



Nebraska Public Power District
Nebraska's Energy Leader

NLS2001054
May 7, 2001

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Gentlemen:

Subject: Emergency Plan Implementing Procedure
Cooper Nuclear Station, NRC Docket 50-298, DPR-46

Pursuant to the requirements of 10 CFR 50, Appendix E, Section V, "Implementing Procedures," Nebraska Public Power District is transmitting the following Emergency Plan Implementing Procedure (EPIP):

EPIP 5.7.13 Revision 14 "Personnel Monitoring and Decontamination"

Should you have any questions concerning this matter, please contact me.

Sincerely,

R. L. Zipfel
Emergency Preparedness Manager

/nr
Enclosure

cc: Regional Administrator w/enclosure (2)
USNRC - Region IV

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- 2.8 Decontamination supplies are maintained at the following decontamination sites:
 - 2.8.1 On-Site Decontamination Area (East of First-Aid Room, 918').
 - 2.8.2 Emergency Operations Facility.
 - 2.8.3 Alternate Emergency Operations Facility (National Guard Armory, Auburn).

3. REQUIREMENTS

- 3.1 Ensure the following equipment and materials are available, as needed:
 - 3.1.1 Decontamination supplies in On-Site Decon Room.
 - 3.1.2 Decontamination supplies per Procedure 5.7.21 in EOF and AEOF.
- 3.2 Personnel are known or suspected to be contaminated.

4. PREPARE DECONTAMINATION SITES (if normal decontamination facility is not available)

- 4.1 Personnel monitoring should be performed in a low background area.
- 4.2 Establish controls in the decontamination area and take measures to avoid the further spread of contamination.
- 4.3 Provide water supply to area with hoses if necessary.
 - 4.3.1 Select a decon location where runoff is routed to the Radwaste drain system or may be otherwise collected.
- 4.4 Assemble individuals that need to be decontaminated.
- NOTE** - During declared emergencies, higher than normal contamination limits apply.
- 4.5 Provide a clean pathway out of the decontamination area. Provide a control exit point for decontaminated personnel after monitoring.

- 4.6 If on-site decontamination areas are unavailable and temporary off-site decontamination facilities have to be improvised:
 - 4.6.1 Select an area where contaminated drains can be collected (i.e., swimming pool, low point in paved parking lot, or a hole covered with plastic).
 - 4.6.2 Establish controls in the decontamination area.
 - 4.6.3 If a local water supply is not available, arrange for a water truck.
 - 4.6.4 Provide an entry and exit control point arranged to minimize the spread of contamination.

- 5. TRANSFER TO DECONTAMINATION AREA
 - 5.1 Take measures to avoid further spread of contamination while personnel are in transit to the decontamination area.

- 6. PERSONNEL MONITORING
 - 6.1 The methods and instruments used for personnel monitoring do not significantly differ from those used for other contamination surveys. The following precautions should be followed:
 - 6.1.1 Do not contaminate the probe by allowing it to come in contact with the person.
 - 6.1.2 Due to the response time of most monitors, pass the probe of the survey meter slowly over the area to be monitored.
 - 6.1.3 Be sure to survey the entire body for contamination.
 - 6.1.4 Record the results on Attachments 2 and 3.
 - 6.2 To determine if personnel decontamination is necessary, refer to Attachment 1. If the limits are such that decontamination is necessary, proceed as described in Section 7.

- 7. DECONTAMINATION OF PERSONNEL
 - 7.1 Personnel with the highest levels of contamination should receive priority in the decontamination process. Although radioiodine contamination of personnel is a probable concern in a radiological emergency the same decontamination techniques are utilized for removal of all radioisotopes.

- [] **NOTE 1** - The following methods of decontamination are listed in the order of severity and possible hazard to the skin. These steps should be attempted in this order when possible.
- [] **NOTE 2** - Other methods of decontamination of personnel may be substituted for steps in this procedure with approval of the Chem/RP Coordinator.
- [] **NOTE 3** - Continued washing will defat and/or erode and irritate the skin.
- [] **NOTE 4** - Indiscriminate washing of other than affected parts may spread contamination.

[] 7.2 SKIN AND HANDS

[] 7.2.1 SOAP AND WATER

[] 7.2.1.1 Wash 2 to 3 minutes.

[] 7.2.1.2 Do not wash more than three or four times.

[] **NOTE** - Use care not to erode the skin.

[] 7.2.2 PUMICE SOAP, SOFT BRUSH, AND WATER

[] 7.2.2.1 Use light pressure with heavy lather.

[] 7.2.2.2 Wash for 2 minutes three times.

[] 7.2.2.3 Rinse with water.

