From: Duncan White
To: Stephen Salomon, Thomas O'Brien
Date: Tue, Dec 21, 1999 4:24 PM
Subject: Re: Draft letter to CRCPD re Part P

I spoke with Mr. Weaver today (12/21/99) regarding my comments. He was appreciative of our efforts. I concur on the letter.

>>> Stephen Salomon 12/16 3:28 PM >>>
Duncan,

I have reworked your letter a bit. Do you think it is OK?

Tom,

Do you recommend anything additional that Duncan should put into the CRCPD letter?

Thanks for your input.

Steve

STATE PROGRAMS OFFICE TRACKING SYSTEM

ACTIVE PROJECTS

Date: 11/29/99

ProjectID: 9-258

ProjectDescription: ADOPTION OF PART P INTO THE SSRCR'S

StartDate: 11/29/99 Original Date: 1/7/00 ProjectLead: WHITE

Completion Date: Due Date: 1/7/00

Status:

Requester/Office: BRUCE HIRSCHLER/CRCPD

Extension Requested: ☐ Extension Date:

RITS Code: PA No:

(1) PHL
(2) ~~FCG~~

Conference of Radiation Control Program Directors, Inc.

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MEMORANDUM

TO: CRCPD Board of Directors,
CRCPD Federal Liaisons

FROM: Bruce Hirschler
Technical Assistant

DATE: November 5, 1999

RE: Adoption of Part P into the SSRCR's

Please find enclosed Part P, "Contingency Planning for Response to Radioactive Material Emergencies" as submitted to the board by the SR-1 working group. The proposed Part P was developed by the SR-1 sub-working group for MOP&S, chaired by Ken Weaver. In addition, the Rationale for Part P and the working group's response to comments received during peer review are also attached. Peer review was conducted by the E-6 working group.

Should the board have any questions or concerns regarding form or format, please feel free to contact me.

99 NOV -7 PM 4:24
OSP

Cc: Charles Hardin, Exec. Dir., CRCPD
Pat Gorman, Deputy Dir., CRCPD
Tom Hill, Chairperson, SR-1
Ken Weaver, Chairperson MOP&S sub-working group

PART P

CONTINGENCY PLANNING FOR RESPONSE TO RADIOACTIVE MATERIAL EMERGENCIES

Sec. P.1 - Purpose. This Part provides for preparedness and response to events involving actual or potential release of radioactive material by specifying the content and exercise of a licensee contingency plan.

Sec. P.2 - Scope.

a. Any person licensed to receive, possess, use, own, acquire, transfer or dispose of radioactive material is subject to this Part.

b. In addition to conforming to the licensing requirements in Part C and the standards for protection in Part D, a licensee with forms and quantities of radioactive material specified in this Part is required to evaluate and prepare to respond to an accident or incident involving possible release of radioactive material. Readiness to respond emphasizes immediate activities such as containment, rescue, notifications, and securing the scene of an event.

Sec. P.3 - Definitions. As used in this Part, these terms have the definitions set forth below.

"Accident" means any unintended event (including an operating error, equipment failure or other mishap) which could (1) result in a dose in excess of regulatory limits on site or for the public or (2) have consequences or potential consequences which cannot be ignored from the point of view of protection or safety (such as an actual or potential substantial degradation of the level of protection or safety of the facility or release of radioactive material in sufficient quantity to warrant consideration of protective actions).

"Alert" means that an accident has occurred, is in progress, or is imminent which involves actual or potential degradation of the level of safety of the facility and requires response, possibly including that off-duty staff of the facility or offsite response organizations report to duty stations. During an alert, the potential release of radioactive material is not expected to require a response by offsite response organizations to protect persons offsite unless the situation becomes more serious.

"Drill" means a supervised, hands-on instruction period intended to test, develop or maintain a specific emergency response capability. A drill may be a component of an exercise.

"Emergency" means an event requiring prompt action to mitigate a threat to the health and safety of workers and the public or a threat of damage to the environment.

"Emergency planning zone" means a geographic area surrounding a specific facility for which special planning and preparedness efforts are carried out to ensure that prompt and effective protective actions

can reduce or minimize the impact of releases of radioactive material to public health and safety or to the environment.

"Evacuation" means the urgent removal of people from an area to avoid or reduce high level, short-term exposure.

"Event" means a situation reasonably discrete in time, location and consequences.

"Exercise" means a multi-faceted activity that tests the plans, procedures, adequacy of training, resources, and integrated capability of an emergency response system.

["General emergency" means an accident has occurred or is in progress which involves actual or imminent catastrophic reduction of facility safety systems with potential for loss of containment or confinement integrity or release of radioactive material that can be reasonably expected to exceed offsite protective action guides.[1/]]

"Immediate" means within not more than fifteen minutes or as otherwise specified in writing by the licensee.

"Incident" means any unintended event involving radioactive material for which the public dose is a fraction of regulatory limits and safety provisions are sufficient, but further degradation of safety systems could lead to an accident condition.

"Offsite response organization" means the non-licensee offsite organizations which may be needed to respond to an emergency, including, but not limited to, local fire, police, ambulance and hospital services.

"Projected dose" means a future dose calculated for a specified time period on the basis of estimated or measured initial concentrations of radionuclides or exposure rates and in the absence of protective actions.

