

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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AFFIRMATION/DISCUSSION AND VOTE

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PUBLIC MEETING

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Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Thursday, February 23, 1989

The Commission met in open session, pursuant to
notice, at 3:30 p.m., the Honorable LANDO W. ZECH, JR.,
Chairman of the Commission, presiding.

COMMISSIONERS PRESENT:

LANDO W. ZECH, JR., Chairman of the Commission
KENNETH M. CARR, Member of the Commission
JAMES R. CURTISS, Member of the Commission

1 STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

2 SAMUEL J. CHILK, Secretary

3 WILLIAM C. PARLER, General Counsel

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P R O C E E D I N G S

(3:30 p.m.)

CHAIRMAN ZECH: Good afternoon, ladies and gentlemen.

Commissioner Roberts and Commissioner Rogers will not be with us this afternoon.

This is an affirmation session. Before I ask the Secretary to lead us through the item to affirm, do any of my fellow Commissioners have any comments to make?

(No response.)

If not, Mr. Secretary, please proceed.

MR. CHILK: The paper before the Commission, Mr. Chairman, is SECY 88-204. It is entitled Final Rule on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees.

The Commission, in this paper, is being asked to act on the final rule which upgrades emergency preparedness requirements for fuel cycle and other radioactive material licensees.

Chairman Zech, Commissioners Carr and Rogers have approved the final rule with a modification to require a bi-annual on-site exercise frequency rather than the annual frequency, and a modification to training requirements for site personnel, as attached to our February 22nd memorandum.

Commissioner Roberts has disapproved the rule.

1 He would have approved the rule based on more realistic
2 assumptions. Commissioner Curtiss has disapproved the rule,
3 indicating that he believes the justification for the action
4 proposed is exceedingly weak.

5 Commissioner Rogers, a member of the majority, is
6 on travel and is not able to participate in this
7 affirmation. In view of this, Commissioner Roberts, who is
8 a member of the minority, is not participating in this
9 session, so that the will of the Commission majority can be
10 accomplished.

11 Will you please affirm your vote.

12 (Chorus of ayes.)

13 CHAIRMAN ZECH: Anything to come before us today?

14 MR. CHILK: I have nothing else.

15 CHAIRMAN ZECH: Thank you very much. We stand
16 adjourned.

17 (Whereupon, at 3:32 p.m., the meeting was
18 adjourned.)

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CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting
of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: AFFIRMATION/DISCUSSION AND VOTE

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: FEBRUARY 23, 1989

were transcribed by me. I further certify that said transcription
is accurate and complete, to the best of my ability, and that the
transcript is a true and accurate record of the foregoing events.

Phyllis Young

Reporter's name: Phyllis Young



RULEMAKING ISSUE

(Affirmation)

SECY-88-204

July 15, 1988

For: The Commissioners

From: Victor Stello, Jr., Executive Director for Operations

Subject: FINAL RULE ON EMERGENCY PREPAREDNESS FOR FUEL CYCLE AND OTHER RADIOACTIVE MATERIAL LICENSEES

Purpose: To obtain Commission approval of a notice of final rulemaking.

Background: During the Commission's deliberations concerning nuclear power plant emergency preparedness after the Three Mile Island accident, the Commission directed the staff to upgrade emergency preparedness requirements for fuel cycle and other radioactive material licensees.

In late 1980, the staff reevaluated previously submitted emergency procedures and plans for fuel fabrication plants and found some weaknesses. For example, some licensees had no procedures for the prompt notification of State and local response organizations.

In February 1981, the NRC staff ordered 62 licensees to submit radiological contingency plans or show why they were not needed (46 FR 12566). These orders required some licensees, based on their licensed possession limits, to plan for actions that would be needed in the event of an accident. The orders were issued to operators of fuel processing and fabrication plants, UF₆ production plants, and radioactive material users authorized to possess large quantities of radioactive materials in unsealed form. As a result of these orders, about half of the affected licensees reduced their authorized possession limits for radioactive material so that they would not be required to submit contingency plans to NRC.

On June 3, 1981, the Commission published in the Federal Register (46 FR 29712) an Advance Notice of Proposed Rulemaking on emergency preparedness for certain fuel cycle and other radioactive

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material licensees. In the advance notice, the Commission proposed to codify with some modifications the radiological emergency requirements set forth in the orders. The main public comment was that there is no need for emergency plans for those facilities because the offsite consequences of a credible accident would be so small.

On January 4, 1986, an overfilled cylinder containing uranium hexafluoride ruptured while being reheated at the Sequoyah Fuels facility in Oklahoma. About 14 tons of uranium hexafluoride escaped to the atmosphere. One worker died due to pulmonary edema caused by hydrofluoric acid. Hydrofluoric acid is created when uranium hexafluoride reacts with moisture in air. Three other workers were hospitalized for lung burns, but they recovered fully. Exposures offsite were well below levels at which injuries or physical symptoms would be expected. Although the facility had an emergency plan, the emergency response did not reduce offsite exposure because the accident happened too quickly. Among serious radiological accidents at fuel cycle and material facilities, the rupture of a heated 14-ton cylinder containing uranium hexafluoride had previously been identified as the accident with both the greatest potential consequences and the greatest probability of occurring.

On April 20, 1987, the NRC published a Notice of Proposed Rulemaking to establish in its regulations a formal basis for the plans required by order. Seventeen public comments were received. Nine were from licensees who would be affected by the regulation and three were from States who would have a role in responding to an accident.

Discussion:

Two types of public comments raised significant policy questions. The first type said the rule should not be adopted because it is not needed or not useful. The reasons given were that the analyses and accident scenarios were too conservative, that actual doses would be far lower than those calculated, that credit should be given for engineered safeguards, that plans should not be required unless doses could exceed 5 rems instead of 1 rem, that the costs far outweigh the benefits, and that accidents would happen so quickly that no offsite response could be effective at reducing offsite exposures, regardless of cost.

These arguments are rejected. The staff agrees that the calculations are conservative, that doses in an actual accident may generally be lower than calculated, that the probability of a large release is very small, and that some accidents could happen so quickly that no response would be effective at lowering doses. Nevertheless, the staff concludes that there can be situations in which emergency planning for such facilities can be effective, and as part of the NRC's defense-in-depth philosophy, an emergency plan is considered

necessary and prudent protecting public health and safety. There is no requirement, stated or implied, that the emergency response would always be effective at reducing exposures offsite or that specified dose levels must be prevented. The requirement would be that the licensee must be prepared to take practical steps that could, in favorable circumstances, reduce radiation exposures to the public.

We do not agree either on comments about the rule being in contradiction with the ALARA concept because costs would greatly exceed benefits. The ALARA concept was designed with a view to assessing the consequences of normal operations, not accidents. In the accident context as here, the Commission considers it desirable to adopt the requirements it has proposed; it recognizes that costs may exceed benefits but the additional financial burdens are small and the cost benefit assessments involve a substantial degree of judgment.

The other type of comment indicated that the rule should require the licensee to have a system to promptly warn the public off-site of an accident and require the licensee to give information brochures annually to people near the facility.

These arguments were also rejected. The licensee has the responsibility to prevent serious accidents. Should that fail, the responsibility for protecting the public near the facility is considered to belong primarily to offsite public safety authorities. The rule would require the licensee to immediately notify those authorities of serious accidents. It is expected that, in general, the authorities would then notify the public in a manner similar to what is done for truck and rail accidents involving hazardous chemicals. In some instances, but not all, doses received by the public would be reduced. Similarly, the rule would leave the decision on public information brochures to local authorities.

In November 1987, the staff published a draft guide for comment that would provide a standard format for an emergency plan and indicate the required content of an emergency plan. The guide would provide licensees with a method enabling them to comply with the new rule before they have to revise their plans. The draft is enclosed (Enclosure 5).

Alternatives:

1. Publish the final rule as drafted by the staff (Enclosure 1).
2. Direct the staff to revise the rule to add requirements for a means to directly warn the public of a release and for a public information program.
3. Direct the staff to be less conservative in its analyses and to reduce the requirements in the rule and associated guidance to be more commensurate with the degree of risk.

Coordination: OGC has reviewed this paper and has no legal objection.