[] 7.2.2.4 Apply hand cream to prevent chapping.

[] 7.2.3 DETERGENT

[] 7.2.3.1 Make into a paste.

[] 7.2.3.2 Use additional water in a mild scrubbing action.

[] 7.2.3.3 Rinse with water.

[] 7.2.3.4 Apply hand cream to prevent chapping.

NOTE - When frisking wet hair the surveyor should be aware that Beta radiation from the contamination may be shielded by the moisture content.

7.3 HAIR

7.3.1 Wash several times with shampoo (be careful not to spread contamination to the other parts of the body).

7.3.2 Rinse.

7.3.3 If contamination cannot be removed in this manner, more extreme methods may need to be implemented.

7.3.3.1 Cutting the hair.

7.3.3.2 Shaving the head and applying skin decontamination methods to the scalp.

7.4 EYES, EARS, NOSE, AND MOUTH

7.4.1 Flush with large amounts of water.

7.4.2 Flush with isotonic irritants (0.9% sodium chloride solution), if available.

7.5 WOUNDS

7.5.1 If the wound is not bleeding severely:

7.5.1.1 Spread the edges of the wound to stimulate bleeding.

7.5.1.2 Wash the wound with septisol.

7.5.1.3 Rinse with large amounts of water.

7.5.1.4 Bandage the wound.

7.5.1.5 Decontaminate the remaining affected area with septisol or the normal soap and water methods.

NOTE - In cases of severe bleeding, stopping the bleeding takes priority over decontamination.

7.5.2 If the wound is bleeding severely:

7.5.2.1 Stop the bleeding.

- 7.5.2.2 Wash the edges of the wound with septicol.
- 7.5.2.3 Rinse with water.
- 7.5.2.4 Bandage the wound.
- 7.5.2.5 Decontaminate the remaining affected area with septicol or by normal soap and water methods.

8. PERSONAL EFFECTS DECONTAMINATION

- 8.1 To determine if decontamination of personal effects is necessary, refer to Attachment 1. If decontamination is deemed necessary, proceed as discussed below.
- 8.2 SHOES
 - 8.2.1 If it is suspected that the contaminant is particulate matter, masking tape may remove it.
 - 8.2.1.1 Press the gummy side of the tape to the area of the shoe that is contaminated.
 - 8.2.1.2 Remove and repeat until no substantial reduction in radiation level is observed or until the shoe is free of contamination.
 - 8.2.2 If the contamination cannot be removed with tape, leather soles should be scraped with a wire brush or emery paper until clean.
 - 8.2.3 If contamination cannot be removed with tape, rubber soles may be scrubbed with decontamination soap. A wire or stiff bristle brush should be used. Wipe off, rinse, dry, and resurvey. Repeat if necessary.
 - 8.2.4 Wire brushes should be washed with clean soapy water to prevent the spread of contamination.
 - 8.2.5 Shoes that cannot be decontaminated by these methods should be confiscated, placed in a plastic bag, and labeled.
 - 8.2.5.1 Disposition of contaminated shoes is to be left to the discretion of the Chem/RP Coordinator.

8.3 PERSONAL CLOTHING

8.3.1 Contaminated clothing will be confiscated, placed in a plastic bag, and labeled.

8.3.1.1 Disposition of all clothing will be left to the discretion of the Chem/RP Coordinator.

8.3.2 Temporary clothing will be issued.

9. DECONTAMINATION OF EQUIPMENT

9.1 METHODS OF DECONTAMINATION

9.1.1 Depending upon the type and location (i.e., on-site vs. off-site) of the equipment to be decontaminated, there are a number of decontamination methods which may be employed. A summary of these methods is described below:

9.1.2 MANUAL CLEANING

9.1.2.1 Manual cleaning includes such procedures as wiping, scrubbing, mopping, etc., and in general, is an effective method of removing low or moderate levels of contamination on nonporous or nearly nonporous surfaces.

a. Water or a variety of detergents, solvents, chelating agents, and other chemicals may be used.

b. Manual cleaning usually presents minimal airborne and surface contamination control problems.

