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LZP 1550-11

POST-ACCIDENT SAMPLING  
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STATION DIRECTOR  
(ACTING STATION DIRECTOR)  
IMPLEMENTING PROCEDURE

A. PURPOSE

The purpose of this procedure is to outline the method used to implement the Station Director's duties.

B. REFERENCES

1. Generating Stations Emergency Plan (GSEP).
2. LZP 1200-1, "Classification of GSEP Conditions."
3. LZP 1200-2, "Classification of a Noble Gas Release."
4. LZP 1200-3, "Classification of an Iodine Release."
5. LZP 1200-4, "Classification of a Liquid Release."
6. LZP 1310-1, "Notifications."
7. LZP 1320-1, "Augmentation of Plant Staffing."
8. LZP 1440-1, "On-Site GSEP Communication System."
9. LZP 1700-2, "Station Employee List."
10. LZP 1700-1, "GSEP Station Group Directory."
11. LAP 900-14, "Fire Protection Program."
12. LZP 1360-1, "Protective Measures for On-site Personnel."
13. USNRC Audit Report 50-373/81-14 and 50-374/81-09 (AIR 1-81-317).
14. LXP 200-1, "Threat Response, Attachment A Bomb Threat Action."

C. PREREQUISITES

1. None.

D. PRECAUTIONS

1. None.

E. LIMITATIONS AND ACTIONS

1. Station Director's responsibilities.
  - a. SUPERVISE and DIRECT the GSEP Station Group in organizing and coordinating on-site emergency efforts and preparedness (as well as directing all other plant activities).
  - b. KEEP the GSEP Command Center Director fully informed of the status of the emergency and the measures being taken to deal with the emergency.
  - c. Establish agreements required by GSEP Section 8.1.3 for the services specified in GSEP Section 4.6 and LaSalle Annex Section 4.2 unless another Director has been assigned the responsibility of obtaining this agreement.
2. Initial notification by:
  - a. Shift Supervisor.
  - b. Senior Nuclear Station Operator.
  - c. Activation Phone List (See Reference 7).
3. The Acting Station Director shall perform the duties of the Station Director until he has been properly relieved of his GSEP duties by the Station Director or his alternate. This may be accomplished by telephone from the Technical Support Center.
4. The Acting Station Director cannot delegate to any individual the responsibility of recommending protective actions to off-site agencies.
5. The Station Director can delegate the transmission of the recommended actions to off-site agencies, but he alone must determine what actions should be recommended.



F. PROCEDURE

1. FULFILL responsibilities of Station Director. GSEP Station Director (Acting Station Director) Actions (Attachment A) may be used as a guide to implement duties.
2. In the event of a fire, REFER also to GSEP Station Director Actions: Fire Emergency (Attachment B).

G. CHECKLISTS

1. None.

H. TECHNICAL SPECIFICATION REFERENCES

1. None.

ATTACHMENT A

GSEP STATION DIRECTOR  
(ACTING STATION DIRECTOR) ACTIONS

NOTE

This checklist is provided solely for the convenience of the Station Director. It is not necessary to follow this checklist step by step. Its completion is not required and its use is determined by the Station Director.

1. OBTAIN information as required from:
  - a. Shift Engineer.
  - b. Rad/Chem Department.
2. CATEGORIZE incident (See LZP 1200-1, "Classification of GSEP Conditions"; LZP 1200-2, "Classification of a Noble Gas Release"; LZP 1200-3, "Classification of an Iodine Release"; and LZP 1200-4, "Classification of a Liquid Release"):
  - a. Transportation Accident.
  - b. Unusual Event.
  - c. Alert.
  - d. Site Emergency.
  - e. General Emergency.
3. PERFORM the following actions.
  - a. For a TRANSPORTATION ACCIDENT condition.
    - 1) DECLARE Transportation Accident condition.
    - 2) COMPLETE appropriate sections of the NARS form.
    - 3) NOTIFY System Power Supply Load Dispatcher.

- 4) ACTIVATE GSEP Station Group as deemed necessary (See LZP 1320-1, "Augmentation of Plant Staffing").
    - a) GSEP Pagers during normal working hours.
    - b) LZP 1320-1 Attachment B during OFF-hours.
  - 5) DISPATCH personnel for evaluation, if deemed necessary.
  - 6) DIRECT the Rad/Chem Technicians (RCT's) to take surveys or perform sample collections as deemed necessary (See Attachment D for guidance in prioritizing the collection of samples).
  - 7) NOTIFY the NRC Region III and NRC Operations Center, Bethesda, Maryland. (See LZP 1310-1, "Notifications" and LZP 1440-1, "On-Site GSEP Communication System").
- b. For an UNUSUAL EVENT condition.
- 1) DECLARE an Unusual Event condition.
  - 2) COMPLETE appropriate sections of the NARS form.
  - 3) NOTIFY System Power Supply Load Dispatcher.
  - 4) ACTIVATE GSEP Station Group as deemed appropriate (See LZP 1320-1, "Augmentation of Plant Staffing").
  - 5) DIRECT the Rad/Chem Technicians (RCT's) to take surveys or perform sample collections as deemed necessary (See Attachment D for guidance in prioritizing the collection of samples).
  - 6) NOTIFY the NRC Region III and NRC Operations Center, Bethesda, Maryland. (See LZP 1310-1, "Notifications" and LZP 1440-1, "On-Site GSEP Communication System").

c. For an ALERT condition.

- 1) DECLARE Alert conditions.
- 2) COMPLETE appropriate sections of the NARS form.
- 3) NOTIFY System Power Supply Load Dispatcher.
- 4) ACTIVATE those parts of the GSEP Station Group needed to meet the emergency (See LZP 1320-1, "Augmentation of Plant Staffing").
- 5) ACTIVATE the on-site Technical Support Center (TSC) and the on-site Operational Support Center (OSC).

NOTE

The Station Director, not the Acting Station Director, should report to, and assume command of, the Technical Support Center (TSC) upon its activation.

- 6) DIRECT the Rad/Chem Technicians (RCT's) to take surveys or perform sample collections as deemed necessary (See Attachment D for guidance in prioritizing the collection of samples).
- 7) NOTIFY the NRC Region III and NRC Operations Center, Bethesda, Maryland. (See LZP 1310-1, "Notifications" and LZP 1440-1, "On-Site GSEP Communication System").

d. For a SITE EMERGENCY condition.

- 1) DECLARE Site Emergency condition.
- 2) COMPLETE appropriate sections of the NARS form.
- 3) NOTIFY System Power Supply Load Dispatcher.
- 4) NOTIFY the NRC Region III and NRC Operations Center, Bethesda, Maryland. (See LZP 1310-1, "Notifications" and LZP 1440-1, "On-Site GSEP Communication System").

- 5) DIRECT the Rad/Chem Technicians (RCT's) to take surveys or perform sample collections as deemed necessary (See Attachment D for guidance in prioritizing the collection of samples).
- 6) ACTIVATE the GSEP Station Group within 60 minutes (See LZP 1320-1, "Augmentation of Plant Staffing").
- 7) ACTIVATE the on-site Technical Support Center (TSC) and the On-Site Operational Support Center (OSC) within 60 minutes.

NOTE

The Station Director, not the Acting Station Director, should report to, and assume command of, the Technical Support Center (TSC) upon its activation.

- 8) DISPATCH personnel for environs monitoring if required (within 60 minutes).
  - 9) CALL IN additional personnel as necessary (within 60 minutes).
  - 10) EVACUATE all non-essential personnel for Site and General Emergency conditions.
    - a) Site evacuation planned - Security Director consult with Rad/Chem Director to take actions to relocate personnel in accordance with LZP 1360-1, "Protective Measures for On-Site Personnel," beginning with step F.3.
- e. For a GENERAL EMERGENCY condition.
- 1) DECLARE a General Emergency condition.
  - 2) COMPLETE the appropriate section of the NARS form.
  - 3) NOTIFY System Power Supply Load Dispatcher.
  - 4) NOTIFY the Illinois ESDA and LaSalle County Sheriff Department (See LZP 1310-1, "Notifications") of the emergency situation and make recommendations consistent with

GSEP Tables 6.3-1, 6.3-2, and 6.3-3  
(Attachment C to this procedure).

- 5) NOTIFY the NRC Region III and NRC Operations Center, Bethesda, Maryland. (See L郑 1310-1, "Notifications" and L郑 1440-1, "On-Site GSEP Communication System.")
- 6) DIRECT the Rad/Chem Technicians (RCT's) to take surveys or perform sample collections as deemed necessary (See Attachment D for guidance in prioritizing the collection of samples).
- 7) ACTIVATE the GSEP Station Group within 60 minutes (See L郑 1320-1, "Augmentation of Plant Staffing").
- 8) ACTIVATE the on-site Technical Support Center (TSC) and the on-site Operational Support Center (OSC) within 60 minutes.