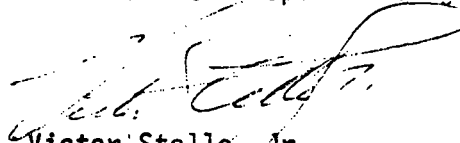
Recommendation: That the Commission:

1. Approve a notice of final rulemaking (Enclosure 1) that would amend 10 CFR Parts 30, 40, and 70 to set out emergency preparedness requirements for fuel cycle and other radioactive material licensees (Alternative 1).
2. Certify that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities in order to satisfy the requirements of the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)).
3. Note:
 - a. The final rule will be published in the Federal Register and be made effective one year after publication. (The time is to allow NRC to publish guidance on how to implement the rule before licensees would have to start revising their plans.)
 - b. The following Congressional Committees will be informed: House Subcommittee on Energy Conservation and Power, Senate Subcommittee on Nuclear Regulation, and House Subcommittee on Energy and the Environment (Enclosure 2).
 - c. A public announcement will be issued (Enclosure 3).
 - d. The staff has prepared a regulatory analysis (Enclosure 4). The analysis indicates that the economic impact on licensees and small entities would not be significant.
 - e. The staff has prepared a environmental impact assessment (Section 4 of Enclosure 4). The assessment concludes that the action would not significantly affect the quality of the human environment.
 - f. This final rule contains information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 USC 3501 et seq.). These requirements were approved by the Office of Management and Budget.
 - g. The Chief Counsel for Advocacy of the Small Business Administration will be informed of the Certification regarding economic impact on small entities and the reasons for it as required by the Regulatory Flexibility Act;

- h. The NRC requirements for radiological emergency plans will be a matter of compatibility for the Agreement States. The Agreement States have participated in the development of the rule. Approximately 10 to 15 Agreement State Licensees will be affected.

Sunshine Act:

Recommend consideration at an open meeting.


Victor Stello, Jr.
Executive Director for Operations

Enclosures:

1. Notice of Final Rulemaking
2. Draft Congressional Letter
3. Draft Public Announcement
4. Regulatory Analysis - NUREG 1140 (On file in SECY)
5. Draft Standard Format and Contents
of Emergency Plans - NUREG 0762, Rev. 1 (On file in SECY)

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Tuesday, August 2, 1988.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Tuesday, July 26, 1988, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

This paper is tentatively scheduled for affirmation at an Open Meeting during the Week of August 8, 1988.

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10 CFR PARTS 30, 40, and 70

Emergency Preparedness for
Fuel Cycle and Other Radioactive Material Licensees

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require approximately 30 major NRC fuel cycle and other radioactive material licensees to maintain emergency plans. The plans are for coping with serious accidents involving licensed radioactive materials for which responses by offsite response organizations (such as police, fire, and medical organizations) might be needed. This action formally establishes in NRC regulations the requirement that these licensees maintain emergency plans. This action is intended to ensure that these licensees are prepared to take action to protect public health and safety if an accident occurs.

EFFECTIVE DATE: (One year from publication in the Federal Register.)

FOR FURTHER INFORMATION CONTACT: Dr. Stephen A. McGuire or Mr. Michael T. Jamgochian, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone 301-492-7000.

SUPPLEMENTARY INFORMATION:

Background

During the Commission's deliberations concerning nuclear power plant emergency preparedness after the Three Mile Island accident, the Commission directed the staff to evaluate the need to change the emergency preparedness regulations for fuel cycle and other radioactive material licensees.

In late 1980, the staff reevaluated previously submitted emergency plans for radioactive releases for fuel fabrication plants and found some apparent weaknesses. For example, some plans did not have arrangements for the prompt notification of offsite response organizations.

Upon noting these weaknesses, the NRC staff prepared orders requiring 62 licensees to submit comprehensive onsite radiological contingency plans (46 FR 12566). These orders, which were issued in February 1981, required some licensees, based on their licensed possession limits, to plan for actions that would be needed in the event of an accident. The actions would be those necessary to protect workers, limit the release of radioactive materials, and mitigate adverse consequences of the accident. The orders were issued to operators of fuel processing and fabrication plants, UF_6 production plants, and radioactive material users authorized to possess large quantities of radioactive materials in unsealed form. The licensees selected were those authorized to possess quantities of radioactive materials that could as a result of a severe accident potentially result in a radiation exposure in excess of

1 rem total body, 5 rems to the thyroid, or 3 rems to other body organs. As a result of these orders, about half of the affected licensees reduced their authorized possession limits for radioactive material, thus no longer requiring them to submit contingency plans to NRC.

On June 3, 1981, the Commission published in the Federal Register (46 FR 29712) an advance notice of proposed rulemaking on emergency preparedness for certain fuel cycle and other radioactive material licensees. In this advance notice, the Commission proposed to codify the radiological contingency planning requirements set forth in the Commission's orders, as well as consider requiring offsite emergency plans. The Commission noted in the advance notice that it would use factors such as possession limits, potential for accidental criticality, chemical toxicity of radioactive materials, and potential radiation hazards for all of the NRC licensees whose radioactive material possession limits were such that severe accidents could result in offsite radiation doses exceeding the lower end of the protective action guides proposed by the EPA.

The Commission received 18 responses to its advance notice of proposed rulemaking. The most significant comment was to question the need for the rule. After considering the comments the Commission decided to go forward with rulemaking and published a Notice of Proposed Rulemaking in the Federal Register on April 20, 1987 (52 FR 12921). That Federal Register Notice discusses the comments on the Advance Notice in more detail.

The Proposed Rule

The proposed rule is summarized below. The public comments and responses to them are discussed after the summary of the proposed rule.

Licensees Needing Plans

The criteria selected for establishing whether a licensed facility would be required to establish and maintain an emergency plan for significant accidental releases were whether a credible severe accident could theoretically deliver a radiation dose of 1 rem effective dose equivalent,¹ 5 rems to the thyroid, or soluble uranium intake exceeding 2 milligrams to a member of the public. Soluble uranium, although weakly radioactive, is primarily a toxic chemical hazard. Two milligrams is an intake from which no clinical evidence of chemical injury would be expected. This is discussed in more detail in the resolution of public comments section.

The EPA recommends that actions to protect the public be considered if projected whole body doses due to an accident are in the range of 1 to 5 rems or thyroid doses are in the range of 5 to 25 rems, taking into account the practicality of the actions that would be taken. The proposed rule used the low end of the dose ranges as the criteria for

1 The effective dose equivalent is defined as the sum of the external radiation dose equivalent plus the dose equivalent to each body organ due to radioactivity deposited within the body multiplied by a risk weighting factor for the organ. The weighting factors are taken from "Recommendations of the International Commission on Radiological Protection," ICRP Publication 26, Pergamon Press, Oxford, 1977. ICRP Publication 26 is available for purchase from Pergamon Press, Elmsford, NY.

establishing whether a licensed facility needs an emergency plan for responding to a release.

The joint NRC-EPA policy on the meaning of the protective action guides was published in NUREG-0396/EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants." That report stated, "The nature of PAGs [protective action guides] is such that they cannot be used to assure that a given level of exposure to individuals in the population is prevented. In any particular response situation, a range of doses may be experienced, principally depending on the distance from the point of release. Some of these doses may be well in excess of the PAG levels and clearly warrant the initiation of any feasible protective actions. This does not mean, however, that doses above PAG levels can be prevented or that emergency response plans should have as their objective preventing doses above PAG levels." Thus, protective action guide doses represent trigger points for taking protective actions. They are not dose limits that cannot be exceeded.

The EPA's draft protective action guides apply to radiation received uniformly over the body. These guidelines are not applicable if the radiation dose is not uniform or if only some body organs receive the radiation dose. To account for radionuclides that would be deposited nonuniformly in the body, such as those possessed by fuel cycle and other radioactive material licensees, the effective dose equivalent from these radionuclides is used to replace the whole body dose equivalent.

The conservative accident scenarios and dose calculations which formed the technical basis for the proposed rule are described in "Regu-

latory Analysis of Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees," NUREG-1140.²

Doses were calculated for a "standard man," taken to represent a normal adult. Doses to children would be slightly different than adult doses. The NRC considered the differences between adult doses and child doses to be insignificant in comparison with the other uncertainties in the analysis. The NRC also considered that the inherent conservatism in its accident dose calculations and its use of the 1-rem lower end of the range for protective action consideration provide an adequate margin of safety.