"Protective action" means an action taken by members of the public to protect themselves from radiation from an accident involving radioactive material. Protective action may include sheltering, evacuation, relocation, control of access, administration of a radioprotective drug, decontamination of persons, decontamination of land or property, or control of food or water.

"Protective action guide" means a projected dose from an accidental release of radioactive material at which protective action is to be considered.

"Relocation" means the removal or, after a plume has passed, continued exclusion of people from contaminated areas to avoid chronic radiation dose.

[1/] *A definition of "general emergency" is provided for reference and completeness. It is unlikely that any state licensee would need to plan for a general emergency.*

"Sheltering" means the use of a structure for radiation protection from an airborne plume containing radioactive material.

"Site" means the physical area within the site boundary, including the area upon which the licensee conducts activities and any restricted area. The site boundary is that line beyond which the land or property is not owned, leased, or otherwise controlled by the licensee.

"Site area emergency" means that an accident has occurred, is in progress, or is imminent which involves actual or probable major failures of facility functions needed for the protection of workers and the public. A site area emergency will require contact with offsite response organizations to protect persons offsite, but is not expected to exceed protective action guides offsite.

Sec. P.4 - Dose Evaluation and Contingency Planning. Each application to possess radioactive material in unsealed form, on a foil or plated source, or sealed in glass in excess of the quantities in Part P, Appendix A, "Quantities of Radioactive Materials Requiring Consideration of the Need for a Contingency Plan for Responding to a Release", must contain either:

a. An evaluation, as described in P.5, showing that the projected dose to a person offsite due to a release of radioactive material would not exceed 0.01 Sievert (1 rem) total effective dose equivalent or 0.05 Sievert (5 rem) to the thyroid; or

b. A contingency plan, as prescribed in P.6, for responding to any accident in which radioactive material could be released from the site.

Sec. P.5 - Evaluation of Potential Dose. In evaluating the total effective dose equivalent to an individual pursuant to P.4a above, the applicant may take into account whether:

a. The radioactive material is physically separated so that only a portion could be involved in an accident;

b. All or part of the radioactive material, because of the way it is stored or packaged, is not subject to release during an accident;

c. The release fraction in the respirable size range is predicted to be lower than the release fraction shown in Part P, Appendix A, due to the chemical or physical form of the material;

d. The solubility in body fluids of the radioactive material is predicted to reduce the dose received;

e. Facility design or engineered safety features in the facility are predicted to cause the release fraction to be lower than shown in Part P, Appendix A;

f. Operating restrictions or procedures are predicted to prevent any release fraction equal to or larger than that shown in Part P, Appendix A.

Sec. P.6 - Contents of a Contingency Plan. A contingency plan for responding to a release of radioactive material submitted pursuant to P.4b above shall include the following information, in separate sections having each page numbered and labeled with a revision date and revision number:

a. Facility description. A brief description of the applicant's facility and surroundings.

b. Types of accidents. An identification of each type of accident involving radioactive material for which actions by licensee staff or offsite response organizations will be needed to protect members of the public.

c. Classification of accidents. A method for classifying and declaring each accident as an alert or site area [or general] emergency as defined in P.3.

d. Detection of accidents. Identification of the means for detecting each type of accident in a timely manner.

e. Mitigation of consequences. A brief description of the means and equipment which are available for mitigating the consequences of each type of incident or accident, including (1) those provided to protect workers onsite, (2) a description of the program for maintaining the equipment, (3) radiological exposure controls for onsite and offsite response personnel, and (4) readiness to carry out special efforts within any designated emergency planning zone as defined in P.3.

f. Assessment of releases. A brief description of the methods and equipment available to assess releases of radioactive material.

g. Responsibilities.

   i. The names and titles of the applicant's personnel responsible for developing, maintaining and updating the contingency plan.

   ii. A brief description of the responsibilities of the applicant's personnel who will respond if an alert or site area [or general] emergency were declared, including identification of personnel responsible for promptly notifying offsite response organizations, including the Agency.

   iii. A list of offsite response organizations, description of their responsibilities and anticipated actions, and copy of formal commitments, if any.

h. Notification, coordination and use of offsite response organizations.

   i. A brief description of the means, in the event of an alert or site area [or general] emergency, to promptly notify the offsite response organizations listed pursuant to P.6g.iii. above.

ii. A brief description of the arrangements made for requesting by telephone and effectively coordinating and using offsite organizations capable of augmenting the planned onsite response, including arrangements for backup communications and 24-hour capability.

iii. The assistance requested may include, but need not be limited to, medical treatment of contaminated or injured onsite workers.

iv. A description or drawing of designated locations from which control and assessment of an accident would be exercised (i.e., command center and control points).

v. Provisions for notification and coordination in case key personnel, parts of the facility, or some equipment are unavailable.

i. Information to be communicated.

i. A brief description of the information to be provided to offsite response organizations, including the Agency, in the event of an alert or site area [or general] emergency.

ii. The types of information to be provided shall include the declared status of the facility, a description of actual or potential releases of radioactive material, the names and telephone numbers of personnel designated as points of contact, who has been affected, and any recommendations for protective action.

iii. A brief description of the types of information to be provided to the public by facility staff and through offsite response organizations.

iv. If protective action by the public is part of the contingency plan, a description of how the public will be trained to perform the action (such as removal and disposition of contamination).

j. Training.

