGENCY EXPOSURE CONSIDERATIONS
>25000		ED and RPC/RM and DASU	ALL OF ABOVE AND BRIEFING ON RISKS

## **EMERGENCY EXPOSURE EXTENSIONS**

CHEC	κ□			
5.	sign th	the Emergency Dose Extension is for greater that 4 Rem (TEDE), have the volunteer in the EMERGENCY EXPOSURE REQUEST Form acknowledging that they are a unteer and are fully aware of the radiological risks of acute and delayed effects.		
6.	Upon o	on completion of the activity requiring the Emergency Exposure perform the follo		
		Collect approp	, process, and evaluate personnel dosimetry devices when technically oriate.	
		Investi receive	gate the circumstances of all emergency exposures and confirm the dose	
		Notify t	the NRC of emergency exposure as follows:	
		Immediate notification of the NRC is required for:		
		a. b. c.	Exposure of the whole body of greater than 25 Rem (TEDE); or Exposure of the skin of the whole body of greater than 150 Rem (SDE); or Exposure of the extremities of greater than 375 Rem (SDE).	
		Notification of the NRC within 24 hours is required for:		
		a. b. c.	Exposure of the whole body of greater than 5 Rem (TEDE); or Exposure of the skin of the whole body of greater than 30 Rem (SDE); or Exposure of the extremities of greater than 75 Rem (SDE).	
		physic	s the health consequences of all emergency exposures. Consult with a ian to determine the need for and extent of physical and biochemical nations.	
			body greater than 25 Rem (TEDE) should result in an examination of the ed person by a physician.	
			nal exposure is suspected, quantitative measurements should be made liately. Bioassays are required based on the following:	
		•	Nasal smear or facial contamination greater than 1,000 cpm above background.	
		•	Greater than 4 DAC-HRS in a day or less, or 20 DAC-HRS in a week or	

## HEALTH PHYSICS AND ALARA CONSIDERATIONS DURING EMERGENCIES

## CHECK 🗆

- 1.0 Evaluate radiological conditions.
  - 1.1 Obtain detailed survey data to ascertain:

	1.1.1	Beta-Gamma radiation levels
	1.1.2	Need for neutron measurements
	1.1.3	Contamination levels and protective clothing requirements
	1.1.4	Airborne radioactive materials
	1.1.5	Variability of conditions over space and time
1.2	sonnel status.	
	1.2.1	Determine available dose under normal administrative dose objectives.
	1.2.2	If essential, obtain approval from RADIATION PROTECTION COORDINATOR/EMERGENCY DIRECTOR for persons expected to exceed administrative objectives.
	1.2.3	Follow criteria in PPL Emergency Personnel Dose Assessment and Protective Action Recommendation Guide when emergency exposures are deemed appropriate by <b>EMERGENCY DIRECTOR</b> .
	1.2.4	Assess individual's history of exposure to airborne materials.

Assess individual's skills in relation to proposed task.

Assess individual's lifetime exposure history.

1.2.5

1.2.6

## HEALTH PHYSICS AND ALARA CONSIDERATIONS DURING EMERGENCIES

### CHECK [

- 1.3 Determine proper type and placement of dosimeters.
  - 1.3.1 Evaluate need for additional whole body dosimeters.

NOTE: For emergency exposures above 4 rem, the

placement of several dosimeters on an individual is recommended to determine spatial

distribution of dose to the individual.

1.3.2 Evaluate need and placement of extremity dosimeters.

1.3.3 Evaluate need for additional dosimetry devices such as high range self-reading dosimeters, electronic dosimeters, and neutron dosimeters.

- 1.3.4 Evaluate need for time keeping.
- 1.4 Determine proper respirator equipment required to perform task.

NOTE: For tasks expected to last more than several hours, consider need for relief of team members.

1.5 Review the following ALARA items:

NOTE: The detail and scope of ALARA reviews are to be commensurate with the magnitude of doses expected, numbers of people involved, and urgency of required task.

- 1.5.1 Consider the trend of exposures vs. the importance of the task:
  - a. Important and critical task with rising exposure rates will require the dispatch of teams as quickly as possible to reduce exposures.
  - b. Unimportant or less critical task could be delayed until exposure rates begin to trend downward.

## HEALTH PHYSICS AND ALARA CONSIDERATIONS DURING EMERGENCIES

### CHECK

- 1.5.2 When time permits the following should be included in the ALARA review:
  - a. Consider the use of remote handling devices or other special tools.
  - b. Consider the use of portable shielding.
  - c. Consider the need for mock-ups or other practice exercises.
  - d. Assess the number of people required to assure all have essential productive roles.
  - e. Consider the magnitude of doses received by team members in transit to work location.