For most licensees who would have to establish and maintain a plan, the degree of risk to the public is small. Consider first those licensees that do not possess significant quantities of uranium hexafluoride (UF_6), which is primarily a chemical hazard. For most of those licensees, even worst-case doses to an individual on the plume centerline off-site would be less than 5 or 10 rems. Realistically, actual doses that anyone would receive should be lower. Finally, the probability of a serious radiological accident is small, less than 10^{-4} /yr, and the probability of a serious accident simultaneous with highly adverse meteorology is less than 10^{-5} /yr. Details are provided in the Regulatory Analysis, NUREG-1140, Sections 2.4, 2.5, and 3.

2 NUREGs-0396, 1140, 1179, 1189, 1198, and CR-3657 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082. Copies are also be available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Copies are available for inspection or copying (for a fee) in the NRC Public Document Room, 1717 H Street NW., Washington, DC.

The rupture of a large heated cylinder of UF_6 is an exception in that both the probability of a large release and the consequences due to the chemical toxicity of the released material could be of greater concern than the radiation doses from other accidents at fuel cycle or other radioactive material facilities. As part of the analysis for this rulemaking, the rupture outdoors of a hot cylinder containing 14 tons of UF_6 was analyzed, and predictions were made concerning the consequences of such a rupture. These predictions, calculated and published prior to an actual release that occurred on January 4, 1986, at the Sequoyah Fuels Corporation facility ("Rupture of a Model 48Y UF_6 Cylinder and Release of Uranium Hexafluoride," NRC Report NUREG-1179, February 1986) were compared with the actual results of the accident. The quantity and duration of the release were quite close to what was predicted. Also, it appears that the actual onsite and offsite consequences were also quite close to what was predicted. ("Assessment of the Public Health Impact from the Accidental Release of UF_6 at the Sequoyah Fuels Corporation Facility at Gore, Oklahoma," NRC Report NUREG-1189, March 1986.)

Airborne releases due to a severe accident at these licensed facilities are likely to occur rapidly with little warning. The only types of accidents identified in NUREG-1140 for which protective action guide doses, or the 2-milligram soluble uranium intake, could theoretically be exceeded are a fire, a UF_6 cylinder rupture, and a criticality accident. Releases from a fire could start even before the fire is detected or shortly thereafter. Plume travel time to nearby people is likely to be no more than a few minutes. Releases would usually end when the local fire department has controlled the fire, generally within half an hour to an hour. Releases of UF_6 are likely to start without warning and be of

short duration. Many other accidental releases could also start without warning and be of short duration. As a result, protective actions would usually have to be taken very quickly to be effective. Protective actions could also be effective if the release were not as fast.

In view of two factors--(1) realistically, exposures should generally be low compared to protective action guides and (2) the fast-moving nature of the accidents of concern--formal evacuation planning is not considered necessary, appropriate, or feasible. In particular, evacuation of neighborhoods before plume arrival would most often not be possible. Thus, the emphasis of the licensee's emergency preparedness should be on ending the accident as quickly as possible, reducing the quantity of material released, protecting workers onsite, recommending appropriate protective actions to offsite officials, notifying offsite response organizations of the accident, and promptly restoring the facility to a safe condition. Offsite, it would be appropriate for police and fire personnel to either move people out of areas of dense smoke or fumes or get them to seek shelter indoors. Such actions are routine for fires and chemical releases and would be expected whether the offsite response organizations had formal written emergency plans or not.

The proposed amendments to Parts 30, 40 and 70 would require that licensees authorized to possess in excess of certain large quantities of byproduct materials, source materials, and special nuclear materials submit emergency plans for responding to releases. Alternatively, an evaluation that shows that offsite doses due to a release of radioactive materials would not exceed 1 rem effective dose equivalent, a thyroid dose of 5 rems, or a soluble uranium intake exceeding 2 milligrams would

be acceptable. The rule would also cover any future plutonium fuel fabrication plants.

The table of quantities in Part 30 that would require evaluation of the need for an emergency plan was taken from "A Regulatory Analysis of Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees," NUREG-1140. The table lists quantities that might theoretically deliver an effective dose equivalent of 1 rem in the event of a severe accident. The quantities were calculated by assuming that the most exposed member of the public would inhale a fraction of 10^{-6} of those materials. External doses from immersion in the cloud and ground-shine were then added to the internal dose. The 1-rem effective dose equivalent is a 50-year dose commitment calculated by the methods of ICRP Publications 26, 28, and 30.

The table in Part 30 includes all nuclides, except for I-129, listed on 20 or more of NRC's approximately 9,000 byproduct material licenses. (I-129 was not included in the table because saturation would prevent the thyroid from absorbing enough I-129 to reach the 5-rem protective action guide for thyroid dose. Thus, I-129 is too weakly radioactive to be significant to emergency planning.) The table also includes all beta-gamma emitters listed on any license for which the quantity to deliver a 1-rem effective dose equivalent would be less than 10,000 curies. The table also includes all alpha emitters listed on any license for which the quantity to theoretically deliver a 1-rem effective dose equivalent would be less than 2 curies.

In Part 40, emergency plans would be required only for handling significant quantities of uranium hexafluoride. It was concluded in NUREG-1140 that uranium and thorium in chemical forms less volatile than

uranium hexafluoride would not require emergency plans because plausible releases would not cause doses exceeding 1 rem effective dose equivalent, the threshold dose for requiring an emergency plan. The dose threshold would not be exceeded because the low volatility of uranium and thorium compounds, other than uranium hexafluoride, causes low release fractions and because the low specific activities of uranium and thorium result in low doses from a given weight of material.

The chemical toxicity of uranium and thorium are also not of concern except for the highly soluble uranium from a uranium hexafluoride release. Other compounds of uranium or thorium would not cause as large an intake due to lower quantities released and are not as acutely toxic as the very soluble uranium compound created when uranium hexafluoride is released.

In Part 70, plans would be required for potential releases of plutonium and releases due to criticality accidents in addition to uranium hexafluoride releases. The offsite dose analyses for criticality accidents and plutonium releases are included in NUREG-1140.

Hazardous Chemical Releases

The NRC also considered requiring emergency planning for NRC-licensed facilities with nonradioactive hazardous chemicals. Certain NRC-licensed facilities that would be required to have an emergency plan for radioactive materials might also have nonradioactive hazardous chemicals. With respect to the response to a hazardous chemical accident by onsite personnel, however, Occupational Safety and Health Administration has proposed a rule on "Hazardous Waste Operations and

Emergency Response," in section 1910.120 of Title 29 of the Code of Federal Regulations. The rule would cover "employers whose employees have a reasonable possibility in engaging in emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard."

Moreover, issue of offsite emergency planning, preparedness, and response for release of hazardous chemicals was addressed by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499, enacted October 17, 1986. Title III of that Act, independently entitled, "Emergency Planning and Community Right-To-Know Act of 1986," establishes a comprehensive and detailed program under the auspices of EPA for community involvement, planning, training, emergency notification, response, and enforcement in the event of an offsite release of certain chemicals as well as radioactive materials. All facilities with a threshold quantity of any of several hundred chemicals are subject to the Act.

In a final rule, the EPA established threshold planning quantities and associated reportable quantities for certain "extremely hazardous substances" (52 FR 13378; April 22, 1987). The EPA also proposed draft reportable quantities for releases of radioactive materials (52 FR 8172; March 16, 1987).

The Superfund Act requires each State to establish local emergency planning districts with a local emergency planning committee in each district. Owner or operators of covered facilities are required to notify the emergency coordinator of the local emergency planning committee immediately upon a release of specified quantities of certain chemicals. Failure to immediately report a release may cause the facility owner or

operator to be subject to an EPA fine of up to \$25,000 (and imprisoned for up to two years if the violation is willful).

The Act also requires that each local emergency planning committee prepare an emergency plan for its district. Plans must include the following: "(1) Identification of facilities subject to the requirements... (2) Methods and procedures to be followed by facility owners and operators and local emergency and medical personnel to respond to any release... (3) Designation of a community response coordinator and facility emergency coordinators...(4) Procedures providing reliable, effective, and timely notification by the facility response coordinators and the community response coordinator to persons designated in the emergency plan and to the public that a release has occurred...(5) Methods for determining the occurrence of a release and the area or population to be affected by such release...(6) A description of emergency equipment and facilities in the community and at each facility...and identification of the persons responsible for such equipment and facilities...(7) Evacuation plans...(8) Training programs, including schedules for training of local emergency response and medical personnel...and (9) Methods and schedules for exercising the emergency plan."

The Act requires facility owners and operators to provide local emergency planning committees promptly with any information the committees need to develop and implement the emergency plans. Failure or delay in providing requested information may result in an EPA fine of no more than \$25,000 per day.