i. A brief description of the performance objectives and plans for initial and annual training that the applicant will provide to workers about how to respond to an emergency, including any special instructions and orientation tours that the applicant will provide for fire, police, medical and other emergency response personnel.

ii. Provisions for familiarizing radiation workers and non-radiation workers, including off-site responders, with site-specific hazards and emergency procedures.

iii. Provisions for adequately preparing site personnel for their responsibilities in the event of serious incident or accident scenarios postulated for the specific site, including the use of drills, exercises and team training for such scenarios.

k. Drills and exercises. Specifications for:

i. Conducting quarterly communications checks with offsite response organizations that include the verification and updating of all necessary telephone numbers and other electronic communication addresses.

ii. Conducting at least one radiological/health physics, medical and fire drill every two years and conducting, between required biennial drills, at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities.

iii. Inviting offsite response organizations to participate in onsite exercises conducted pursuant to P.10 below.[2/]

iv. Using several accident scenarios, including those involving many of the potential responders identified in the contingency plan and those postulated as most probable for the specific site, up to and including the maximum credible accident.

v. Ensuring that accident scenarios are known to exercise participants as prescribed in the contingency plan.

l. Safe condition. A brief description of the site-specific criteria for a safe condition and means of restoring the facility and surroundings to a safe condition after an accident.

Sec. P.7 - Comment from Offsite Response Organizations. Not less than 60 days prior to submittal of the contingency plan to the Agency, the applicant shall provide the contingency plan for comment to offsite response organizations expected to respond in case of an accident, including, but not limited to, local fire, ambulance, and hospital emergency response officials. Amendments to the plan shall also be provided to offsite agencies for comment before submittal to the Agency. The licensee shall provide each comment received within the 60 days to the Agency with the contingency plan or amendment.

Sec. P.8 - Hazardous Chemicals. The applicant shall certify to the Agency that it has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499, if applicable to the applicant's activities at the proposed place of use of the radioactive material.

Sec. P.9 - Training. Each licensee required to submit a contingency plan pursuant to P.4b shall provide training to facility staff and off-site response organization personnel at intervals not to exceed one year for each person who has a responsibility for responding to accidents postulated as most probable for the specific site.

Sec. P.10 - Conduct of Drills and Exercises. Each licensee that is required to submit a contingency plan pursuant to P.4b shall:

[2/] *Participation of offsite response organizations in exercises, although recommended, is not required.*

a. Conduct drills and exercises at required intervals not to exceed two years to test the response to simulated emergencies;

b. Perform critiques of drills and exercises and ensure that such critiques evaluate the appropriateness of the contingency plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response;

c. Unless the Agency approves otherwise, ensure that the critique of each exercise is performed by individuals not having direct implementation responsibility for conducting the exercise; and

d. Correct deficiencies noted in the critique of each drill and exercise within a time period for corrective action which is specified to the Agency [cite appropriate state agency] in writing.

Sec. P.11 - Plan Implementation. Each licensee required to submit a contingency plan pursuant to P.4b shall:

a. Comply with each provision and specification of the contingency plan submitted to the Agency [cite appropriate state agency]; and

b. Notify offsite response organizations, including the Agency [cite appropriate state agency], immediately after the licensee declares an alert, site area emergency or general area emergency.[3/]

c. Promptly report any projected dose and protective action recommendation as prescribed in the contingency plan.

Sec. P.12 - Plan Revision. Each licensee that is required to submit a contingency plan pursuant to P.4b shall, with each page numbered and labeled with a revision date and revision number:

a. Update the contingency plan at intervals not to exceed one year, and provide the update to the Agency [cite appropriate state agency] and to affected offsite response organizations within 30 days after the update is completed; and

b. Obtain Agency [cite appropriate state agency] approval in writing before implementing changes to the plan except for updates to names, titles, and telephone numbers. For information purposes only, updates of individual names, titles, assignments of responsibility, and telephone numbers are to be reported to the Agency and to affected offsite response organizations within 30 days.

Sec. P.13 - Documentation and Recordkeeping. Each licensee required to submit a contingency plan pursuant to P.4b shall retain records of contingency plan training, drills and exercises pursuant to P.6,

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3/ The reporting requirements of P.11b above does not supersede or relieve a licensee from complying with the Emergency Planning and Community Right-to-Know Act of 1986 (Title III, Pub. L. 99-499), nor Part C, nor the reporting requirements of other State or federal agencies.

and revisions and records of all notifications and reports pursuant to P.12 or Part C of these regulations in accord with the recordkeeping requirements of Part C of these regulations.

Part P

Appendix A

Quantities of Radioactive Materials Requiring Consideration of the Need for a Contingency Plan for Responding to a Release