NOTE

The Station Director, not the Acting Station Director, should report to, and assume command of, the Technical Support Center (TSC) upon its activation.

- 9) DISPATCH personnel for environs monitoring if required (within 60 minutes).
- 10) CALL IN additional personnel as necessary (within 60 minutes).
- 11) PROVIDE plant status updates to the plant personnel via the P.A. system and to the State and local authorities until these authorities can be informed by the Corporate Command Center Director (See L郑 1310-1, "Notifications" and L郑 1440-1, "On-Site GSEP Communication System").
- 12) EVACUATE all non-essential personnel for Site and General Emergency conditions.
  - a) Site evacuation planned - Security Director consult with Rad/Chem Director to take actions to relocate personnel in accordance with L郑 1360-1.



"Protective Measure for On-Site  
Personnel," beginning with step F.3.

4. NOTIFY the following and complete the appropriate sections of the NARS form as necessary:
  - a. Command Center Director; the Command Center Director is initially contacted by the System Power Supply Load Dispatcher. Unless requested by the Command Center Director, no further notification is required.
  - b. Local support agencies, including ambulance service, as required in order to expedite their response to the emergency (See LZF 1700-1, "GSEP Station Group Directory").
  - c. LaSalle County Sheriff during the following type GSEP events (See LZF 1310-1, "Notifications") in order to keep local authorities alerted:
    - 1) Bomb Threat.
    - 2) Fire.
    - 3) Flood.
    - 4) Civil Disturbance.
5. TSC ACTIVATION.
  - a. Verify the following TSC personnel requirements as specified in Table I of LZF 1320-1 are met.

NOTE

Numbers shown are for the SITE and GENERAL EMERGENCY. Refer to Table I of LZF 1320-1 to determine TSC requirements for the UNUSUAL EVENT or ALERT condition.

- 1) STATION DIRECTOR (1).
- 2) OPERATIONS DIRECTOR (1).
- 3) MAINTENANCE DIRECTOR (1).

- 4) TECHNICAL DIRECTOR (1).
  - 5) ADMINISTRATIVE DIRECTOR (1).
  - 6) STORES DIRECTOR (1).
  - 7) RAD/CHEM DIRECTOR (1).
  - 8) SECURITY DIRECTOR (1).
  - 9) ENVIRONS DIRECTOR (1).
- b. Establish on-going communications, as deemed necessary, between the following locations:
- 1) TSC/CONTROL ROOM.
  - 2) TSC/NRC.
  - 3) TSC/CCC & EOF.
  - 4) CONTROL ROOM/OSC.
- c. Notify the Shift Engineer:
- 1) when TSC is activated and is ready to assume responsibility for off-site communications.
  - 2) when the Station Director assumes command (formal statement of turnover).
- d. Note the name of the person in charge at the OSC and the time the OSC is activated.
- 1) Name of person in charge \_\_\_\_\_
  - 2) Time activated \_\_\_\_\_
- NOTE
- TSC and OSC must be activated within 60 minutes for SITE or GENERAL EMERGENCY.
- e. BRIEF TSC Group Directors of plant status.
- f. Verify that all applicable actions and notifications of this attachment are completed.

6. PROVIDE the Command Center Director and Nuclear Regulatory Commission information as to the status of the plant as determined by the station staff.
7. In case of a hazardous material incident, including a radioactivity incident, REQUEST support personnel from the Command Center Director to assist in performing environmental surveys and PROVIDE other technical assistance during the emergency as required.
8. IMPLEMENT emergency and recovery efforts as directed by the Command Center Director.
9. ASSIGN duties as manpower becomes available.
10. REQUEST, through the Command Center, additional materials and mobile equipment from the Division Director as necessary to perform decontamination, repair, and restoration work.
11. DIRECT the Station Training staff to provide training in direct support of recovery efforts.
12. Actions required-completed as necessary.
  - a. Personnel Accounting - contact Security Director.
    - 1) Personnel accounted for or assembled.  
\_\_\_\_\_
    - 2) Personnel missing (list).  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - b. Injured personnel - contact Operations Director.
    - 1) Rad/Chem notified for first aid/survey and decontamination.  
\_\_\_\_\_

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2) Ambulance arranged.

-----

3) Hospital arranged.

-----

4) Command Center notified.

-----

NAME	HOSPITAL	AMBULANCE
-----	-----	-----
-----	-----	-----
-----	-----	-----

c. Plant Access - contact Security Director  
(Security Administrator).

1) Gate House secured.

-----

a) Locked by guard.

-----

b) Open to allow off-site access and  
notified to direct off-site assistance.

-----

d. Contact Industrial Relations regarding injuries  
(After incident is under control).

e. Recovery.

1) Determine extent of contamination.

a) On-site - contact Rad/Chem Director.

b) Off-site - contact Off-site Environs  
Director.

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- 2) Protective - measures set for personnel.
- 3) Dose management set.
- 4) Unit status set and stable - contact  
Operations Director.
- 5) Damage estimated.
- 6) Development of specific recovery plan.

13. Maintain a record of the GSEP related activities.

ATTACHMENT B

GSEP STATION DIRECTOR  
(ACTING STATION DIRECTOR) ACTIONS: FIRE

1. COMPLETE Attachment A of this procedure as appropriate, including:
  - a. CATEGORIZE incident and implement applicable GSEP program.
  - b. NOTIFY proper responsible personnel as appropriate:
    - 1) Station Director (to be notified by acting Station Director if Station Director is not on-site).
    - 2) Plant Security.
    - 3) Fire Marshall.
    - 4) Others as required.
2. The Shift Engineer will coordinate the overall fire-fighting response as follows:
  - a. SOUND the fire alarm and announce fire location over station P.A. system.
  - b. REQUEST the status of the Fire Brigade and Fire Company No. 1 as they are assembled.
  - c. NOTIFY Fire Officer No. 1 if the Fire Brigade needs assistance from Fire Company No. 1.
  - d. NOTIFY Fire Company No. 2 (Off-Site Fire Department) when assistance may be required (See Reference 10, LZP 1700-1, "GSEP Station Group Directory" for phone listings): Supply Fire Company No. 2 with as much pertinent information concerning the fire as necessary for their efficient response.
  - e. KEEP the Fire Marshall informed of the situation.
  - f. Make evaluation as to the necessity for unit shutdown.



ATTACHMENT C

GSEP GUIDELINES FOR RECOMMENDED OFFSITE  
PROTECTIVE ACTIONS FOR GASEOUS PLUME EXPOSURE

CONDITION	RECOMMENDED ACTION
1. Unusual Event Alert Site Emergency	o Protective action recommendations <u>do not</u> relate directly to these emergency classes themselves, but to the projected offsite doses. Refer to Items #3 and #4 below.
2. General Emergency	o Because of the serious nature of this emergency class, recommend that the public be notified of the emergency situation. Recommend sheltering for a two (2) mile radius around the nuclear station, as a minimum. Make subsequent recommendations in accordance with offsite dose considerations given below.
3. Doses to the offsite public have been projected to be:  —Whole body: 1 to 5 rem; and/or —Thyroid: 5 to 25 rem.	o Recommend a two (2) mile radius evacuation.  o Recommend seeking shelter in the three downwind 22½° standard sectors to a distance appropriate to the dose projected, normally to five (5) or ten (10) miles.  o Recommend controlling access to affected areas.
4. Doses to the offsite public have been projected to be:  —Whole body: greater than 5 rem; and/or —Thyroid: greater than 25 rem.	o Recommend a two (2) mile radius evacuation.  o Recommend evacuation of the three downwind 22½° standard sectors to a distance appropriate to the dose projected, normally to five (5) or ten (10) miles. If the wind direction is variable, or if the start of the release is delayed, or if the duration of the release is long, the number of evacuated sectors may increase or possibly extend to a complete circle.  o If a timely evacuation is not feasible (i.e., the time available before cloud arrival is short compared with the required mobilization, warning and transit time for evacuation), then recommend sheltering for affected areas (instead of evacuation).  o Recommend controlling access to affected areas.

ATTACHMENT C (Cont.)