The Act and NRC's regulation are complementary. On the one hand the Act provides for offsite responses to accidents involving hazardous chemicals. On the other hand, the NRC rule adds the ability to respond

to potential releases of radioactive materials to possibly reduce offsite doses.

A review of the EPA reference listed chemicals indicates that some NRC materials licensees that would be subject to radiological emergency planning for releases of radioactive materials might be subject to the new law. It is also highly likely that several hundred, if not thousands, of other materials licensees, that would not be subject to radiological emergency planning, will be subject to the new law. The new law is more comprehensive, detailed, and demanding than any program contemplated or recommended by the NRC staff for offsite emergency planning for nonradiological chemical hazards. The Act requires State and local participation, but the issuance of other permits and licenses to a chemical facility operator is not made contingent upon facility compliance. Rather, facility compliance is expected because of heavy civil penalties for failure to abide by the recordkeeping, reporting and notification provisions of the Act.

The NRC staff, accordingly, believes that any obligation of NRC to ensure adequate emergency planning and response for releases offsite of hazardous chemicals can be met by requiring that applicants for licenses and for license renewals who are subject to the radiological emergency planning requirements certify that they are in compliance with the Emergency Planning and Community Right-To-Know Act of 1986. Therefore, the rule requires NRC licensees having the potential for significant offsite releases of radioactive materials to certify they are in compliance with the requirements of the Emergency Planning and Community Right-To-Know Act of 1986 with respect to hazardous chemicals they may possess.

Licensees not required by this rule to have an emergency plan for licensed material are also not required to certify to NRC compliance with the Emergency Planning and Community Right-to-Know Act of 1986. The rule is directed toward and affects only those licensees with the potential for a significant release of licensed radioactive material, taking into account both the radiological and chemical toxicity of the licensed material. Undoubtedly, many NRC licensees who are not covered by the rule possess in excess of the threshold quantities of some hazardous chemical. The NRC in this rulemaking has not made a finding that those hazardous chemicals do not require emergency preparedness. Rather, the licensees are otherwise required by law to comply with the requirements of the Emergency Planning and Community Right-to-Know Act of 1986.

Uranium hexafluoride production facilities are covered by the Act because they possess hydrogen fluoride and fluorine, both of which are on the list of hazardous chemicals. The local emergency planning committee for each area is required by the Act to decide, among other things, the area or population that could be affected by a release as well as procedures for timely notification of the public. NUREG-1140 recommended a distance of one mile downwind from the release point as the distance affected. This distance is based on U.S. Department of Transportation criteria for releases of hazardous chemicals in transport accidents. The criteria are those used by the Johns Hopkins University Applied Physics Laboratory to derive the emergency action distances given in "Hazardous Materials-Emergency Response Guidebook," U.S. Department of Transportation

Report DOT-P5800.4, 1987.³ However, the local emergency planning committees may select any distance or criteria they consider appropriate. In addition, the local emergency planning committees also select the means of notifying the public. (Technical guidance for site-specific hazard analysis is being developed by an interagency group.)

An important difference between the NRC requirement and the "Emergency Planning and Community Right-to-Know" requirement concerns when to notify offsite officials. The NRC requirement is for notification as soon as an accident that might cause a release is detected. The NRC requires notification if a fire were detected even if a release is not taking place or the licensee does not know whether a release is taking place. In most circumstances, it is likely to take the licensee a considerable time to determine whether a release has occurred. The Act requires notification only when it is known that a release exceeding reportable quantities has occurred. Thus, the NRC rule, in a practical sense, may require notification hours before notification would be required by the Act.

Lessons Learned from a Uranium Hexafluoride Release

On January 4, 1986, a cylinder filled considerably above its 14-ton capacity with uranium hexafluoride ruptured while being heated at the Sequoyah Fuels Corporation facility in Gore, Oklahoma. One worker died

3 Information on the availability of DOT-P5800.4 can be obtained from the Office of Hazardous Material Transportation (DHM-51), Research and Special Programs Administration, U.S. Department of Transportation, Washington, DC 20590.

and several other workers were injured. The death and injuries were caused by exposure to hydrofluoric acid, produced by a reaction of the uranium hexafluoride with airborne moisture.

After the accident, the NRC formed a Lessons-Learned Group that reviewed the accident and recommended improvements. (See "Release of UF_6 from a Ruptured Model 48Y Cylinder at Sequoyah Fuels Corporation Facility: Lessons-Learned Report," NRC report NUREG-1198, June 1986.) A number of the recommendations were relevant to this rule and were considered in the proposed rule. Most were fully adopted. The specific recommendations and their resolution were discussed in the preamble to the proposed rule (52 FR 12921; April 20, 1987).

- Option to Demonstrate that a Plan is not Needed

Licensees are given the option of demonstrating that emergency plans for responding to accidental releases are not needed because doses would not exceed 1 rem effective dose equivalent as a result of a credible accident at their specific facility. The table of radionuclides in the proposed regulations was developed using conservative, pessimistic, or "worst-case" assumptions. Each assumption is possible at some "generic" facility, but may not be realistic for an actual facility. Thus the licensee is given the option of analyzing accidents for the actual existing facility and determining site-specific maximum credible releases. If after the review, the NRC staff agrees that the resulting

doses would be below 1 rem effective dose equivalent, an emergency plan for responding to the release would not be required.

The licensee also has the option of revising facility design, operating procedures, or possession limits to reduce potential doses below 1 rem effective dose equivalent in lieu of preparing an emergency plan for responding to an accidental release.

Emergency Plan Contents

If an emergency plan for responding to an accidental release is needed, it would include:

(1) Facility description - A brief description of the licensee's facility and area near the site. The purpose is to provide the reader with enough basic information to evaluate the licensee's plan. Significant nearby facilities, such as schools, should be included in the site area description.

(2) Types of accidents - An identification of each type of radioactive materials accident for which protective actions might be needed. Typically, the accidents of concern are fires involving radioactive materials, releases of large quantities of uranium hexafluoride, and criticalities involving high-enriched uranium or plutonium. Releases of hazardous chemicals that could affect the radiological safety of the facility and result in releases of or exposure to radioactive materials must also be considered.

(3) Classification of accidents - A classification system for classifying accidents as alerts or site area emergencies. These classes

are adopted from nuclear power plant emergency planning, but modified for fuel cycle and other radioactive material licensees. For nuclear power plants, a general emergency means there is a possibility of very large releases that could cause acute radiation effects miles from the plant. Neither releases nor doses of those magnitudes could result from accidents at fuel cycle or other radioactive material licensees.

Therefore, the general emergency class is not used for these facilities. A site area emergency means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite. Alert means events may occur, are in progress, or have occurred that could lead to a release of radioactive materials, but that the release is not expected to require a response by offsite response organizations to protect people offsite.

(4) Detection of accidents - Identification of the means of detecting each type of accident in a timely manner. The means of detection could include one or more of the following: fire alarms, criticality alarms, visual observation, stack monitors, or radiation monitors, as appropriate.

(5) Mitigation of consequences - A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment. Mitigating actions could include actions to reduce or stop the release and actions to protect workers such as evacuating the building or decontaminating personnel. Means for limiting releases could include sprinkler systems and other fire suppression systems, fire detection systems, physical separation of

material, storage in fire-resistant containers, use of fire-resistant building materials, fire-fighting capabilities, procedures prohibiting flammable materials in areas where radioactive materials are found, filter systems, use of water sprays to knock-down UF_6 , and others.

Equipment might include respiratory protection equipment for employees, evacuation alarms, and equipment possessed by the licensee to reduce or stop the release. It would not include equipment brought to the site by offsite response organizations.

This item is not intended to require backfits or design changes. Plant design is subject to a more complete safety review when the license application is reviewed.

(6) Assessment of releases - A brief description of the methods and equipment to assess releases of radioactive materials.

This does not mean real-time assessment. It means measurements made after the release has occurred to determine how much material was released. The NRC does not believe that real-time estimates of releases are generally possible for the types of accidents of concern.

Significant releases are not likely to occur by way of monitored release paths. Monitored paths would generally contain filters that would reduce any release to negligible levels. Even if a release were detected from a monitored release path there would generally be no way to determine that additional material was not being released by way of unmonitored paths.

In addition, even if one could assure that the entire release were monitored so that a release rate could be determined, there would be no way to know the duration of the release or whether the release rate would subsequently rise or fall. Beyond this, measurements of releases would

generally be made much too late to be of any usefulness during the emergency response.