Radioactive Material[1/]	Release Fraction	Quantity (GBq)	Quantity (Ci)
Actinium-228	0.001	148,000	4,000
Americium-241	0.001	74	2
Americium-242	0.001	74	2
Americium-243	0.001	74	2
Antimony-124	0.01	148,000	4,000
Antimony-126	0.01	222,000	6,000
Barium-133	0.01	370,000	10,000
Barium-140	0.01	1,110,000	30,000
Bismuth-207	0.01	185,000	5,000
Bismuth-210	0.01	22,200	600
Cadmium-109	0.01	37,000	1,000
Cadmium-113	0.01	2,960	80
Calcium-45	0.01	740,000	20,000
Californium-252	0.001	333	9 (20 mg)
Carbon-14 (Non-CO)	0.01	1,850,000	50,000
Cerium-141	0.01	370,000	10,000
Cerium-144	0.01	11,100	300
Cesium-134	0.01	74,000	2,000
Cesium-137	0.01	111,000	3,000
Chlorine-36	0.5	3,700	100
Chromium-51	0.01	11,100,000	300,000
Cobalt-60	0.001	185,000	5,000
Copper-64	0.01	7,400,000	200,000
Curium-242	0.001	2,220	60
Curium-243	0.001	110	3
Curium-244	0.001	148	4
Curium-245	0.001	74	2
Europium-152	0.01	18,500	500
Europium-154	0.01	14,800	400
Europium-155	0.01	111,000	3,000
Gadolinium-153	0.01	185,000	5,000
Gold-198	0.01	1,110,000	30,000

Radioactive Material[1/]	Release Fraction	Quantity (GBq)	Quantity (Ci)
Hafnium-172	0.01	14,800	400
Hafnium-181	0.01	259,000	7,000
Holmium-166m	0.01	3,700	100
Hydrogen-3	0.5	740,000	20,000
Indium-114m	0.01	37,000	1,000
Iodine-124	0.5	370	10
Iodine-131	0.5	370	10
Iridium-192	0.001	1,480,000	40,000
Iron-55	0.01	1,480,000	40,000
Iron-59	0.01	259,000	7,000
Krypton-85	1.0	222,000,000	6,000,000
Lead-210	0.01	296	8
Manganese-56	0.01	2,220,000	60,000
Mercury-203	0.01	370,000	10,000
Molybdenum-99	0.01	1,110,000	30,000
Neptunium-237	0.001	74	2
Nickel-63	0.01	740,000	20,000
Niobium-94	0.01	11,100	300
Phosphorus-32	0.5	3,700	100
Phosphorus-33	0.5	37,000	1,000
Polonium-210	0.01	370	10
Potassium-42	0.01	333,000	9,000
Promethium-145	0.01	148,000	4,000
Promethium-147	0.01	148,000	4,000
Ruthenium-106	0.01	7,400	200
Samarium-151	0.01	148,000	4,000
Scandium-46	0.01	111,000	3,000
Selenium-75	0.01	370,000	10,000
Silver-110m	0.01	37,000	1,000
Sodium-22	0.01	333,000	9,000
Sodium-24	0.01	370,000	10,000
Strontium-89	0.01	111,000	3,000
Strontium-90	0.01	3,330	90
Sulfur-35	0.5	33,30	900
Technetium-99	0.01	370,000	10,000
Technetium-99m	0.01	14,800,000	400,000
Tellurium-127m	0.01	185,000	5,000
Tellurium-129m	0.01	185,000	5,000
Terbium-160	0.01	148,000	4,000
Thulium-170	0.01	148,000	4,000
Tin-113	0.01	370,000	10,000
Tin-123	0.01	111,000	3,000

Radioactive Material[1/]	Release Fraction	Quantity (GBq)	Quantity (Ci)
Tin-126	0.01	37,000	1,000
Titanium-44	0.01	3,700	100
Vanadium-48	0.01	259,000	7,000
Xenon-133	1.0	33,300,000	900,000
Yttrium-91	0.01	74,000	2,000
Zinc-65	0.01	185,000	5,000
Zirconium-93	0.01	14,800	400
Zirconium-95	0.01	185,000	5,000
Any other beta-gamma emitter	0.01	370,000	10,000
Mixed fission products	0.01	37,000	1,000
Contaminated equipment, beta-gamma	0.001	370,000	10,000
Irradiated material, any form other than solid noncombustible	0.01	37,000	1,000
Mixed radioactive waste, beta-gamma	0.01	37,000	1,000
Packaged mixed waste,[2/] beta-gamma	0.001	370,000	10,000
Any other alpha emitter	0.001	74	2
Contaminated equipment, alpha	0.0001	740	20
Packaged waste, alpha[2/]	0.0001	740	20

[1/] *For combinations of radioactive materials, the licensee is required to consider whether a contingency plan is needed if the sum of the ratios of the quantity of each radioactive material authorized to the quantity listed for that material above exceeds one.*

[2/] *Waste packaged in Type B containers does not require a contingency plan.*

1999
RATIONALE FOR REVISIONS

PART P

CONTINGENCY PLANNING FOR RESPONSE TO RADIOACTIVE MATERIAL EMERGENCIES

Introduction

Part P provides for preparedness and response to events involving actual or potential release of radioactive material by specifying the content and exercise of a licensee contingency plan. Certain licensees are required to evaluate and prepare to respond to any release of radioactive material in an accident.

By addition of this Part P, the requirements for immediate containment, rescue, notifications, and securing the scene of an event are now located separate from Part C (Licensing of Radioactive Material) in the *Suggested State Regulations for Control of Radiation* (SSRCR) of the Conference of Radiation Control Program Directors (CRCPD).