- [] 9.1.2.2 Mechanical cleaning includes such decontamination methods as vacuuming, high-pressure steam and water cleaning, soaking, and ultrasonics. These methods are generally associated with the decontamination of highly contaminated equipment but have application with lower levels of contamination.
 - [] a. Vacuuming, wet or dry - Vacuuming is generally effective in removing loose particulate contamination and is frequently used as an initial decontamination step preparatory to manual cleaning.
 - [] 1. Vacuum systems should be properly filtered to prevent the spread of contamination to surrounding areas and to reduce the hazard of airborne contamination.
 - [] 2. Care should be taken to ensure that the concentration of radioactive material in the vacuum system does not create unusually high radiation exposure rates to personnel.
 - [] b. Jet cleaning - High-pressure steam and water used alone or mixed with chemicals and detergents are effective in attaining high decontamination factors.
 - [] 1. Commercial systems using the jet cleaning principle are available. Equipment of this type is ideally suited for remote operation and for cleaning large surface areas.
 - [] 2. High-pressure jet cleaning has the disadvantage of spreading contamination over a large area or causing loose surface contamination to go airborne and is more effective when used in a cave or cell designed especially for this purpose.
 - [] c. Soaking and spraying are used extensively for decontamination of small and moderate size material and equipment.
 - [] 1. Both methods make use of chemical solutions and may require support features such as catch tanks, liquid recycle ability, and filtered ventilation systems.

- 2. Abrasive blasting makes use of a large variety of abrasives (sand, shells, glass beads, metals, etc.) with velocity, shape, and size of the abrasive influencing surface-removal characteristics.
 - 3. A prime disadvantage of abrasive blasting is that it usually generates high airborne contamination and spreads surface contamination; however, this can be minimized by wet blasting techniques, vacuum systems, or filtered enclosures.
- c. Destructive decontamination procedures include physical removal of contaminated parts or sections.
- 1. Generally, little or no effort is made to clean the contaminated parts before disposal as waste.
 - 2. Containment and other radiological controls associated with destructive cleaning are dependent on contamination levels, the nature of the contaminant, and the physical characteristics of the parts being removed.

10. WASTE DISPOSAL

- 10.1 Contaminated fluids will be collected in receptacles (55 gallon drums) if the normal decontamination facility or radwaste drains are not available.
- 10.2 Contaminated disposable supplies will be placed in plastic bags.
- 10.3 Contaminated equipment will remain in the area until decontaminated or processed as radioactive waste.

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| ATTACHMENT 1 EMERGENCY CONTAMINATION LIMITS |
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NOTE - If contamination levels are less than those provided below, the decontamination procedures do not have to be implemented.

| | SMEARABLE | | FIXED |
|---|------------------------------|-----------------------------|-------------|
| | BETA/GAMMA | ALPHA | BETA/GAMMA |
| | EMERGENCY | EMERGENCY | EMERGENCY |
| Personnel | N/A | N/A | 0.5 mrem/hr |
| Personal Effects/ Equipment/ Area (1) | 2200 dpm/100 cm ² | 220 dpm/100 cm ² | 1.0 mrem/hr |

- (1) If equipment contamination is such that it approaches the values presented above, it should not be utilized unless its use is critical to emergency response activities.

ATTACHMENT 2 SURVEY REPORT - PERSONNEL DECONTAMINATION

SHEET ___ OF ___

NAME: _____ TLD BADGE NUMBER: _____ DATE: _____

AREA: _____ JOB LOCATION: _____ JOB WHEN CONTAMINATED: _____

TIME: _____ DATE: _____ INSTRUMENT: _____ MEASUREMENT: _____

SURVEY BY: _____

SKIN CONDITION BEFORE CONTAMINATION: _____

| DESCRIPTION (BODY PART) | BEFORE | | AFTER | |
|----------------------------|-------------------------|----------------|-------------------------|----------------|
| | BETA/GAMMA (mrem/hr) | ALPHA (cpm) | BETA/GAMMA (mrem/hr) | ALPHA (cpm) |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

SURVEY NUMBER: _____ (1, 2, etc.)