The recommended approach, therefore, is to estimate a range of potential source terms for each accident type in the planning and then decide in the planning what recommendations would be made to offsite response organizations for each accident type. In summary, one cannot wait until a potential accident is underway to decide what recommendations should be made. There is not enough time during the accident.

One purpose of the assessment is to be able to determine whether an immediate notification of the National Response Center is necessary under the Emergency Planning and Community Right-to-Know Act of 1986 if the quantity of radioactive material released exceeds those listed by EPA (52 FR 8172). In most situations the first organizations to be notified would be the local offsite response organizations. Thus, in the case of a fire the fire department would be notified first before it was known if any radioactive material were even being released. The assessment would not be available for hours or even days after the accident. As soon as an assessment was made, however, the National Response Center should be immediately notified if the assessed release exceeds a reportable quantity.

(7) Responsibilities - A brief description of the responsibilities of licensee personnel should an accident occur, including the identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan. In general, responsibilities should be described for the position rather than by naming individuals so that

personnel changes do not require amending the emergency plan. Offsite response organizations would generally include fire, police, medical, state radiological safety organizations, and perhaps other emergency personnel. (Agreement State licensees would notify the State rather than the NRC.)

(8) Notification and coordination - A commitment and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when appropriate. A control point must be established. Notification should include the organizations responsible for notifying the public near the site to take protective actions. The means of notification and coordination must be planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC Operations Center immediately after notification of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency. (The commercial telephone number at the operations center is (301) 951-0550.) In addition, the licensee should notify the National Response Center immediately after the size of the release has been assessed if the estimated quantity of material released exceeds the reportable quantities established by the U.S. Environmental Protection Agency. This last notification permits licensees to meet the requirements of the Emergency Planning and Community Right-to-Know Act of 1986.

In general, the State Radiological protection organization would be among the offsite response organizations that would be notified by NRC

licensees. In a few cases, the licensee may want to seek assistance from the Department of Energy under the Federal Radiological Emergency Response Plan (see 50 FR 46524; November 8, 1985).

(9) Information to be communicated - A brief description of the types of information on facility status, radioactive releases, and recommended actions, if necessary, to be given to offsite response organizations and to the NRC.

(10) Training - A brief description of the training the licensee will provide workers on how to respond to an emergency and any special instructions and orientation tours the licensee would offer to fire, police, medical, and other emergency personnel.

Instructions on how to deal with the radiation release should be appropriate for the personnel and should clearly state the specific actions expected of them and things they should and should not do. After the more comprehensive initial training, refresher briefings are suggested annually. A desirable time would be soon after the exercise has been conducted so that training deficiencies can be corrected and recommendations from the audits relevant to training can be implemented. Refresher briefings for offsite response organizations should be conducted at a frequency considered appropriate by those organizations.

(11) Recovery - A brief description of the means of restoring the facility to a safe condition after different types of accidents. Detailed procedures are not appropriate because the exact nature of the accident cannot be foreseen. Instead general criteria are appropriate.

(12) Exercises - A brief description of the provisions for conducting quarterly communications checks with offsite response organizations and annual onsite exercises to test response to simulated

emergencies. The licensee shall invite offsite response organizations to participate in the annual exercises. Exercises must use scenarios not known to most exercise participants. A critique of each exercise must be conducted by individuals not having direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

The exercises are for the purpose of familiarizing the licensee personnel with the emergency plan, training them in the use of site-specific response procedures, and for identifying and correcting deficiencies in the plan. All deficiencies in the plan must be corrected, including problems with procedures, training, staffing, equipment, and so forth. Participation by offsite personnel is not required. Annual means once each calendar year, at any time during the year.

(13) Hazardous chemicals - A certification that the applicant 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. In this, the licensee acknowledges his responsibility under that Act. It is not Commission intent to review the licensee's compliance as that falls under the EPA's jurisdiction.

In brief, the licensee is required to give prompt notification to appropriate offsite response organizations, providing these organizations with information on the situation and recommended actions, and assuring that these officials have been offered instruction in advance. In addition, in order to assure that offsite response organizations expected to

respond to an accident have been consulted in the formulation of the plan, the licensee must allow such offsite organizations 60 days to comment on the plan and must provide these comments to the NRC.

Most, if not all, of the licensees who are required to submit an emergency plan by this regulation have already submitted onsite Radiological Contingency Plans under the orders issued in 1981. Those plans already include most of the information required under the new regulation, but some of the plans may require some changes to meet the new rule. At the time of renewal of their licenses, licensees must resubmit their plan revised to conform to the new rule as a part of their renewal application. Alternatively, these licensees could submit an evaluation showing that an emergency plan is not necessary.

The staff identified about 60 NRC licensees who are covered by the rule. The staff estimated, however, that about 15 of those licensees will probably lower their possession limits so they are not covered and that about 15 will probably demonstrate that the 1-rem dose is not plausible. Realistically, probably no more than about 30 licensees will actually need an emergency plan. Perhaps 10 to 15 Agreement State licensees will also eventually be covered because the new requirements will be a matter of compatibility with Agreement States.

Public Comments

Eighteen public comments were received. Three were from States, eleven were from licensees, one was from the U.S. Environmental Protection Agency, one was from a private citizen, one was from a fire protection association, and one was from an environmental group. The more

significant comments are summarized below followed by the Commission's response.

Comment: Possibly the most significant comment was that the rule should not be adopted at all because there is no need for it. Some commenters thought that the NRC should concentrate on requiring engineered safeguards to prevent the accidents and thus eliminate the need for the plan. Others also considered the NRC's dose calculations too conservative because the calculations multiplied a series of worst-case assumptions to calculate offsite doses. They cited the example of assuming the facility burns but the smoke is not buoyant and does not rise. Commenters said that not all assumptions would be appropriate for any particular facility. Commenters said the costs did not justify the benefits. They said the NRC underestimated the costs of compliance with the requirements, saying that annual exercises, for example, would be very expensive and were not properly accounted for. Commenters also said that NRC overestimated the benefits. They said that the accidents of concern would happen so quickly that no offsite response would ever be effective at reducing offsite exposures, regardless of cost. Commenters suggested that Part 30 licensees (those with radioactive byproduct material, for example, tritium or radioactive iodine) should be excluded from the requirements. Commenters said that the requirements would damage facilities' public relations and cause unjustified public fear of the facility for no good reason.

Response: The NRC has decided to proceed with the rule. Any system of engineered safeguards is considered to have some possibility of

failure. No system could ever be perfect. Therefore, the NRC has decided to require another level of protection beyond engineered safeguards designed to prevent or mitigate an accident if releases could cause doses exceeding protective action guides. The NRC agrees that its dose calculations are very conservative and that doses from an actual accident are likely to be far lower than calculated. Nevertheless, the NRC considers the calculated doses to be possible even if improbable. The NRC recognizes that the costs to licensees tend to exceed the anticipated benefits. Nonetheless, in view of the uncertainties inherent in making the cost-benefit balance, and considering in any event the limited additional financial burden that would result from adoption of the rule, NRC concludes that the emergency planning measures are desirable to protect health.

While the NRC agrees that in many instances it would not be possible to reduce exposures offsite because there would not be enough time, the NRC believes that in some instances there would be a possibility of reducing doses. The requirements are aimed at those potential dose saving situations. There is no requirement, stated or implied, that the emergency response would always be effective in reducing exposures offsite or that specified dose levels would not be exceeded. Instead, the requirement is that the licensee be prepared to take some practical steps that could, in favorable circumstances, reduce radiation exposure of the public.

Comment: The potential dose for requiring a plan should be 5 rems instead of 1 rem. A reason given is that the analysis was conservative

in that actual doses would be much less than the assumed values calculated. Thus, if the calculated dose were 5 rems, actual doses would be well below 1 rem.

Response: The NRC did not accept this recommendation. The NRC considers the doses it calculated to be credible even though lower doses are more probable. The EPA states the protective actions should be considered at the lower end of the dose range. When doses for which the EPA states that protective actions should be considered are credible, the NRC believes that there should be a formal emergency plan even if doses are likely to be much less than the calculated values.

Comment: Credit should be given for filters and other engineered safeguards designed to mitigate accidents and reduce releases. Credit should be given when material is kept in different buildings.