D D/HHS ? NRC

D/HHS The U.S. Nuclear Regulatory Commission regulations upon which Part P is based--in particular 10 CFR 30.32(i), 40.31(i), 40.31(j), 40.34(f) & 70.22(i)--were published by April 7, 1989 (54 FR 14051), *Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licenses (10 CFR parts 30, 40, and 70)*, effective April 7, 1990. The U. S. Nuclear Regulatory Commission considers their adoption a matter of compatibility for an Agreement State. CRCPD considers these regulations essential to a Naturally Occurring and Accelerator Produced Radioactive Material (NARM) Licensing State. Cognizance was also taken of the June 22, 1995 (60 FR 32430-32442), *Emergency Planning Licensing Requirements for Independent Spent Fuel Storage Facilities (ISFSI) and Monitored Retrievable Storage Facilities (MRS)*, 10 CFR Part 72, Final Rule.

General

The purpose of Part P stated in Section P.1 is for a licensee to be prepared to respond to an event involving actual or potential release of radioactive material.

Key definitions are provided in Section P.3. For clarity of definition in Part P, reliance was placed upon NUREG-1140, *A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees* (January 1988). The U.S. Environmental Protection Agency, Federal Emergency Management Administration, U.S. Department of Energy and U.S. Department of Transportation also have significant roles in emergency preparedness. Some Part P definitions are based on EPA 400-R-92-001, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, May 1992. In addition, cognizance was taken of the relevant International Atomic Energy Agency (IAEA) guides, including the International Nuclear Event Scale for prompt communication of safety significance and IAEA Safety Series I, numbers 115 and 109.

As prescribed by P.4, a license application must either (1) provide a contingency plan for responding to any accident in which specified quantities of radioactive material (Appendix A to Part P) could be released from the licensed site or (2) show that 0.01 Sievert (1 rem) total effective dose equivalent or 0.05 Sievert (5 rems) to the thyroid will not be exceeded by any accident. The applicant's dose calculation may take into account the factors in Section P.5.

The applicant's contingency plan must contain the information in Sections P.6a through P.6l. Section P.7 requires comment on the contingency plan to be solicited from offsite response organizations including, but not limited to, local fire, police, ambulance and hospital services.

Section P.8 relates Part P to the public information requirements of the *Emergency Planning and Community Right-to-Know Act of 1986*, Title III, Pub. L. 99-499, pertaining to hazardous materials. Sections P.9 and P.10 specify required training, drills and exercises.

Section P.11 specifies what must be done in cases when the plan is put into action. Section P.12 specifies how often the contingency plan is to be revised and how revision is to be done. Section P.13 contains recordkeeping requirements.

This Part was based upon existing US Nuclear Regulatory Commission and state regulations (AR indicates Arkansas, CO indicates Colorado, and IL indicates Illinois). Wording was used for some provisions from AR RH-403g, adopted August 15, 1990, CO 3.9.11, effective January 1, 1994, and IL 330.500.

Part P is not intended to regulate radioactive material "in transport". See 49 CFR 172.600-604, in particular 49 CFR 172.602. Part P may relate to a licensed shipper or a facility with potential responsibility for an offsite radioactive material transportation accident.

Specific Provisions

Section P.1 - Purpose. Part P specifies requirements on a licensee for accidents only. The relationship of "accident" and "incident" is that in the International Basic Safety Standards and International Atomic Energy Agency International Nuclear Event Scale. This is reflected in P.2b and later in Part P. The key distinction between accident and incident is whether a public dose limit is likely to be exceeded or not. The International Atomic Energy Agency usage fits a wider range of licensees than United States government agency usages and is more self-consistent and less confusing. The International Atomic Energy Agency usage differs semantically from (1) the use of the word "incident" in reporting abnormal occurrences and also (2) the fixed facility definition of "nuclear incident" (EPA 400-R-92-001, p. 1-1), which includes "accidents", both "deliberate or accidental" releases, and the possibility of release "in sufficient quantity to warrant consideration of protective actions" (EPA 400-R-92-001, p. 1-1 & A-2).

Section P.3 - Definitions. The definitions in Part P have been judiciously crafted for clarity in their application by state radiation control staff. For example, some planners use a definition of "abnormal exposure condition", defined as when a source, or the radiation from it, is not under control. The Part P definitions do not include abnormal exposure or potential exposure in order to avoid the multiple and often confusing meanings of "exposure" in radiation protection and hazardous material regulation.

As used in this Part, "accident" is defined (1) semi-quantitatively in relation to public dose in excess of regulatory limits (consonant with both 10 CFR and the International Atomic Energy Agency), then (2) also in relation to consequences of the unintended event and whether facility protection or safety are degraded. The phrase "in sufficient quantity to warrant consideration of protective actions" is from the definition of a "nuclear incident" in EPA 400-R-92-001.

Some definitions of "accident" refer to the loss of normal control of a source. This is not included in Part P. Some definitions include "loss" of radioactive material. For Part P, "release" is sufficient.

Other phrases considered but not included in the definition of "accident" were: "unauthorized release of radioactive material due to human error or negligence, system failure, an act of God, or defective components", as well as theft.

The definition of alert is essentially from 10 CFR, enhanced slightly. The phrase "may occur" is too general and isn't time-bound, so the word "imminent" is used. The references to "off-duty staff" and "duty stations" help make very clear the distinction between "alert" and "site area emergency".

A definition of "emergency" is added in the sense of EPA 400-R-92-001 (danger to life and property).

The definition of "Emergency Planning Zone" is from federal guides.

The definition of "evacuation" is from EPA 400-R-92-001, p. A-1.

The definition of "event" is meant to be general.

The definition of "exercise" is from federal guides.

A definition of "facility" or "fixed facility" is not included at this time.