CSRP GUIDELINES FOR PROTECTION AGAINST INGESTION OF CONTAMINATION FOR THE OFFSITE PUBLIC

FOOD AND WATER CONTAMINATION

A. Derived Response Level\*\*

Nuclide**	Critical Organ	Milk/Water***	Preventive Action Levels*	
			Total Intake via All Food and Water Pathways	Pasture Grass (Fresh weight)
I-131	Thyroid	0.012 uCi/l	0.09 uCi	0.27 uCi/kg
Cs-137	Whole Body	0.34 uCi/l	7 uCi	3.5 uCi/kg
Sr-90	Bone	0.007 uCi/l	0.2 uCi	0.7 uCi/kg
Sr-89	Bone	0.13 uCi/l	2.6 uCi	13 uCi/kg

\* The preventive derived response action levels relate to a 1.5 rem projected dose commitment to the thyroid or to a 0.5 rem projected dose commitment to the whole body, bone, or any other organ. Emergency action levels are equal to ten(10) times the preventive levels and relate to either a 15 rem projected dose commitment to the thyroid or a 5 rem projected dose commitment to the whole body, bone, or any other organ.

\*\* If other nuclides are present, use Regulatory Guide 1.109 to calculate the dose commitment to the critical organ(s). Infants are considered to be the critical segment of the population.

B. Recommended Protective Actions

Preventive Level Exceeded

- o For pasture: remove lactating dairy cows from contaminated pasture and substitute uncontaminated stored feed. Also, substitute a source of uncontaminated water.
- o For milk: withhold milk from market to allow radioactive decay. Consider diversion of fluid milk for production of butter or evaporated milk.
- o For fruits and vegetables: wash, brush, or scrub to remove contamination. Allow radioactive decay through canning, dehydration, or storage.
- o For grains: mill and polish.

\*\*\* The preventive action levels apply to water as well as milk; the protective action for water would be to use a suitable source of uncontaminated water.

Emergency Level Exceeded

- o Isolate food containing radioactive contamination to prevent its introduction into commerce and determine whether condemnation or another disposition is appropriate. Before taking this action, consider:
  - Availability of other possible actions;
  - Importance of particular foods in nutrition; and
  - Time and effort required to take action.

ATTACHMENT C (Cont.)

SUMMARY OF POSSIBLE OFFSITE PROTECTIVE ACTIONS  
TO BE RECOMMENDED OR IMPLEMENTED DURING AN EMERGENCY<sup>+</sup>

ACCIDENT PHASE	EXPOSURE PATHWAY	EXAMPLES OF ACTION TO BE RECOMMENDED
<sup>1</sup> EMERGENCY PHASE (0.5 to 30 hours)*	Inhalation of gases, radiiodine, or particulate	Evacuation, shelter, access control, respiratory protection, prophylaxis (thyroid protection)
	Direct whole body exposure	Evacuation, shelter, access control
<sup>2</sup> INTERMEDIATE PHASE (30 hours to 30 days)*	Ingestion of milk	Take cows off pasture, prevent cows from drinking surface water, discard contaminated milk, or divert to stored products such as cheese
	Ingestion of fruits and vegetables	Wash all produce, or impound produce, delay harvest until approved, substitute uncontaminated produce
	Ingestion of water	Cut off contaminated supplies, substitute from other sources, filter, demineralize
	Whole body exposure and inhalation	Relocation, decontamination, access control
<sup>3</sup> LONG TERM PHASE (over 30 days)*	Ingestion of food and water contaminated from the soil either by resuspension or uptake through roots	Decontamination, condemnation, or destruction of food; deep plowing, condemnation, or alternate use of land
	Whole body exposure from deposition material or inhalation of resuspended material	Relocation, access control, decontamination, fixing of contamination, deep plowing

<sup>1</sup>Emergency phase - Time period of major release and subsequent plume exposure.

<sup>2</sup>Intermediate phase - Time period of moderate continuous releases with plume exposure and contamination of environment.

<sup>3</sup>Long Term Phase - Recovery period.

\*"Typical" Post-accident time periods.

<sup>+</sup>Reference: USEPA "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," 1975.

ATTACHMENT D

1. When Control Room indicators are inoperable or offscale obtain samples as needed so that the true source term for any potential release can be determined. Obtain needed samples as expeditiously as possible in accordance with priorities delineated in the following:

RELEASE POTENTIAL	Rx. COOLANT	DRYWELL	VENT STACK/ SBGT
None	1	2	3
IMMINENT.	2	1	3
OCCURING	3	2	1
VERIFY STOPPED	3	2	1



## NOTIFICATIONS

### A. PURPOSE

The purpose of this procedure is to outline the various notification requirements for GSEP response conditions.

### B. REFERENCES

1. IE Bulletin No. 79-06B.
2. IE Bulletin No. 79-08.
3. IE Bulletin No. 80-15.
4. IE Information Notice 80-06.
5. Supplement to IE Information Notice 80-C6, dated July 29, 1980.
6. 10CFR Part 50 Section 50.72, Notification of Significant Events.
7. 10CFR Part 20 Section 20.403, Notification of Incidents.
8. Nuclear Stations Division Manager's Directive No. 014.
9. Generating Stations Emergency Plan, Section 6.0.
10. Regulatory Guide 1.16.
11. Technical Specification, Section 6.6.
12. LZP 1110-1, "Station Director Implementing Procedure."
13. LZP 1210-1, "Hazardous Material Incidents Reporting."
14. LZP 1380-1, "Control of Oil Spills."
15. Environmental Emergency Plan Implementing Procedures.
16. 10 CFR Part 70 Section 70.52.
17. 10 CFR Part 73 Section 73.71

18. LXP 100, "Security Contingency Events (General)."

C. PREREQUISITES

1. None.

D. PRECAUTIONS

1. All information given over the ENS phone will be designated as unofficial and preliminary until it is reviewed and finalized by the Shift Engineer, the Station Director or Command Center Desk.

E. LIMITATIONS AND ACTIONS

1. Whenever the NRC phone (ENS) is used, notification of the General Office Nuclear Duty Officer is required. Normally, the station will inform the Power Supply Load Dispatcher to make this required notification. However if shift supervisor received instructions (via the night orders or direct communication with the specific Duty Officer) to take the responsibility for direct notification of the Duty Officer, they must then inform the load dispatcher that the station will make the required notification.

F. PROCEDURE

1. When initial notification of an emergency is made to State or local authorities the State of Illinois Nuclear Accident Report Form (Attachment C) is to be used to compile the information needed for the report with periodic updates made whenever possible if plant or atmospheric conditions change significantly. Per 10 CFR 50 App E. D.3, state and local authorities must be notified within 15 min. of declaring a General Emergency.
2. A requirement to notify the NRC within one (1) hour applies to the following events which should be reported on the Control Room phone:
  - a. In accordance with References 1 and 2, one hour notifications shall be made when the reactor is not in a controlled or expected condition while operating or shutdown. This condition is interpreted to mean:



- 1) A LOCA or similar failure of the reactor coolant system which results in an uncontrolled increase in containment radiation levels, pressures, or temperatures or unexpected uncontrolled release or radioactivity off-site.
  - 2) when the reactor coolant system pressures and temperatures are not under control or following expected trends within a reasonable amount of time such as 15 minutes after a transient.
- b. In accordance with Reference 4, 5, 6, and 9, notification shall be made as soon as possible and, in all cases, within one hour by telephone for the events listed below. For the following events, also establish and maintain an open continuous communications channel with the NRC Operations Center and close this channel only when notified by the NRC:
- 1) Any event requiring initiation of the licensee's emergency plan or any section of that plan as described below:
    - a) See Attachment A (GSEP Table LA 5-1, LSCS Emergency Action Levels).
    - b) Fires are reportable if an off-site fire department is notified to respond or assist, or more than ten (10) minutes is required from the time of discovery to control or extinguish the fire.
  - 2) The exceeding of any Technical Specification Safety Limit.
  - 3) Any act that threatens the safety of the nuclear power plant or site personnel, or the security of special nuclear material. This includes civil disturbances or acts of sabotage or attempted sabotage. (See LXP 100 for additional information.)
- c. In accordance with Reference 4, 5, 6, 7, and 8, notification shall be made as soon as possible

and in all cases within one hour by telephone for the following events:

- 1) Any event requiring initiation of shutdown of the nuclear power plant in accordance with Technical Specification Limiting Conditions for Operation.
- 2) Personnel error or procedural inadequacy which, during normal operations, anticipated operational occurrences, or accident conditions, prevents or could prevent, by itself, the fulfillment of the safety function of those structures, systems, and components important to safety that are needed to (i) shutdown the reactor safely and maintain it in a safe shutdown condition, or (ii) remove residual heat following reactor shutdown, or (iii) limit the release of radioactive material to acceptable levels or reduce the potential for such release.
- 3) Any event resulting in manual or automatic actuation of Engineered Safety Features, including the Reactor Protection System. Notification is required for unplanned unit or reactor trips resulting from valid Reactor Protection System (RPS) actuation. Excluded from notification are:
  - a) Partial actuation of safeguards or RPS (i.e. -half scrams).
  - b) Actuation of ESF including the RPS which result from and are part of the planned sequence during surveillance testing or startup testing.
- 4) Any accidental, unplanned, or uncontrolled radioactive release (normal or expected releases from maintenance or other operational activities are not included). Gaseous or liquid releases require notification if:
  - a) A minor release which escapes the plant, is detectable either through sampling or observation of a (recording)

monitor, or reaches a monitor alarm setpoint, and is associated with an unplanned or accidental event.