Response: In general, credit would not be given for filters because the accidents on which the need for emergency preparedness is based are severe accidents such as large fires, possibly with explosions, in which the filters are assumed to be destroyed or the release is assumed to occur through an unprotected release path, such as a hole burned in the roof of the building. Credit could, however, be taken if material is stored in separate locations not likely to be affected by the same accident. Provision to allow this credit is contained in the option that a licensee has to show that an emergency plan is not necessary for all or part of his facility.

Comment: The rule should require the licensee to provide a system for notifying the public offsite of a release. The licensee should be required to provide information brochures to people near the facilities annually. Emergency planning zones should be established.

Response: The NRC did not adopt these recommendations. The NRC requires the licensee to promptly notify offsite response organizations of the accident, but believes that notification of the public offsite is the responsibility of the public safety officials in the area. The decision and when and how to notify the public are considered to be their responsibility. This approach is consistent with the approach in the "Emergency Planning and Community Right-to-Know Act of 1986."

The NRC believes that the normally available capabilities of States and local governments for responding to industrial emergencies and the normally available radiological health capabilities of States will be adequate to deal with accidents at fuel cycle and other radioactive material licensees. These radiological emergencies would involve small (not life threatening) doses, small areas, and small numbers of people. The potential risks are much lower than the risks from accidents involving chemical plants or the shipping of hazardous chemicals, to which states and local governments routinely respond. In other words, the response to radiological accidents at fuel cycle and other radioactive materials licensees can and should be handled by State and local governments as part of their normal emergency response capability without additional resources.

In most situations, the NRC would expect the local authorities to handle public notification and response on an ad hoc basis, the way those authorities would handle a truck or rail accident in which hazardous chemicals had been, were being, or might be released. On the other hand, information brochures could be provided by offsite authorities to people near the facilities at the discretion of those authorities.

The NRC intentionally did not establish emergency planning zones, deciding instead to define the offsite response in terms of when offsite response organizations should be notified. The NRC concluded that dose projections during an accident would not be possible. Thus, the size of the response would be dictated mainly by the practicality of response actions. Because fires are the primary accident of concern, this would usually involve any actions offsite that could reduce the exposure of people to smoke from the fire. Sheltering in or evacuation of nearby buildings would both be suitable, but again, the actual response would be determined by what was practical at the time of the accident.

Comment: Guidance should be given on what responses would be appropriate offsite and to what distances they would be appropriate.

Response: In general, the appropriate responses and distances are dictated by what is practical at the time the accident occurs. Police and emergency personnel have generally been quite proficient in handling similar types of emergencies, such as truck and rail accidents. Suggestions on how to respond to the particular situation would also come from the licensee at the time of the notification. Beyond this, some additional guidance is given in NUREG-1140, Section 2.5.

Comment: The NRC should publish a regulatory guide or other guidance document that fully explains how each of the requirements of the rule would be met. That document should be published for public comment prior to final formulation of the rule.

Response: The NRC is now preparing a guidance document. A draft was published for public comment in November, 1987, and a revised final version will be available to licensees before they would have to start preparing to comply with the new rule. (The new rule is effective one year after publication.)

Comment: The potential uranium intake for which a plan would be required should be 1 mg rather than 2 mg.

Response: The NRC did not accept this recommendation. A panel of experts evaluated the effects of uranium intake and concluded that intakes of 4 mg would have no effect and intakes of 8 mg would cause transient changes in the chemical composition of urine, indicating some effect.⁴ The NRC then applied a factor of two margin to the 4 mg value to account for possible increased sensitivity for children. The NRC sees no valid reason for lower values.

4 R.A. Just and V.S. Emler, "Generic Report on Health Effects for the U.S. Gaseous Diffusion Plants," DOE report K/D 5050, Section VIII, Part I, 1984.

In addition, a recently published follow-up of three men with initial depositions of 40 to 50 mg of uranium in their lungs showed no physical effects of the exposure 38 years after their exposure (Health Physics, Volume 51, pages 609-619, November, 1986).

Comment: The State in which the NRC-licensed facility is located should receive immediate notification of an accident. The State should also be able to review and approve the facility emergency plan.

Response: The NRC agrees that the State should generally receive immediate notification, but the proposed rule already provided that by requiring immediate notification of offsite response organizations. In general, the State radiological safety organization would be one of the offsite response organizations. As one of the offsite response organizations, the rule provides that the State would be allowed to review the licensee's plan before it was submitted to NRC. The States' comments on the plans would be a factor that the NRC would consider in deciding whether or not to approve a plan.

Comment: The EPA suggested that the rule contain a provision to remind licensees to notify the National Response Center if the estimated quantity of material released exceeds the reportable quantities established by the EPA.

Response: The suggestion was adopted.

Comment: The assumed release fractions for chlorine and bromine should be 0.5 because those materials could be in volatile or combustible form.

Response: The NRC agrees and adopted these recommendations. The value of 0.5 assumes the material is volatile or combustible but that some of the material would not be affected, the material would plate out or be deposited onsite, or would remain in ash.

Comment: NUREG-1140, the draft regulatory analysis should be revised and published in final. The conservatism in the calculations should be pointed out.

Response: The NRC agrees. NUREG-1140 has been revised and published in final form. The conservatism in the calculations was noted.

Comment: Exercises should be required once every two years rather than every year.

Response: The NRC did not accept this recommendation. Experience with reactor licensees has indicated that annual licensee exercises are reasonable and beneficial, especially when employee turnover is considered.

Comment: The NRC should fund or seek funding for States in which the facilities needing plans are located.

Response: The NRC does not support this recommendation. The rule requires little or no additional capabilities on the parts of States beyond their normal and existing capabilities to protect public health and safety from emergencies of all types.

Comment: The NRC should not duplicate the work of other agencies by inspecting for compliance with the Emergency Planning and Community Right-to-Know Act of 1986.

Response: The NRC does not plan to duplicate the efforts of other agencies. The licensee need only certify compliance with the Act. The NRC does not plan to inspect the adequacy of compliance with the Act. The Act gives that responsibility to the EPA, States, and the local emergency planning committees.

Comment: Regulatory Guide 3.42, "Emergency Planning for Fuel Cycle Facilities and Plants Licensed under 10 CFR Parts 50 and 70," September 1979, is obsolete, refers to regulations that have since been amended, and is superseded by the new rule.

Response: The NRC agrees. The guide will be revised.

Comment: The definitions of the emergency classes are different from those used by nuclear power plants.

Response: While the definitions of the emergency classes are different from nuclear power plants (i.e., "core melt" does not make

sense for these facilities), the meanings are compatible. In particular, the licensee actions and the State and local offsite authority actions listed in NUREG-0654 for the alert and site area emergency classes are essentially what would be expected for those emergency classes at fuel cycle and other radioactive material facilities. The actions listed in NUREG-0654 for general emergency would not be appropriate for any fuel cycle or radioactive material accident. Thus, the meaning and the expected responses for the emergency classes would be similar for both nuclear power plants and fuel cycle and radioactive material facilities.

Comment: Licensees having an emergency plan required by order should not have to rewrite their plan to comply with the new rule.

Response: Because the requirements of the order and the new rule are essentially the same, licensees would not have to submit a new plan until their regular five-year license renewal application was due. Even then an attempt is being made to minimize the number of changes that would be required.

Comment: The question was raised as to whether exercise reviewers would have to be present during the exercise.

Response: A reviewer should be present. Otherwise, the reviewer would have limited information on which to base a critique.

Comment: Changes to the plan should be sent to the offsite response organizations.

Response: The NRC agrees. The rule has been changed to include the requirement.

Comment: The rule was said to contradict the "ALARA" concept (radiation doses should be kept as low as is reasonably achievable) because costs would greatly exceed benefits.

Response: The "ALARA" concept was designed with a view to assessing the consequences of normal operations, not accidents. In the accident context as here, the Commission considers it desirable to adopt the requirements it has proposed; it recognizes that costs may exceed benefits but the additional financial burdens are small and the cost benefit assessments involve substantial degree of judgment.

Comment: The limit for carbon-14 is wrong because carbon-14 would be released as carbon dioxide in the accident scenarios presented.

Response: The NRC agrees that for large releases most carbon dioxide would be released as carbon dioxide which has negligible deposition on surfaces or in the lungs. Therefore the release fraction for carbon has been changed to 0.01 to account for carbon released in other forms. The amount needing a plan has been correspondingly increased.

Comment: Methods of calculating doses from releases should be published.

Response: The methods have been published in "A Regulatory Analysis in Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licenses," NUREG-1140 and in "Preliminary Screening of Fuel Cycle and By-Product Material Licenses for Emergency Planning," NUREG/CR-3657.