A definition of "general emergency" is added in brackets. This would possibly apply in a state evaluating an irradiator facility accident or fire at a radiopharmaceutical laboratory and if a state were to at some future time regulate certain U.S. Department of Energy facilities. The 1989 and 1995 U.S. Nuclear Regulatory Commission NUREG documents and Federal Register notices upon which Part P is based do not anticipate this class of response for non-nuclear-power-plant licenses.

A definition of "immediate" is included ("15 minutes" is from NUREG-0654), with provision for flexibility.

A definition of "incident" as used internationally is included. Incident is not used at this time in any regulatory requirement of Part P.

The definition of "offsite response organizations" is taken from wording in 60 FR 32430-32442, modified by replacing "for example" with "including, but not limited to," and replacing "medical" with "ambulance and hospital services".

The definition of "projected dose" is from EPA 400-R-92-001, p. A-2.

The definition of "protective action" is from 10 CFR. For comparison, the definition in EPA 400-R-92-001, p. A-2, is: "An activity conducted in response to an incident or potential incident to avoid or reduce radiation dose to members of the public (sometimes called a protective measure)".

The definition of "protective action guide" is condensed from EPA 400-R-92-001, p. A-3, which has: "The projected dose to reference man, or other defined individual, from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted."

The definition of "relocation" is from EPA 400-R-92-001, p. A-3.

The definition of "sheltering" is from EPA 400-R-92-001, p. A-3.

The definition of "site" is generically adapted from state radiation regulations (e.g. CO '1.4). It includes the term "restricted area", which is defined in Part A, and also includes a sub-definition of site boundary.

The definition of "site area emergency" is that found in 10 CFR.

Section P.4 - Dose Evaluation and Contingency Planning. A 10 mSv effective dose equivalent is used, consistent with the U.S. Nuclear Regulatory Commission administrative threshold to determine whether a contingency plan is required. AR uses 5 mSv. "Projected dose" is "in the absence of protective actions", thus, the 10 mSv administrative level (10 times the 10 CFR Part 20 annual limit for an individual member of the public) is in part because in practice (1) actual dose may well be less than 1 mSv and (2) the plan is to prepare (and help prevent) a potential as well as an actual accident. For IAEA, "accident" is at the prescribed public total effective dose equivalent limit, while "incident" is 0.1 of the total effective dose equivalent limit for a member of the public.

Since Appendix A, footnote 1, provides for combinations of materials, "quantities" is used in P.4 and the title to Appendix A.

The word "maximum" was not included, since it adds no meaning to "not exceed".

Section P.5 - Evaluation of Potential Dose. Part P uses language from Illinois, "may take into account whether", rather than 10 CFR and Arkansas, which use "One or more of the following factors may be used to support an evaluation submitted under this section."

Section P.5b - Evaluation of Potential Dose. The wording "because of the way it is stored or packaged" (AR) is used rather than "due to the method of storage or packaging" (IL).

Section P.5f - Evaluation of Potential Dose. The phrase "or larger than" (IL) is added to the 10 CFR phrasing.

Section P.5g - Evaluation of Potential Dose. "Other factors appropriate for the specific facility" as included by NRC, AR & CO but excluded by IL, is not added to P.5g. P.5e probably includes this flexibility.

Section P.6 - Contents of a Contingency Plan. Part P uses IL "shall" rather than AR "must".

To make explicit the accountable and dynamic nature of the contingency planning document, Part P includes "in separate sections having each page labeled with a date and revision number."

Section P.6e - Contents of a Contingency Plan. P.6e includes both incidents and accidents, since the ALARA principle applies to both. Radiological exposure controls for both onsite and offsite response personnel are to be included.

Section P.6h.ii. - Contents of a Contingency Plan. This provision is based on 60 FR 32441. Notification is by telephone only, since facsimile or electronic mail can go for hours or days before being read. Arrangements for backup communication and 24-hour capability are required.

Section P.6h.iii. - Contents of a Contingency Plan. This provision is from 60 FR 32441.

Section P.6j.ii. - Contents of a Contingency Plan. The phrase "radiation workers and non-radiation workers including off-site responders" was substituted for "personnel" in order to be explicitly consistent with the recent clarification in 10 CFR of radiation and non-radiation worker and to make it clear that training include responders.

Section P.6k.i. - Contents of a Contingency Plan. Quarterly is a usual frequency of communication drills.

Section P.6k.ii. - Contents of a Contingency Plan. A biennial frequency is required, with at least one drill in between which combines some of the principal functional areas of the licensee's emergency response capabilities.

Section P.6k.iv - Contents of a Contingency Plan. The most probable scenario may be a minor event. Drills and exercises are to deal with events up to and including the maximum credible accident.

Section P.6k.v. - Contents of a Contingency Plan. Since it can be helpful to have participants think about an exercise in advance, the question of whether scenarios are announced or unannounced is left to be "prescribed in the contingency plan." NUREG-0654 evidently doesn't require that participants not know the scenario.

Section P.7 - Comment from Offsite Response Organization. 60 FR 32433 discusses whether amendments should also be subject to 60-day comment specification.

The phrase "including, but not limited to, local fire, ambulance, and hospital emergency response officials" was added for explicitness.

Section P.11b - Plan Implementation. The word "immediately" (IL) is used, consonant with the definition in P.3j. 10 CFR and AR include "not later than one hour after the licensee declares an emergency." Per 60 FR 32435, one commenter on ISFSI emergency response advocated 15 minutes.