- b) The release exceeds a Technical Specification Limiting Condition for operation.
  - c) Excluded from notification are increases in effluent monitor from sampling, inventory changes in rented tanks or equipment, and increases attributable to operating processes wherein radioactive water moves through systems with minor leakage such that activity will be released to vented buildings. (i.e. - start of pumps with controlled leakage seals)
- 5) Any fatality or serious injury occurring on the site and requiring transport to an off-site medical facility for treatment. Serious injury is considered to be any injury that in the judgement of the licensee representative will require admission of the injured individual to a hospital for treatment or observation for an extended period of time (greater than 48 hours). Injuries that only require treatment and/or medical observation at a hospital or off-site medical facility, but do not meet the conditions satisfied above, are not required to be reported.
- a) Notification should also be made for less severe injuries if contamination complications also exist or if an ambulance service is used to transport the victim to an off-site medical facility.
- 6) Any serious personnel radioactive contamination requiring extensive on-site decontamination or outside assistance.
- 7) Any incident involving by-product, source, or special nuclear material which, in

accordance with 10CFR section 20.403, may have caused or threatens to cause:

- a) Exposure of the whole body of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual of 150 rems or more of radiation; or exposure of the feet, ankles, hands or forearms of any individual to 375 rems or more of radiation; or
  - b) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 5,000 times the limits specified for such materials in 10CFR 20 Appendix B, Table II (see Attachment B); or
  - c) The loss of one working week or more of the operation of any facilities affected; or
  - d) Damage to property in excess of \$200,000.00.
- 8) Strikes of operating employees or security guards, or honoring of picket lines by these employees.
- d. In accordance with Reference 3, notification shall be made within one hour, by commercial telephone or relayed message, to the NRC Operations Center, when one or more extensions of the Emergency Notification System (ENS) is found to be inoperable for any reason. (See precaution #1)
3. Notification of reportable Oil or Hazardous Substances.
- a. Oil spills shall be reported as required per Reference 14.
  - b. Hazardous materials shall be reported in accordance with Reference 13.
4. A requirement to notify the NRC within twenty-four (24) hours applies to the following events which should be reported on the Control Room phone. These

events should be confirmed by telegraph, mailgram, or facsimile transmission by no later than the first working day following the event, with a written followup report within two weeks.

- a. In accordance with Reference 7, any incident involving licensed material which may have causes or threatens to cause:
  - 1) Exposure of the whole body of any individual to 5 rems or more of radiation; exposure of the skin of the whole body of any individual to 30 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms to 75 rems or more of radiation; or
  - 2) The release of radioactive material in concentration which, if averaged over a period of 24 hours, would exceed 500 times the limits specified for such materials in 10CFR20 Appendix B, Table II (see Attachment B); or
  - 3) A loss of one day or more of the operation of any facilities affected; or
  - 4) Damage to property in excess of \$2,000.00.
- b. In accordance with Reference 10, notification shall be made as expeditiously as possible, but within 24 hours by telephone for the following events:
  - 1) Failure of the reactor protection system or other systems subject to limiting safety-system settings to initiate the required protective function by the time a monitored parameter reaches the setpoint specified as the limiting safety-system setting in the technical specifications or failure to complete the required protective function.
  - 2) Errors discovered in the transient or accident analyses or in the methods used for such analyses as described in the safety analyses report or in the bases for the technical specifications that have



or could have permitted reactor operation in a manner less conservative than assumed in the analyses.

- 3) Performance of structures, systems, or components that requires remedial action or corrective measures to prevent operation in a manner less conservative than that assumed in the accident analyses in the safety analyses report or technical specifications bases; or discovery during plant life of conditions not specifically considered in the safety analyses report or technical specifications that require remedial action or corrective measures to prevent existence or development of an unsafe condition.

5. Accidental criticality requires immediate NRC Regional Office notification (Region III) by telephone and a followup telegram, mailgram or facsimile (Reference 17).
6. As required in Reference 17 and 18, one hour notification of the NRC Operations Center via the ENS line is required for:
- a. Any event which significantly threatens or lessens the effectiveness of a physical security system.
  - b. The loss, unlawful diversion, theft, attempted theft or suspected attempted theft of special nuclear material. This event also requires immediate notification of the NRC Regional Office by telephone and followup telegram, mailgram or facsimile notification.
  - c. An act of radiological sabotage against the plant or its transportation system.

G. CHECKLISTS

1. None.

H. TECHNICAL SPECIFICATION REFERENCES

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1. Section 6.6.



## LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
Class Description	Events in progress or have occurred which indicated a potential degradation of the level of Safety of the plant.	Events in progress or have occurred which involve and actual or potential substantial degradation of the level of safety of the plant.	Events in progress or have occurred which involve actual or likely major failures of plant functions need for protection of the public	Events in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.
1) Aircraft Crash or missiles from whatever source.	Impacted on-site	Impacted on-site <u>and</u> requiring unit shutdown due to the implementation of an ACTION statement of the Technical Specifications	Impacted on-site <u>and</u> requiring unit shutdown due to the implementation of Technical Specification Section 3.0.3.	
2) Control Room Evacuation		Evacuation is anticipated or required with control established from remote shutdown panel	Evacuation is required and control is not established from remote shutdown panel within 15 min.	

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
3) Earthquake (Activation of seismic monitoring alarm with level verification from the Aux. Electric Room) (Not spurious or testing)	Equipment activated at the setpoint level ( $\leq 0.01g$ )	At a level greater than an Operating Basis Earthquake (0.1 g horizontal 0.066 g vertical)	At a level greater than a Safe Shutdown Earthquake with a unit <u>not</u> in cold shutdown or refueling (0.2 g horizontal 0.133 g vertical)	
4) Explosion Causing Damage	Onsite.	Requiring unit shutdown due to the implementation of an ACTION statement of the Technical Specifications	Requiring unit shutdown due to the implementation of Technical Specifications Section 3.0.3.	
5) Fire (Ongoing as detected by observation or alarm, and verified by the Fire Brigade)	Requiring offsite assistance	Requiring offsite assistance <u>and</u> requiring unit shutdown due to the implementation of an ACTION statement of the Technical Specifications	Requiring offsite assistance <u>and</u> requiring unit shutdown due to the implementation of Technical Specification 3.0.3.	

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
6) Flood	Rupture of cooling pond dike affecting offsite property	1) Illinois River > 610' MSL (88 feet above max probable flood)  2) > 25 inches of rain in a 48 hour period as determined from the National Weather Service	1) Illinois River > 710' MSL (188 feet above max probable flood)  2) > 25 inches of rain in a 6 hour period.	
7) FSAR Analyzed Accidents  NOTE: For Fuel Handling Accident (FSAR 15.7.4), see condition no. 17.		1) Control Rod Drop (FSAR 15.4.9)  2) Pipe Breaks Outside Primary Containment (FSAR Appendix C)	1) Pipe Breaks Inside Primary Containment (FSAR 6.2, 6.3, 7.1, 7.3, 8.3, 15.6.5) 2) Gaseous Radwaste Adsorber Tank Rupture (FSAR 15.7.1)	

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
8) Security Threat	<p>The following events as described in the Security Plan:</p> <ol style="list-style-type: none"><li>1) Obvious attempt to sabotage.</li><li>2) Internal disturbance (disturbance which is not short lived or is not a harmless outburst involving one or more individuals within the protected area).</li><li>3) Bomb device discovered.</li><li>4) Hostage.</li><li>5) Civil disturbance (spontaneous collective group gathering which disrupts normal operations).</li><li>6) Armed or forced protected area intrusion.</li><li>7) Armed or forced vital area intrusion.</li></ol>	Security Threat of increasing severity that persists for more than 60 minutes.	Imminent loss of physical control of facility.	Loss of physical control of facility.