Finding of No Significant Environmental Impact: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. The rule does not affect the probability or the size of accidental radioactive releases. It might in some cases reduce the doses people near the facility site could receive. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 1717 H Street NW., Washington, DC. The environmental assessment and finding of no significant impact are contained in Section 4.3 of "A Regulatory Analysis for Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees," NUREG-1140. Single copies are available for purchase from the U.S. Government Printing Office.

Paperwork Reduction Act Statement

This rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

These requirements were approved by the Office of Management and Budget, approval numbers: Part 30, 3150-0017; Part 40, 3150-0020; Part 70, 3150-0009.

Regulatory Analysis

The Commission has prepared a regulatory analysis (NUREG-1140) on this regulation. The analysis examines the accident scenarios considered by the Commission (in its Section 2) as well as the costs and benefits of actions considered (in its Section 3). The analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW., Washington, DC. Single copies of the analysis (NUREG-1140) may be purchased from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule will not have a significant economic impact upon a substantial number of small entities.

The rule requires development and implementation of emergency plans by licensees who are authorized to possess significant amounts of radioactive material. These companies do not fall within the definition of a small business found in the Small Business Act, 15 U.S.C. 632, or within the small business size standards set forth in 13 CFR Part 121. The rule affects about 60 out of some 9,000 licensees. However, the staff believes that about 15 of these licensees could amend their licenses to

reduce quantities of material they are authorized to possess and about 15 could perform an evaluation showing no need to be covered by the rule. Realistically, probably no more than about 30 licensees will actually submit emergency plans. These 30 licensees are essentially identical to those issued orders to require onsite contingency plans in 1981. An additional 10 to 15 Agreement State licensees may have to submit emergency plans because the rule, will be made an item of compatibility with Agreement State programs.

Thus, the rule does not impose a significant economic impact on a substantial number of small entities, as defined in the Regulatory Flexibility Act of 1980.

List of Subjects

10 CFR Part 30

Byproduct material, Government contracts, Intergovernmental relations, Isotopes, Nuclear materials, Penalty, Radiation protection, Reporting and recordkeeping requirements.

10 CFR Part 40

Government contracts, Hazardous materials - transportation, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Source material, Uranium.

10 CFR Part 70

Hazardous materials - transportation, Material control and accounting, Nuclear materials, Packaging and containers, Penalty, Radiation pro-

tection, Reporting and recordkeeping requirement, Scientific equipment, Security measures, Special nuclear material.

Under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Parts 30, 40, and 70.

PART 30 - RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL

1. The authority citation for Part 30 is revised to read as follows:

AUTHORITY: Secs. 81, 82, 161, 182, 183, 186, 68 Stat. 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2111, 2112, 2201, 2232, 2233, 2236, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 30.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 30.34(b) also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 30.61 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 30.3, 30.34(b), (c), and (f), 30.41(a) and (c), and 30.53 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); and §§ 30.6, 30.36, 30.51, 30.52, 30.55, and 30.56(b) and (c) are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 30.4, the introductory text and paragraph (b) are removed, all definitions are alphabetized, the lettering system for the definitions is deleted, and three new definitions are added to read as follows:

§ 30.4 Definitions.

* * * * *

"Alert means events may occur, are in progress, or have occurred that could lead to a release of radioactive material but that the release is not expected to require a response by offsite response organizations to protect persons offsite.

* * * * *

"Effective dose equivalent" means the sum of the products of the dose equivalent to the organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated. Weighting factors are: 0.25 for gonads, 0.15 for breast, 0.12 for red bone marrow, 0.12 for lungs, 0.03 for thyroid, 0.03 for bone surface, and 0.06 for each of the other five organs receiving the highest dose equivalent.

* * * * *

"Site area emergency" means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite.

* * * * *

3. In § 30.32, a new paragraph (g) is added to read as follows:

§ 30.32 Application for specific licenses.

* * * * *

(g)(1) Each application to possess radioactive materials in unsealed form, on foils or plated sources, or sealed in glass in excess of the quantities in § 30.72, "Schedule C - Quantities of Radioactive Materials Requiring Consideration of the Need for an Emergency Plan for Responding to a Release," must contain either:

(i) An evaluation showing that the maximum dose to a person offsite due to a release of radioactive materials would not exceed 1 rem effective dose equivalent or 5 rems to the thyroid; or

(ii) An emergency plan for responding to a release of radioactive material.

(2) One or more of the following factors may be used to support an evaluation submitted under paragraph (g)(1)(i) of this section:

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

(ii) All or part of the radioactive material is not subject to release during an accident because of the way it is stored or packaged;

(iii) The release fraction in the respirable size range would be lower than the release fraction shown in § 30.72 due to the chemical or physical form of the material;

(iv) The solubility of the radioactive material would reduce the dose received;

(v) Facility design or engineered safety features in the facility would cause the release fraction to be lower than shown in § 30.72;

(vi) Operating restrictions or procedures would prevent a release fraction as large as that shown in § 30.72; or

(vii) Other factors appropriate for the specific facility.

(3) An emergency plan for responding to a release of radioactive material submitted under paragraph (g)(1)(ii) of this section must include the following information:

(i) Facility description: A brief description of the licensee's facility and area near the site.

(ii) Types of accidents: An identification of each type of radioactive materials accident for which protective actions may be needed.

(iii) Classification of accidents: A classification system for classifying accidents as alerts or site area emergencies.

(iv) Detection of accidents: Identification of the means of detecting each type of accident in a timely manner.

(v) Mitigation of consequences: A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(vi) Assessment of releases: A brief description of the methods and equipment to assess releases of radioactive materials.

(vii) Responsibilities: A brief description of the responsibilities of licensee personnel should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan.

(viii) Notification and coordination: A commitment to and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when

appropriate. A control point must be established. The notification and coordination must be planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC operations center immediately after notification of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency.⁵

(ix) Information to be communicated: A brief description of the types of information on facility status, radioactive releases, and recommended protective actions, if necessary, to be given to offsite response organizations and to the NRC.

(x) Training: A brief description of the training the licensee will provide workers on how to respond to an emergency and any special instructions and orientation tours the licensee would offer to fire, police, medical and other emergency personnel.

(xi) Safe shutdown: A brief description of the means of restoring the facility to a safe condition after an accident.

(xii) Exercises: Provisions for conducting quarterly communications checks with offsite response organizations and annual onsite exercises to test response to simulated emergencies. Quarterly communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The licensee shall invite offsite response organizations to participate in the annual exercises.

⁵ These reporting requirements do not supercede or release licensees of complying with the requirements under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499 or other state or federal reporting requirements.

Participation of offsite response organizations in annual exercises although recommended is not required. Exercises must use scenarios not known to most exercise participants. The licensee shall critique each exercise using individuals not having direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(xiii) Hazardous chemicals: A certification that the applicant has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Public Law 99-499, if applicable to the applicant's activities at the proposed place of use of the byproduct material.

(4) The licensee shall allow the offsite response organizations expected to respond in case of an accident 60 days to comment on the licensee's emergency plan before submitting it to NRC. The licensee shall provide any comments received within the 60 days to the NRC with the emergency plan.

4. In § 30.34, a new paragraph (f) is added to read as follows:

§ 30.34 Terms and conditions of licenses.

* * * * *

(f) Licensees required to submit emergency plans by § 30.32(g) shall follow the emergency plan approved by the Commission. The licensee may change the approved plan without Commission approval only if the changes do not decrease the effectiveness of the plan. The licensee shall furnish the change to the appropriate NRC Regional Office specified

in § 30.6 and to affected offsite response organizations within six months after the change is made. Proposed changes that decrease, or potentially decrease, the effectiveness of the approved emergency plan may not be implemented without prior application to and prior approval by the Commission.

* * * * *

5. A new § 30.72 is added to read as follows:

§ 30.72 Schedule C - Quantities of radioactive materials requiring consideration of the need for an emergency plan for responding to a release.