Section P.12a - Plan Revision. 10 CFR "report" is modified to "provide" (meaning "send in").

Section P.12b - Plan Revision. Plan revisions are to be "in writing", to make explicit that Agency approval is to be documented not just verbal.

Based on comments, the second sentence was added: "For information purposes only, updates of individual names, titles, assignments of responsibility, and telephone numbers are to be reported to the Agency and to affected offsite response organizations within 30 days."

Appendix A - Quantities of Radioactive Materials Requiring Consideration of the Need for a Contingency Plan for Responding to a Release. In the table (10 CFR Part 30.72, Schedule C) of "quantities of radioactive materials requiring consideration of the need for an emergency plan for responding to a release", naturally occurring and accelerator-produced radioactive materials are covered by limits for "any other beta-gamma emitter", "any other alpha emitter" and other special case.

Matters for Future Consideration

These matters for future consideration came from state radiation control agency comments and from federal and state agency documents used by the working group.

1. The working group will consider the following regarding definitions in Sec. P.3:

    a. Since the relationship of "accident" and "incident" is that in the International Basic Safety Standards and International Atomic Energy Agency International Nuclear Event Scale, closer comparison could be made to the definitions in the International Nuclear Event Scale Users' Manual.

    b. The definition of "emergency" could be refined in comparison to the usages of the U.S. Environmental Protection Agency and Federal Emergency Management Agency.

    c. The word "demonstration" may be preferable to "exercise".

    d. A definition of "facility", or reference to one elsewhere, for example, "fixed facility" or "facility alert", could be made.

    e. A definition of "protective measure", used as different from "protective action" by some possession-only license holders to distinguish between onsite and offsite emergency preparedness needs, could be added.

    f. A definition of "release fraction" could be included.

    g. Define "respirable size range" in relation to Sec. P.5c, perhaps by citing an American National Standards Institute or similar reference.

    h. Define "solubility" in relation to Sec. P.5c, perhaps by citing an American National Standards Institute or similar reference.

2. The working group will consider deriving specific release fraction values for naturally occurring radionuclides to be added to the table in Appendix A, "Quantities of Radioactive Materials Requiring Consideration of the Need for a Contingency Plan for Responding to a Release". This matter is interrelated with the potential necessity of calculations using revised methods and definitions prior to modifying table entries.

   a. An updated methodology could be used to calculate estimated offsite dose and to relate the release fraction to the calculated total effective dose equivalent. An updated methodology would use and likely replace the present basis, as found in pages 70-101 of U.S. Nuclear Regulatory Commission NUREG-1140, January 1988.

   b. The table values at present do not reflect differences in the chemical state of an element and also the type of material (paper, metal, liquid, etc.) as they might modify the release fraction.

   c. The table values pertain to releases which are airborne. Scenarios exist for waterborne releases that require a response plan.

   d. An updated methodology will likely use a revised definition for release fraction.

   e. Release fraction table values could be calculated for specific naturally occurring and accelerator produced radionuclides (in particular ^{226}Ra, ^{57}Co, ^{67}Gallium, ^{111}In, and ^{201}Thallium). These nuclides could then be added to the table in Appendix A.

3. The working group will consider adding additional specifications of the kind usually required for nuclear power plants, uranium enrichment facilities or an interim spent fuel storage installation. Some of these specifications may be more appropriately included in regulatory guidance. Alternatively, such specifications could be added to Part P in brackets, as optional regulatory language.

   Requirements which could be considered include:

   a. Sec. P.6b: When radioactive material inventories or industrial applications change, the license should be required to change the offsite release scenarios, making the contingency plan inventory- and process-specific.

   b. Sec. P.6d: Specifications for the type of monitoring, for example, area monitors.

   c. Sec. P.6e: Description of radiological exposure controls should specifically state how exposure is estimated (whether based on source term measurements or field airborne radioactivity detectors) and minimized, including how authorization, if any, to exceed limits or guidelines is obtained.

d. Sec. P.6e: Description of radiological exposure controls should explicitly state whether respirators will be used, and, if so, whether they're maintained and whether workers receive medical exams.

e. Sec. P6.g.ii.: Description of responsibilities should explicitly state the role of site Radiation Protection Officer. State radiation control programs expect the Radiation Protection Officer to be responsible, since the Radiation Protection Officer will usually have the best information regarding current uses and inventory.

f. Sec. P6.g.iii.: Capabilities and notification procedures of offsite response personnel should be documented, with clearly defined roles and 24-hour telephone and pager numbers.

g. Sec. P6.g.iii.: The description should identify how contractors will be coordinated.

h. Sec. P.6j.ii.: Hazard training should conform to specifications of the Occupation Safety and Health Administration for hazardous waste operations (HAZWOPER).

i. Sec. P.6k.i.: Communications drills should be monthly.

j. Sec. P. 6k.ii.: Radiological/health physics drills should be conducted every year with a medical emergency every other year.

k. Sec P.6k.iii.: Fire/ambulance services should be invited to participate every other year.

l. Sec. P.6k.v.: Explicitly state a frequency of unannounced drills or exercises (being unannounced is not necessary every time).

m. Sec. P.10a: An exercise should be conducted each year and deficiencies corrected before the subsequent drill or exercise is conducted.

n. Sec. P.10b: Be more explicit about who is to do the critique and evaluation, for example. the licensee Radiation Protection Officer.

o. Sec. P.10c: Here or in a footnote, be explicit as to whether the Agency is required to participate. The Agency should observe or participate every two years.

p. Sec. P.12: A process for maintaining, updating and distributing controlled copies to onsite and offsite response organizations and to the public should be required.