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
9) Tornado or Severe winds being experienced (Wind speed as indicated in Control Room)	<p>1) Tornado near facility.</p> <p>a) Control Room informed by Load Dispatcher or</p> <p>b) Informed by Station personnel who have made visual sighting.</p> <p>2) Sustained winds of &gt; 60 mph.</p>	<p>1) Tornado strikes facility</p> <p>2) Sustained winds of &gt; 75 mph.</p>	Sustained winds of > 90 mph (Designed Winds)	
10) Toxic Gas (Chlorine, Ammonia)	Incident observed near or onsite	<p>Detected by the Chlorine and Ammonia Detection System <u>with</u> Control Room and Auxiliary Electric Equipment Room Emergency Filtration System operable.</p> <p>Chlorine detected at 5 ppm Ammonia detected at 50 ppm</p>	<p>Detected by the Chlorine and Ammonia Detection System <u>without</u> Emergency Filtration System operable .</p>	
11) Loss of AC Power	Unit shutdown due to implementation of Technical Specification ACTION statement 3.8.1.1.	Unit shutdown due to implementation of Technical Specification Section 3.0.3	Loss of <u>all</u> the following 4160 VAC Busses for >15 minutes: 141y (241y), 142y (242y) and 143 (243)	

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
12) DC Power	Unit shutdown due to implementation of Technical Specification ACTION statement 3.8.2.3	Unit shutdown due to implementation of Technical Specification Section 3.0.3	Loss of <u>all</u> the following 125 VDC Distribution Panels for > 15 minutes 111y(211y), 112y(212y), 113(213)	
13) Plant Shutdown Functions		<p>1) Loss of all systems capable of maintaining cold shutdown, or</p> <p>2) Failure of the Reactor Protection System instrumentation to initiate and complete a SCRAM which brings the reactor subcritical once a limiting Safety system setting, as specified in Technical Specifications Section 2.2.1, has been exceeded.</p>	Loss of systems capable of maintaining hot shutdown.	
14) Other Systems required by any Technical Specification (such as ECCS, fire protection systems, control room ventilation, etc.)	Unit shutdown due to the implementation of a Technical Specifications ACTION statement.	Unit shutdown due to implementation of Technical Specifications Section 3.0.3		

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
15) Loss of Fission Product Barriers		<p>A. <math>\geq 2.10^2</math> R/hr Primary Contain- ment Activity, or B. Loss of 1 of the following 3 fission product barriers:</p> <p>1) Cladding: grab sample <math>&gt; 300</math> uci/cc equivalent of I-131 2) Reactor Coolant Sys: <math>&gt; 1.69</math> psig dry- well pressure and <math>&lt; -129</math> inches Reactor Vessel Level 3) Primary Containment: a) <math>&gt; 45</math> psig Contain- ment pressure, or b) <math>&gt; 340^\circ\text{F}</math> drywell temperature, or c) <math>&gt; 275^\circ\text{F}</math> wetwell air temp., or d) <math>&gt; 200^\circ\text{F}</math> wetwell water temp.</p>	<p>A. <math>\geq 4 \times 10^2</math> R/hr Primary Contain- ment Activity, or B. Loss of 2 of the following 3 fission product barriers:</p> <p>1) Cladding: grab sample <math>&gt; 300</math> uci/cc equivalent of I-131 2) Reactor Coolant Sys: <math>&gt; 1.69</math> psig dry- well pressure and <math>&lt; -129</math> inches Reactor Vessel Level 3) Primary Containment: a) <math>&gt; 45</math> psig Contain- ment pressure, or b) <math>&gt; 340^\circ\text{F}</math> drywell temperature, or c) <math>&gt; 275^\circ\text{F}</math> wetwell air temp., or d) <math>&gt; 200^\circ\text{F}</math> wetwell water temp., or e) Loss of Primary Containment integrity when Containment integrity is required.</p>	<p>A. <math>\geq 2 \times 10^3</math> R/hr Primary Contain- ment Activity, and B. Loss of 2 of the following 3 fission product barriers, with an imminent loss of the 3rd fission product barrier:</p> <p>1) Cladding: grab sample <math>&gt; 300</math> uci/cc equivalent of I-131 2) Reactor Coolant Sys: <math>&gt; 1.69</math> psig dry- well pressure and <math>&lt; -129</math> inches Reactor Vessel Level 3) Primary Containment: a) <math>&gt; 45</math> psig Contain- ment pressure, or b) <math>&gt; 340^\circ\text{F}</math> drywell temperature, or c) <math>&gt; 275^\circ\text{F}</math> wetwell air temp., or d) <math>&gt; 200^\circ\text{F}</math> wetwell water temp., or e) Loss of Primary Containment integrity when Containment integrity is required.</p>



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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
16) Loss Primary Coolant	1) ECCS Initiation (Not spurious) examples: a) Loss of F.W. b) Loss of Con- densate  2) Failure of a Primary System Safety Valve to close as indicated by position in- dication.	A > 50 gpm leakage <u>increase</u> in a 4 hour period as indicated by monitors* or totalizer.	1) A > 500 gpm leakage <u>increase</u> in a 4 hour period as indicated by monitors*  2) A Main Steam Line Break Outside Con- tainment <u>without</u> <u>isolation</u> (MSIV closure) as indicated by the following alarms: MS line area temp Hi; Main steam line flow high.	Imminent Core Melt

\* Monitors are: Primary Containment sump  
flow monitors; or air coolers condensate flow rate monitors.

17) Fuel Handling Accident (Report of damage to irradiated fuel assemblies and fuel pool exhaust Monitor > 100 mR/hr)	Standby gas treatment system operable	Standby gas treat- ment system <u>not</u> operable
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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
18) Radiation Releases From the Plant	1) Gaseous Effluents 10CFR20 instantaneous release limits (10CFR20.105) are exceeded as measured by the vent stack radiation monitor and/or counting equipment.	1) Gaseous Effluents >10 times the 10CFR20 instantaneous release limits (10CFR20.105) as measured by the vent stack radia- tion monitor and/ or counting equip- ment. 1	1) Gaseous Effluents Effluent monitors detect level cor- responding to >50 mR/hr ( $1.3 \times 10^7$ uCi/sec) for 1/2 hour or >500 mR/hr ( $1.3 \times 10^8$ uCi/sec) for 2 minutes at the site boundary (adverse meteor- ology)	1) Gaseous Effluents Effluent monitors detect levels corresponding to >1 Rem/hr whole body at the site boundary. This condition exists when: $Q/u > 4.5 \times 10^7$ where Q=release rate in uCi/sec u=mean wind speed in mph or $Q/u > 1 \times 10^8$ where Q=release rate in uCi/sec u=mean wind speed in meters/sec
	2) Liquid Effluents estimated liquid release > 4 Ci but $\leq 40$ Ci** sampled and measured counting equipment.	2) Liquid Effluents > $10^{-6}$ uCi/ml as measured by moni- tors* and/or counting equipment or Estimated liquid release > 40 Ci but $\leq 2000$ Ci	2) Liquid Effluents Estimated liquid release > 2000 Ci but $\leq 20,000$ Ci	2) Liquid Effluents Estimated liquid release > $2 \times 10^4$ Ci

\* Monitors: Radioactive liquid waste effluent radiation monitors  
service water effluent monitor

\*\*  $> 1 \times 10^{-7}$  uCi/ml but  $\leq 1 \times 10^{-6}$  uCi/ml

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CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
19) Personnel Injury	Transportation of radioactivity con- taminated injured person to hospital			
20) Hazardous Materials	As a direct result of hazardous materials a person is killed or hospitalized or esti- mated property damage exceeds \$50,000.			
21) Any other condi- tions of equiva- lent magnitude to the criteria used to define the accident category as determined by Station Director.*	Warrants increased awareness on the part of the state and/or local offsite officials			

\*Conditions that may or may not warrant classification under GSEP include:

- a. Incident reporting per 10CFR50.72
- b. Incident reporting per 10CFR20.403 or Illinois Rules and Regulations, Part D .403.
- c. Discharges of oil or hazardous substances into waterways per 33CFR153.
- d. Security contingency events per the Station Security Plan.

The Station Director may, at his discretion, categorize the above situations as GSEP emergencies, depending upon seriousness of the situation. (Refer to Section 10.3 of the generic plan for additional information).

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Transportation Accident

- A. A vehicle transporting radioactive materials or non-radioactive hazardous materials from a Commonwealth Edison generating station is involved in a situation in which:
1. Fire, breakage, or suspected radioactive contamination occurs involving a shipment of radioactive material or;
  2. As a direct result of hazardous materials,
    - (a) A person is killed; or
    - (b) A person receives injuries requiring hospitalization; or
    - (c) Estimated carrier or other property damage exceeds \$50,000.
- B. Any other condition involving hazardous material transportation and equivalent to the criteria in Item A.