DECON SOLUTIONS USED: _____

SKIN CONDITION AFTER DECONTAMINATION: _____

COMMENTS AND RECOMMENDATIONS: _____

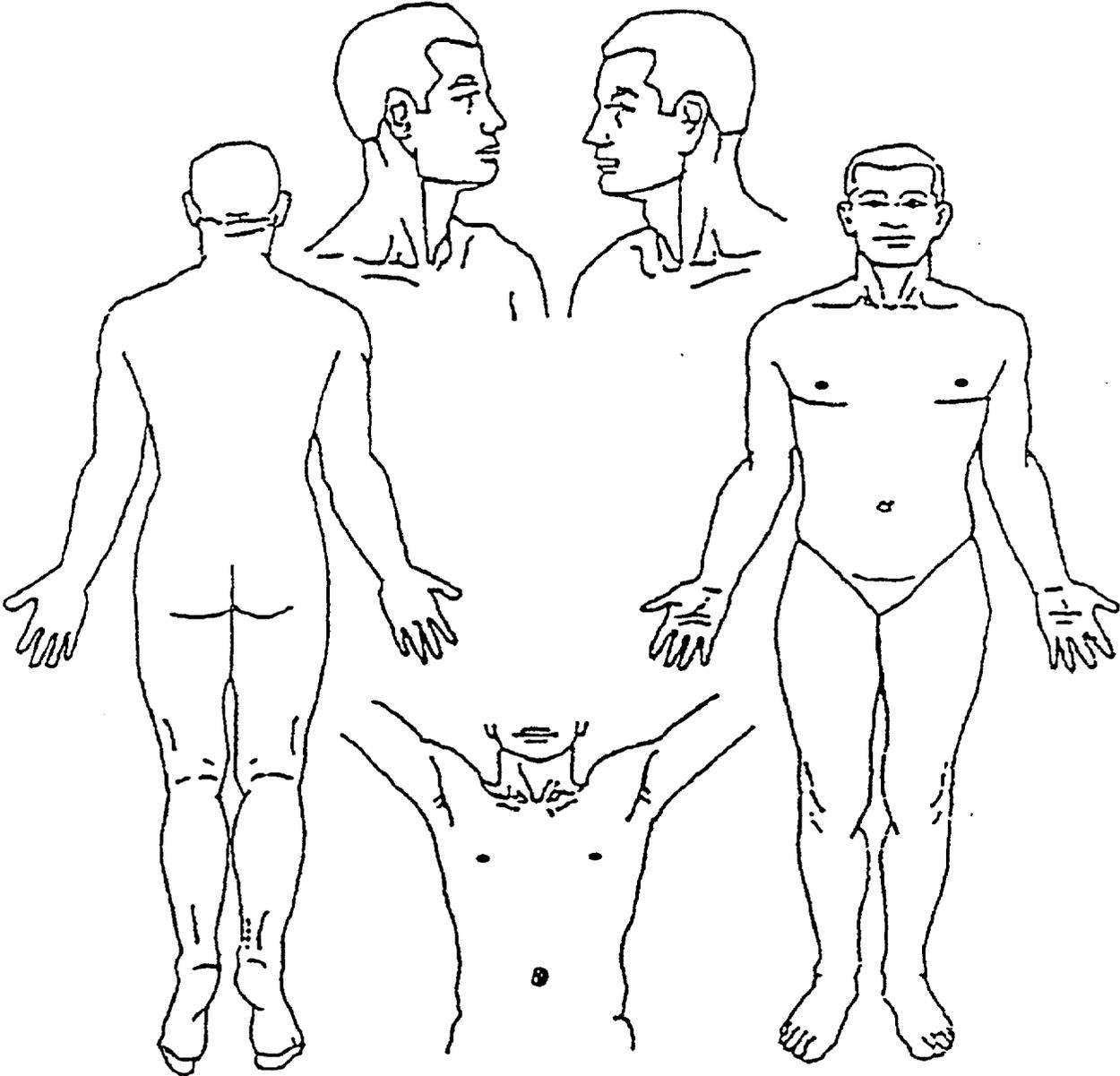
REVIEWED BY: _____

Route this completed form to the Emergency Preparedness Coordinator after termination of event.©

ATTACHMENT 3 SURVEY REPORT - PERSONNEL DECONTAMINATION
BODY MAP

NAME: _____ TIME: _____ DATE: _____

INDICATE WOUNDS AND/OR CONTAMINATED AREAS:



5-7-13A.SCAN

Route this completed form to the Emergency Preparedness Coordinator after termination of event.©

1. DISCUSSION

- 1.1 The objectives of personnel decontamination are to promptly reduce radiation exposure, to minimize the absorption of radionuclides into the body, and to prevent the spread of contamination.
- 1.2 All personnel and their clothing shall be free of significant contamination before release from an Emergency Response Facility. If contaminated, they will proceed to a decontamination facility.
- 1.3 Potential for contamination will be assessed by evaluating known plant conditions during the emergency including amount and direction of any radioactive release and personnel monitoring.
- 1.4 The need to improvise decontamination facilities may develop during an emergency if large numbers of people become contaminated or have to be immediately evacuated from the site prior to monitoring and decon.

2. REFERENCES

2.1 CODES AND STANDARDS

- 2.1.1 NUREG 0654/FEMA-REP-1, Revision 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.
- 2.1.2 NPPD Emergency Plan for CNS.

2.2 PROCEDURES

- 2.2.1 Emergency Plan Implementing Procedure 5.7.21, Emergency Equipment Inventory.

2.3 MISCELLANEOUS

- 2.3.1 © QA Audit, QA-86-06. Affects NOTE on Attachments 2 and 3.