4. In Sec. P.4, a 1 mSv (100 mrem) may be a more consistent threshold for requiring a contingency plan. As an alternative, a smaller scale of contingency planning (strictly onsite emergency planning) could be required for the 1 mSv to 10 mSv range.

5. Clarify how the thyroid (iodine) special dose limit, included by the U.S. Nuclear Regulatory Commission in 1989, is best understood in relation to total effective dose equivalent.

6. By analogy to the environmental report requirement for some radioactive material licensees, consider providing discretion to the Agency by adding "Notwithstanding P.4a., if the Agency determines a credible accident may affect the quality of the human environment by reason of exposure to radiation, a contingency plan for mitigation shall be included in the application."

7. A question which remains is whether to require delineation of an "emergency planning zone" of set radius, for example 10 miles, or perhaps 1-5 miles as regarded appropriate for an Interim Spent Fuel Storage Installation by the U.S. Nuclear Regulatory Commission in the June 22, 1995, 60 FR 32430-32442, Emergency Planning Licensing Requirements for Independent Spent Fuel Storage Facilities (ISFSI) and Monitored Retrievable Storage Facilities (MRS), 10 CFR Part 72, Final Rule.

8. Part P contains minimal requirements for public information. If a reasonable likelihood existed for offsite consequences of a credible accident, a public education program could let people know ahead of time, possibly through a warning system. If protective action by the public is part of the contingency plan, a description of how the public will be trained in what might happen and how to perform the action (such as removal and disposition of contamination). If no such likelihood exists, the licensee's contingency plan could still describe who is responsible for public information and how news releases will be coordinated.

9. Consider whether Part P might be strengthened by a provision for the Agency to take possession of radioactive material in emergency.

10. Consider whether Part P might be strengthened by a provision for the Agency to assert Agency authority for access to accident site for specific purposes.

11. Consider whether Part P might be strengthened by a provision for the Agency to have certain capabilities in place.

Responses to Comments from Part P Peer Review

1. Several comments pointed out that the contents of the contingency plan required by Section P.6 could include additional detailed requirements similar to those required for a nuclear power plant or an interim spent fuel storage installation. Part P could thus be modeled more closely on 10 Code of Federal Regulations 50, 44 Code of Federal Regulations 350 and U.S. Nuclear Regulatory Commission NUREG-0654.

   These comments (in particular from Andrea Pepper of Conference of Radiation Control Program Directors Committee E-6, Emergency Response Planning) were added to similar prior suggestions as matters for future consideration by the working group. The working group will need to determine whether to (1) add the detailed regulatory provisions to Part P, (2) add optional (bracketed) language in Part P or (3) recommend that the specifications be included in regulatory guidance, but not in Part P. The suggested detailed requirements to be considered include:

   1. Sec. P.6b: When radioactive material inventories or industrial applications change, the license should be required to change the offsite release scenarios, making the contingency plan inventory- and process-specific.

   2. Sec. P.6e: Description of radiological exposure controls should specifically state how exposure is estimated and mimimized and how authorization, if any, to exceed limits or guidelines is obtained.

   3. Sec. P 6g.iii: Capabilities and notification procedures of offsite response personnel should be documented, with clearly defined roles and 24-hour telephone and pager numbers.

   4. Sec. P 6j.ii: Hazard training should conform to specifications of the Occupational Safety and Health Administration for hazardous waste operations (HAZWOPER).

   5. Sec. P.6k.i: Communications drills should be monthly.

   6. Sec. P. 6k.ii. Radiological/health physics drills should be conducted every year with a medical emergency every other year.

   7. Sec P.6k.iii: Fire/ambulance services should be invited to participate every other year.

   8. Sec. P.10: An exercise should be conducted each year. The Agency should observe or participate every two years. Deficiences should be corrected before the subsequent drill or exercise is conducted.

   9. Sec. P.12: A process for maintaining, updating and distributing controlled copies to onsite and offsite response organizations and to the public should be required.

2. Comments were received about dose calculation and Appendix A, "Quantities of Radioactive Materials Requiring Consideration of the Need for a Contingency Plan for Responding to a Release". Revised calculation methods and definitions are a matter for consideration before updated table entries are made.

    1. An updated method could be used to better relate the release fraction to the calculated offsite total effective dose equivalent. An updated method would use and likely replace the present Appendix A basis, found in pages 70-101 of U.S. Nuclear Regulatory Commission NUREG-1140, January 1988.

    2. An updated method will likely use a revised definition for release fraction.

    3. Naturally occurring radionuclide release fractions could then added to the Appendix.

3. One commenter noted that Part P contains minimal provisions related to public information. The commenter stated that if a reasonable likelihood existed for offsite consequences of a credible accident, a public education program should let people know ahead of time, through a warning system, what could happen and how to react. If no such likelihood exists, the licensee's contingency plan should still describe who is responsible for public information and how news releases will be coordinated.

    The degree to which Part P could specify licensing requirements for public information programs is a matter of future consideration.

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SR-1 MOPS subgroup
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