PART 20 • STANDARDS FOR PROTECTION AGAINST RADIATION

APPENDIX B

Concentrations in Air and Water Above Natural Background—Continued

(See footnotes on page 20-18)

APPENDIX B

Concentrations in Air and Water Above Natural Background

(See footnotes on page 20-18)

Element (atomic number)	Isotope	Table 1		Table 2		Element (atomic number)	Isotope	Table 1		Table 2	
		Column 1	Column 2	Column 1	Column 2			Column 1	Column 2	Column 1	Column 2
		Al (μCi/ml)	Water (μCi/ml)	Al (μCi/ml)	Water (μCi/ml)			Al (μCi/ml)	Water (μCi/ml)	Al (μCi/ml)	Water (μCi/ml)
Actinium (89)	Ac 227	2 × 10 <sup>-12</sup>	6 × 10 <sup>-11</sup>	8 × 10 <sup>-12</sup>	2 × 10 <sup>-11</sup>	Barium (56)	Ba 134m	3 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	4 × 10 <sup>-12</sup>	2 × 10 <sup>-11</sup>
	Ac 228	3 × 10 <sup>-12</sup>	9 × 10 <sup>-12</sup>	9 × 10 <sup>-12</sup>	3 × 10 <sup>-11</sup>		Ba 134	3 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	3 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>
	Ac 228	3 × 10 <sup>-12</sup>	3 × 10 <sup>-11</sup>	3 × 10 <sup>-12</sup>	9 × 10 <sup>-12</sup>		Ba 135	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Ac 228	3 × 10 <sup>-12</sup>	3 × 10 <sup>-11</sup>	3 × 10 <sup>-12</sup>	9 × 10 <sup>-12</sup>		Ba 135	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Ac 228	3 × 10 <sup>-12</sup>	3 × 10 <sup>-11</sup>	3 × 10 <sup>-12</sup>	9 × 10 <sup>-12</sup>		Ba 135	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
Americium (95)	Am 241	6 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	4 × 10 <sup>-12</sup>	4 × 10 <sup>-12</sup>	Carbon (6)	C 14	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Am 241m	6 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	4 × 10 <sup>-12</sup>	4 × 10 <sup>-12</sup>		C 14	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Am 241	6 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	4 × 10 <sup>-12</sup>	4 × 10 <sup>-12</sup>		C 14	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Am 241	6 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	4 × 10 <sup>-12</sup>	4 × 10 <sup>-12</sup>		C 14	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Am 241	6 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	4 × 10 <sup>-12</sup>	4 × 10 <sup>-12</sup>		C 14	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
Antimony (51)	Sb 122	2 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	1 × 10 <sup>-12</sup>	1 × 10 <sup>-12</sup>	Cesium (55)	Cs 131	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Sb 124	2 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	1 × 10 <sup>-12</sup>	1 × 10 <sup>-12</sup>		Cs 134	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Sb 125	2 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	1 × 10 <sup>-12</sup>	1 × 10 <sup>-12</sup>		Cs 134	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Sb 125	2 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	1 × 10 <sup>-12</sup>	1 × 10 <sup>-12</sup>		Cs 134	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Sb 125	2 × 10 <sup>-12</sup>	1 × 10 <sup>-11</sup>	1 × 10 <sup>-12</sup>	1 × 10 <sup>-12</sup>		Cs 134	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
Argon (18)	Ar 41	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	Chlorine (17)	Cl 36	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Ar 41	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cl 36	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Ar 41	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cl 36	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Ar 41	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cl 36	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	Ar 41	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cl 36	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
Arsenic (33)	As 74	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	Chromium (24)	Cr 51	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	As 74	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cr 51	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	As 74	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cr 51	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	As 74	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cr 51	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
	As 74	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>		Cr 51	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>
Astatine (85)	At 211	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>						
	At 211	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>						
	At 211	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>						
	At 211	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>						
	At 211	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>	3 × 10 <sup>-12</sup>						



ATTACHMENT B

APPENDIX B

Concentrations in Air and Water Above Natural Background - Continued  
(See footnotes on page 20-18)

Element (atomic number)	Isotope	Table 1		
		Column 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Column 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Column 3 Air ( $\mu\text{Ci}/\text{m}^3$ )
Cobalt (27)	Co 57	$3 \times 10^{-4}$	$2 \times 10^{-4}$	$1 \times 10^{-4}$
	Co 58	$2 \times 10^{-4}$	$1 \times 10^{-4}$	$4 \times 10^{-4}$
	Co 59	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Co 60	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Copper (29)	Co 64	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Co 64	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Co 64	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Co 64	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Cesium (55)	Cs 132	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Cs 134	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Cs 137	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Cs 137	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Dysprosium (66)	Dy 165	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Dy 166	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Dy 167	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Dy 168	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Einsteinium (99)	Es 253	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Es 254	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Es 255	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Es 256	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Europium (63)	Eu 152	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Eu 154	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Eu 155	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Eu 156	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$

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Element (atomic number)	Isotope	Table 1		
		Column 1 Air ( $\mu\text{Ci}/\text{m}^3$ )	Column 2 Water ( $\mu\text{Ci}/\text{m}^3$ )	Column 3 Air ( $\mu\text{Ci}/\text{m}^3$ )
Pernitium (100)	Pm 100	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Pm 101	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Pm 102	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Pm 103	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Plutonium (94)	Pu 238	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Pu 239	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Pu 240	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Pu 241	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Radium (88)	Ra 226	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Ra 228	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Ra 229	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Ra 230	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Rhenium (75)	Re 185	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Re 186	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Re 187	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Re 188	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Samarium (62)	Sa 152	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Sa 154	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Sa 155	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Sa 156	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Selenium (34)	Se 76	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Se 77	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Se 78	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Se 79	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Strontium (38)	Sr 88	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Sr 90	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Sr 92	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Sr 94	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Tellurium (52)	Te 128	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Te 130	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Te 132	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Te 134	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Thallium (81)	Tl 205	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Tl 207	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Tl 208	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Tl 209	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Thorium (90)	Th 230	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 231	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 232	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 233	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
Uranium (92)	U 234	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	U 235	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	U 236	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$
	U 238	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$3 \times 10^{-4}$

ATTACHMENT B

APPENDIX B

Concentrations in Air and Water Above Natural Background—Continued  
(See footnotes on page 20-18)

Element (atomic number)	Isotope <sup>1</sup>	Table I			Table II		
		Column 1	Column 2	Water	Column 1	Air	Water
		(μCi/ml)(μCi/ml)(μCi/ml)					
Iodine (53)	I 134	3 × 10 <sup>-3</sup>	2 × 10 <sup>-1</sup>	1 × 10 <sup>-7</sup>	1 × 10 <sup>-7</sup>	6 × 10 <sup>-4</sup>	
	I 135	1 × 10 <sup>-7</sup>	7 × 10 <sup>-1</sup>	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	
		4 × 10 <sup>-7</sup>	3 × 10 <sup>-1</sup>	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	7 × 10 <sup>-3</sup>	
Sodium (77)	S 190	1 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		4 × 10 <sup>-7</sup>	5 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		1 × 10 <sup>-7</sup>	1 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	
	S 192	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	9 × 10 <sup>-10</sup>	9 × 10 <sup>-10</sup>	4 × 10 <sup>-3</sup>	
		3 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	S 194	2 × 10 <sup>-7</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		9 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
Polonium (84)	Po 85	1 × 10 <sup>-3</sup>	7 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		1 × 10 <sup>-3</sup>	7 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Po 89	1 × 10 <sup>-7</sup>	2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		3 × 10 <sup>-3</sup>	2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
Krypton (36)	Kr 85m	6 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	2 × 10 <sup>-7</sup>	2 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	
	Kr 85	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	2 × 10 <sup>-7</sup>	2 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	
	Sb 87	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	2 × 10 <sup>-3</sup>	2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Kr 88	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	2 × 10 <sup>-3</sup>	2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
Xenon (54)	Xe 140	2 × 10 <sup>-7</sup>	7 × 10 <sup>-7</sup>	7 × 10 <sup>-7</sup>	7 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	
		2 × 10 <sup>-7</sup>	7 × 10 <sup>-7</sup>	7 × 10 <sup>-7</sup>	7 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	
		2 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Pb 203	2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Pb 210	2 × 10 <sup>-3</sup>	6 × 10 <sup>-3</sup>	6 × 10 <sup>-3</sup>	6 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		2 × 10 <sup>-3</sup>	6 × 10 <sup>-3</sup>	6 × 10 <sup>-3</sup>	6 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Pb 212	2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		2 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Bi 177	6 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		6 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
Manganese (25)	Mn 52	2 × 10 <sup>-7</sup>	1 × 10 <sup>-3</sup>	7 × 10 <sup>-3</sup>	7 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		1 × 10 <sup>-7</sup>	9 × 10 <sup>-3</sup>	5 × 10 <sup>-3</sup>	5 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Mn 54	4 × 10 <sup>-7</sup>	4 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		4 × 10 <sup>-7</sup>	4 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Mn 56	6 × 10 <sup>-7</sup>	4 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		5 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Hg 197m	7 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		6 × 10 <sup>-7</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Hg 197	1 × 10 <sup>-3</sup>	9 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	4 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		3 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Hg 203	7 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Mg 99	7 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		1 × 10 <sup>-3</sup>	1 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Md 144	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Md 147	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
	Md 149	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	
		3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	3 × 10 <sup>-3</sup>	



[illegible]

## Appendix B

PCBs (continued on page 25-18)

Element (atomic number)	Isotope <sup>1</sup>	Table I			Table II		
		Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
		Ab ( $\mu\text{Ci/ml}$ ) $\times$	Water ( $\mu\text{Ci/ml}$ ) $\times$	Ab ( $\mu\text{Ci/ml}$ ) $\times$	Ab ( $\mu\text{Ci/ml}$ ) $\times$	Water ( $\mu\text{Ci/ml}$ ) $\times$	Water ( $\mu\text{Ci/ml}$ ) $\times$
		+					
Thorium (90)	Th 234	$6 \times 10^{-6}$	$9 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$3 \times 10^{-6}$	$3 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 170	$4 \times 10^{-6}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$5 \times 10^{-4}$	$5 \times 10^{-4}$
		$3 \times 10^{-6}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$5 \times 10^{-4}$	$5 \times 10^{-4}$
	Th 171	$1 \times 10^{-7}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$4 \times 10^{-4}$	$5 \times 10^{-4}$	$5 \times 10^{-4}$
		$2 \times 10^{-7}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$4 \times 10^{-4}$	$5 \times 10^{-4}$	$5 \times 10^{-4}$
	Th 215	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$1 \times 10^{-4}$	$9 \times 10^{-4}$	$9 \times 10^{-4}$
		$3 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$1 \times 10^{-4}$	$9 \times 10^{-4}$	$9 \times 10^{-4}$
	Th 223	$3 \times 10^{-6}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$8 \times 10^{-6}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
Radium (88)	Th 224	$2 \times 10^{-6}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$8 \times 10^{-4}$	$4 \times 10^{-4}$	$4 \times 10^{-4}$
		$2 \times 10^{-6}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$4 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 226	$8 \times 10^{-6}$	$4 \times 10^{-4}$	$4 \times 10^{-4}$	$3 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$
		$1 \times 10^{-7}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$
	Th 228	$1 \times 10^{-7}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$6 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$3 \times 10^{-7}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$4 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 230	$3 \times 10^{-10}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-11}$	$4 \times 10^{-4}$	$4 \times 10^{-4}$
		$1 \times 10^{-10}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$4 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 232	$1 \times 10^{-10}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$2 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$3 \times 10^{-11}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$9 \times 10^{-12}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
Actinium (89)	Th 233	$3 \times 10^{-10}$	$9 \times 10^{-4}$	$9 \times 10^{-4}$	$2 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$1 \times 10^{-10}$	$9 \times 10^{-4}$	$9 \times 10^{-4}$	$4 \times 10^{-12}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 234	$6 \times 10^{-10}$	$9 \times 10^{-4}$	$9 \times 10^{-4}$	$2 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$1 \times 10^{-10}$	$9 \times 10^{-4}$	$9 \times 10^{-4}$	$4 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 235	$5 \times 10^{-10}$	$8 \times 10^{-4}$	$8 \times 10^{-4}$	$3 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$1 \times 10^{-10}$	$8 \times 10^{-4}$	$8 \times 10^{-4}$	$4 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Th 236	$7 \times 10^{-11}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-11}$	$4 \times 10^{-4}$	$4 \times 10^{-4}$
		$1 \times 10^{-10}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$5 \times 10^{-11}$	$4 \times 10^{-4}$	$4 \times 10^{-4}$
	Th 240	$2 \times 10^{-7}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$6 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$1 \times 10^{-10}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$5 \times 10^{-11}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
Vanadium (23)	U natural	$1 \times 10^{-10}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$6 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-7}$	$8 \times 10^{-4}$	$8 \times 10^{-4}$	$2 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	V 46	$6 \times 10^{-8}$	$8 \times 10^{-4}$	$8 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$8 \times 10^{-4}$	$8 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Mo 121m	$2 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$1 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Mo 123	$1 \times 10^{-8}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Mo 123m	$4 \times 10^{-8}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Mo 123	$4 \times 10^{-8}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	Tc 175	$7 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
Technetium (43)		$6 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	V 90	$1 \times 10^{-8}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$1 \times 10^{-8}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	V 91m	$3 \times 10^{-8}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$3 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	V 91	$2 \times 10^{-8}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$1 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$4 \times 10^{-8}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$1 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
	V 92	$3 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$1 \times 10^{-8}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$
		$3 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$1 \times 10^{-8}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$
Technetium (43)	V 93	$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$
		$2 \times 10^{-8}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$4 \times 10^{-8}$	$3 \times 10^{-4}$	$3 \times 10^{-4}$

916C H-5

PART 20 • STANDARDS FOR PROTECTION AGAINST RADIATION

ATTACHMENT B

APPENDIX B

Concentrations in Air and Water Above Natural Background - Continued

Element (atomic number)	Isotope	Table 1				Table 2	
		Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
		$\mu\text{Ci/ml}$ (Air)				$\mu\text{Ci/ml}$ (Water)	
		Al	Water	Al	Water	Al	Water
		$\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$	$\mu\text{Ci/ml}$
Zinc (30)	Zn 65	$1 \times 10^{-7}$	$3 \times 10^{-7}$	$4 \times 10^{-7}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$	$1 \times 10^{-4}$
	Zn 66	$6 \times 10^{-7}$	$5 \times 10^{-7}$	$2 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
	Zn 67m	$4 \times 10^{-7}$	$2 \times 10^{-7}$	$1 \times 10^{-7}$	$7 \times 10^{-4}$	$7 \times 10^{-4}$	$7 \times 10^{-4}$
	Zn 69	$3 \times 10^{-7}$	$2 \times 10^{-7}$	$1 \times 10^{-7}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$
	Zn 70	$7 \times 10^{-7}$	$5 \times 10^{-7}$	$3 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
Zirconium (40)	Zr 92	$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
	Zr 93	$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
	Zr 94	$2 \times 10^{-7}$	$2 \times 10^{-7}$	$1 \times 10^{-7}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$	$6 \times 10^{-4}$
	Zr 95	$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
	Zr 97	$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life less than 3 hours.		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life greater than 3 hours.		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$
		$1 \times 10^{-7}$	$2 \times 10^{-7}$	$4 \times 10^{-7}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$	$2 \times 10^{-4}$

\* Radioisotope (R); footnote (f).  
 \* "Sub" means that values given are for submergence in a semi-infinite liquid cloud of air above material.  
 \* These radon concentrations are appropriate for protection from radon-222 combined with its short-lived daughters. Alternatively, the value in Table 1 may be replaced by one-third (1/3) "working level," (A "working level" is defined as any combination of short-lived radon-222 daughters, polonium-218, lead-214, bismuth-214 and polonium-214, in one liter of air, without regard to the degree of equilibrium, that will result in the ultimate emission of  $1.5 \times 10^5$  MeV of alpha particle energy.) The Table 2 value may be replaced by one-thirtieth (1/30) of a "working level." The limit on radon-222 concentration in restricted areas may be based on an annual average.  
 1.4. For soluble mixtures of U-235, U-238 and U-239 in air chemical toxicity may be the limiting factor. If the percent by weight (enrichment) of U-235 is less than 5, the concentration value for a 40-hour workweek, Table 1, is 0.5 milligrams uranium per cubic meter of air. For any enrichment, the product of the average concentration and time of exposure during a 40-hour workweek shall not exceed  $5 \times 10^{-6}$  Ci/m<sup>3</sup> of air, where U-235 is the specific activity of the uranium in U-235. The concentration value for Table 2 is 0.005 milligrams uranium per cubic meter of air. The specific activity for natural uranium is  $6.77 \times 10^{-4}$  curies per gram U. The specific activity for other mixtures of U-235, U-238 and U-239, if not known, shall be:  
 $SA = 3.9 \times 10^{-4}$  curies/gram U  
 $SA = (0.61258 \pm 0.0035 \text{ g})^{-1} 10^{-4}$  curies/gram U  
 where SA is the percentage by weight of U-235, expressed as percent.  
 \* Amended 37 FR 33319.  
 \*\* Amended 39 FR 33990; footnote re designated 40 FR 50704.  
 \*\*\* Amended 40 FR 50704.  
 † Amended 38 FR 30314.  
 ‡ Amended 39 FR 35463; redesignated 40 FR 50704.

LZP 1310-1  
Revision 3  
March 2, 1983  
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ATTACHMENT C

MESSAGE IDENTIFICATION

TIME

DATE

STATE OF ILLINOIS  
NUCLEAR ACCIDENT REPORTING SYSTEM FORM

1. SITE

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> A DRESDEN     | <input type="checkbox"/> F BRAIDWOOD |
| <input type="checkbox"/> B QUAD CITIES | <input type="checkbox"/> G _____     |
| <input type="checkbox"/> C ZION        |                                      |
| <input type="checkbox"/> D LA SALLE    |                                      |
| <input type="checkbox"/> E BYRON       |                                      |

2. ACCIDENT CLASSIFICATION

- |  |
|--|
| <input type="checkbox"/> A TRANSPORTATION ACCIDENT<br>(SEE ITEM #18) |
| <input type="checkbox"/> B UNUSUAL EVENT                             |
| <input type="checkbox"/> C ALERT                                     |
| <input type="checkbox"/> D SITE AREA EMERGENCY                       |
| <input type="checkbox"/> E GENERAL EMERGENCY                         |

3. REACTOR NUMBER (S)

- |   |
|---|
| <input type="checkbox"/> A ONE (1)        |
| <input type="checkbox"/> B TWO (2)        |
| <input type="checkbox"/> C THREE (3)      |
| <input type="checkbox"/> D NOT APPLICABLE |

4. TIME AND DATE OF INCIDENT/EVENT:

TIME

DATE

5. INCIDENT INVOLVES:

6. SITUATION INVOLVES:

- |  |
|--|
| <input type="checkbox"/> A NO RELEASE                            |
| <input type="checkbox"/> B POTENTIAL (POSSIBLE) RELEASE          |
| <input type="checkbox"/> C IMMINENT (PROBABLE) RELEASE           |
| <input type="checkbox"/> D A RELEASE IS OCCURRING                |
| <input type="checkbox"/> E A RELEASE THAT OCCURRED, BUT STOPPED. |

7. TYPE OF RELEASE IS

- |  |
|--|
| <input type="checkbox"/> A RADIOACTIVE GASEOUS     |
| <input type="checkbox"/> B NON-RADIOACTIVE GASEOUS |
| <input type="checkbox"/> C RADIOACTIVE LIQUID      |
| <input type="checkbox"/> D NON-RADIOACTIVE LIQUID  |
| <input type="checkbox"/> E NON-APPLICABLE          |

8. RECOMMENDED PROTECTIVE ACTIONS:

- |                            |   |
|----------------------------|---|
| <input type="checkbox"/> A | FOR INFORMATION ONLY - (UNUSUAL EVENT, ALERT OR TRANSPORTATION ACCIDENT)  |
| <input type="checkbox"/> B | PREPARE FOR POSSIBLE ACTION INVOLVING THE PUBLIC, TO INCLUDE NOTIFICATION. (ALERT OR SITE EMERGENCY OR TRANSPORTATION ACCIDENT) |
| <input type="checkbox"/> C | NOTIFY PUBLIC TO TAKE THE FOLLOWING PROTECTIVE ACTIONS. (SITE OR GENERAL EMERGENCY OR TRANSPORTATION ACCIDENT.)                 |

SHELTER EVACUATE

- |                            |                            |   |
|----------------------------|----------------------------|---|
| <input type="checkbox"/> D | <input type="checkbox"/> H | 0-2 MILE RADIUS (GASEOUS RELEASE)                           |
| <input type="checkbox"/> E | <input type="checkbox"/> I | 2-5 MILES FOR THREE (3) DOWNWIND SECTORS (GASEOUS RELEASE)  |
| <input type="checkbox"/> F | <input type="checkbox"/> J | 5-10 MILES FOR THREE (3) DOWNWIND SECTORS (GASEOUS RELEASE) |
| <input type="checkbox"/> G | <input type="checkbox"/> K | _____ MILES (TRANSPORTATION ACCIDENT OR OTHER)              |

☐ L DISCONTINUE USE OF POTENTIALLY AFFECTED WATER IN \_\_\_\_\_ LOCATION(S)

☐ M PUT CATTLE ON STORED FEED IN DOWNWIND SECTORS OUT TO \_\_\_\_\_ MILES.

9. RELEASE IS:

- |                            |  |
|----------------------------|--|
| <input type="checkbox"/> A | CONTINUING - EXPECTED DURATION OR MAGNITUDE _____    |
| <input type="checkbox"/> B | TERMINATED - APPROXIMATE DURATION OR MAGNITUDE _____ |

10. HEIGHT OF GASEOUS RELEASE IS: ☐ A GROUND LEVEL ☐ B ELEVATED

11. WIND SPEED \_\_\_\_\_ METERS PER SECOND X 2 = \_\_\_\_\_ MILES PER HOUR

NOTE: USE NOT APPLICABLE (N/A) WHERE APPROPRIATE.

ATTACHMENT C

12. WIND DIRECTION DATA (CHECK ONE, READ ACROSS)

	<u>WIND FROM</u>	<u>DEGREES</u>	<u>WIND TOWARD</u>	<u>SECTORS AFFECTED</u>
<input type="checkbox"/> A	N	349-11	S	H J K
<input type="checkbox"/> B	NNE	12-33	SSW	J K L
<input type="checkbox"/> C	NE	34-56	SW	K L M
<input type="checkbox"/> D	ENE	57-78	WSW	L M N
<input type="checkbox"/> E	E	79-101	W	M N P
<input type="checkbox"/> F	ESE	102-123	WNW	N P Q
<input type="checkbox"/> G	SE	124-146	NW	P Q R
<input type="checkbox"/> H	SSE	147-168	NNW	Q R A
<input type="checkbox"/> I	S	169-191	N	R A B
<input type="checkbox"/> J	SSW	192-213	NNE	A B C
<input type="checkbox"/> K	SW	214-236	NE	B C D
<input type="checkbox"/> L	WSW	237-258	ENE	C D E
<input type="checkbox"/> M	W	259-281	E	D E F
<input type="checkbox"/> N	WNW	282-303	ESE	E F G
<input type="checkbox"/> O	NW	304-326	SE	F G H
<input type="checkbox"/> P	NNW	327-348	SSE	G H J

13. CURRENT OUTSIDE TEMPERATURE: ☐ A \_\_\_\_\_ °F ☐ B \_\_\_\_\_ °C

14. WEATHER CONDITIONS (RAIN, SNOW, SLEET, ETC.): \_\_\_\_\_

15. TEMPERATURE DIFFERENCE ( $\Delta T$ ): ☐ A \_\_\_\_\_ °F ☐ B \_\_\_\_\_ °C or ☐ C \_\_\_\_\_ °C/100M

☐ D ELEVATION OF TEMP. DIFFERENCE MEASUREMENT: \_\_\_\_\_

16. RELEASE DETECTED BY:

☐ A VISUAL

☐ B SAMPLE RESULTS ARE: \_\_\_\_\_

☐ C INSTRUMENTATION \_\_\_\_\_ IDENTIFICATION \_\_\_\_\_ READING \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

17. ACCIDENT RELATED INJURIES: ☐ A NO ☐ B YES ☐ C NUMBER OF INJURIES \_\_\_\_\_

18. A. LOCATION OF TRANSPORTATION ACCIDENT: \_\_\_\_\_

B. TYPE OF SHIPMENT (NEW FUEL, SPENT FUEL, LOW WASTE, ETC.): \_\_\_\_\_

C. TYPE OF VEHICLE OR CONTAINER \_\_\_\_\_

D. FORM OF MATERIAL BEING SHIPPED ( SOLID, LIQUID, GASEOUS): \_\_\_\_\_

E. CECO. PERSONNEL DISPATCHED TO TRANSPORTATION ACCIDENT SCENE: ☐ A NO ☐ B YES ☐ C NUMBER \_\_\_\_\_

19. OTHER INFORMATION: \_\_\_\_\_

20. MESSAGE REPORTED BY: \_\_\_\_\_

NAME

ORGANIZATION

TELEPHONE  
(OUTSIDE #)

21. N.A.R.S. MESSAGE RECEIVED BY \_\_\_\_\_

YOUR NAME

TIME

DATE

22. MESSAGE VERIFIED: ☐ A NO ☐ B YES

IF YES, BY WHOM: \_\_\_\_\_

NAME

ORGANIZATION