Radioactive Material	Release Fraction	Quantity (Curies)
Actinium-228	.001	4,000
Americium-241	.001	2
Americium-242	.001	2
Americium-243	.001	2
Antimony-124	.01	4,000
Antimony-126	.01	6,000
Barium-133	.01	10,000
Barium-140	.01	30,000
Bismuth-207	.01	5,000
Bismuth-210	.01	600
Cadmium-109	.01	1,000
Cadmium-113	.01	80
Calcium-45	.01	20,000
Californium-252	.001	9(20 mg)
Carbon-14	0.01 (non CO ₂)	50,000
Cerium-141	.01	10,000
Cerium-144	.01	300
Cesium-134	.01	2,000
Cesium-137	.01	3,000
Chlorine-36	.5	100
Chromium-51	.01	300,000
Cobalt-60	.001	5,000
Copper-64	.01	200,000
Curium-242	.001	60
Curium-243	.001	3
Curium-244	.001	4
Curium-245	.001	2
Europium-152	.01	500
Europium-154	.01	400
Europium-155	.01	3,000
Germanium-68	.01	2,000
Gadolinium-153	.01	5,000
Gold-198	.01	30,000
Hafnium-172	.01	400
Hafnium-181	.01	7,000
Holmium-166m	.01	100
Hydrogen-3	.5	20,000
Iodine-125	.5	10
Iodine-131	.5	10
Indium-114m	.01	1,000
Iridium-192	.001	40,000
Iron-55	.01	40,000
Iron-59	.01	7,000

Radioactive Material ¹	Release Fraction	Quantity (Curies)
Krypton-85	1.0	6,000,000
Lead-210	.01	8
Manganese-56	.01	60,000
Mercury-203	.01	10,000
Molybdenum-99	.01	30,000
Neptunium-237	.001	2
Nickel-63	.01	20,000
Niobium-94	.01	300
Phosphorus-32	.5	100
Phosphorus-33	.5	1,000
Polonium-210	.01	10
Potassium-42	.01	9,000
Promethium-145	.01	4,000
Promethium-147	.01	4,000
Ruthenium-106	.01	200
Samarium-151	.01	4,000
Scandium-46	.01	3,000
Selenium-75	.01	10,000
Silver-110m	.01	1,000
Sodium-22	.01	9,000
Sodium-24	.01	10,000
Strontium-89	.01	3,000
Strontium-90	.01	90
Sulfur-35	.5	900
Technitium-99	.01	10,000
Technitium-99m	.01	400,000
Tellurium-127m	.01	5,000
Tellurium-129m	.01	5,000
Terbium-160	.01	4,000
Thulium-170	.01	4,000
Tin-113	.01	10,000
Tin-123	.01	3,000
Tin-126	.01	1,000
Titanium-44	.01	100
Vanadium-48	.01	7,000
Xenon-133	1.0	900,000
Yttrium-91	.01	2,000

Radioactive Material ¹	Release Fraction	Quantity (Curies)
Zinc-65	.01	5,000
Zirconium-93	.01	400
Zirconium-95	.01	5,000
Any other beta-gamma emitter	.01	10,000
Mixed fission products	.01	1,000
Mixed corrosion products	.01	10,000
Contaminated equipment beta-gamma	.001	10,000
Irradiated material, any form other than solid noncombustible	.01	1,000
Irradiated material, solid noncombustible	.001	10,000
Mixed radioactive waste, beta-gamma	.01	1,000
Packaged mixed waste, beta-gamma ²	.001	10,000
Any other alpha emitter	.001	2
Contaminated equipment, alpha	.0001	20
Packaged waste, alpha ²	.0001	20
Combinations of radioactive materials listed above ¹		

¹For combinations of radioactive materials, consideration of the need for an emergency plan is required if the sum of the ratios of the quantity of each radioactive material authorized to the quantity listed for that material in Schedule C exceeds one.

²Waste packaged in Type B containers does not require an emergency plan.

PART 40 - DOMESTIC LICENSING OF SOURCE MATERIAL

6. The authority citation for Part 40 is revised to read as follows:

AUTHORITY: Secs. 62, 63, 64, 65, 81, 161, 182, 183, 186, 68 Stat. 932, 933, 935, 948, 953, 954, 955, as amended, secs. 11e(2), 83, 84, Pub. L. 95-604, 92 Stat. 3033, as amended, 3039, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2014(e)(2), 2092, 2093, 2094, 2095, 2111, 2113, 2114, 2201, 2232, 2233, 2236, 2282); sec. 274, Pub. L. 86-373, 73 Stat. 688 (42 U.S.C. 2021); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); sec. 275, 92 Stat. 3021, as amended by Pub. L. 97-415, 96 Stat. 2067 (42 U.S.C. 2022).

Section 40.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 40.31(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 40.46 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 40.71 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 40.3, 40.25(d)(1)-(3), 40.35(a)-(d) and (f), 40.41(b) and (c), 40.46, 40.51(a) and (c), and 40.63 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); and §§ 40.5, 40.25(c) and (d)(3) and (4), 40.26(c)(2), 40.35(e), 40.42, 40.61, 40.62, 40.64, and 40.65 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

7. In § 40.4, the introductory text is removed, all definitions are alphabetized, the lettering system for the definitions is deleted, and two new definitions are added to read as follows:

§ 40.4 Definitions.

* * * * *

"Alert means events may occur, are in progress, or have occurred that could lead to a release of radioactive material but that the release is not expected to require a response by offsite response organizations to protect persons offsite.

* * * * *

"Site area emergency" means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite

* * * * *

8. A new paragraph (i) is added to § 40.31 to read as follows:

§ 40.31 Applications for specific licenses.

* * * * *

(i)(1). Each application to possess uranium hexafluoride in excess of 50 kilograms in a single container or 1000 kilograms total must contain either:

(i) An evaluation showing that the maximum intake of uranium by a member of the public due to a release would not exceed 2 milligrams; or

(ii) An emergency plan for responding to the radiological hazards of an accidental release of source material and to any associated chemical hazards directly incident thereto.

(2) One or more of the following factors may be used to support an evaluation submitted under paragraph (i)(1)(i) of this section:

(i) All or part of the radioactive material is not subject to release during an accident because of the way it is stored or packaged;

(ii) Facility design or engineered safety features in the facility would reduce the amount of the release; or

(iii) Other factors appropriate for the specific facility.

(3) An emergency plan submitted under paragraph (i)(1)(ii) of this section must include the following:

(i) Facility description: A brief description of the licensee's facility and area near the site.

(ii) Types of accidents: An identification of each type of accident for which protective actions may be needed.

(iii) Classification of accidents: A classification system for classifying accidents as alerts or site area emergencies.

(iv) Detection of accidents: Identification of the means of detecting each type of radioactive materials accident in a timely manner.

(v) Mitigation of consequences: A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(vi) Assessment of releases: A brief description of the methods and equipment to assess releases of radioactive materials.

(vii) Responsibilities: A brief description of the responsibilities of licensee personnel should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan.

(viii) Notification and coordination: A commitment to and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for

the treatment of contaminated injured onsite workers when appropriate. A control point must be established. The notification and coordination must be planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC operations center immediately after notification of the offsite response organizations and not later than one hour after the licensee declares an emergency.⁶

(ix) Information to be communicated: A brief description of the types of information on facility status, radioactive releases, and recommended protective actions, if necessary, to be given to offsite response organizations and to the NRC.

(x) Training: A brief description of the training the licensee will provide workers on how to respond to an emergency and any special instructions and orientation tours the licensee would offer to fire, police, medical and other emergency personnel.

(xi) Safe shutdown: A brief description of the means of restoring the facility to a safe condition after an accident.

(xii) Exercises: Provisions for conducting quarterly communications checks with offsite response organizations and annual onsite exercises to test response to simulated emergencies. Quarterly communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The licensee shall invite offsite

⁶ These reporting requirements do not supercede or release licensees of complying with the requirements under the Emergency Planning and Community Right-to-Know Act of 1986, Title III. Pub. L. 99-499 or other state or federal reporting requirements.

response organizations to participate in the annual exercises. Participation of offsite response organizations in annual exercises although recommended is not required. Exercises must use scenarios not known to most exercise participants. The licensee shall critique each exercise using individuals not having direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(xiii) Hazardous chemicals: A certification that the applicant has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Public Law 99-499, if applicable to the applicant's activities at the proposed place of use of the source material.

(4) The licensee shall allow the offsite response organizations expected to respond in case of an accident 60 days to comment on the licensee's emergency plan before submitting it to the NRC. The licensee shall provide any comments received within the 60 days to the NRC with the emergency plan.

9. In § 40.35, a paragraph (f) is added to read as follows:

§ 40.35 Conditions of specific licenses issued pursuant to § 40.34

* * * * *

(f) Licensees required to submit emergency plans by § 40.31(i) shall follow the emergency plan approved by the Commission. The licensee may change the plan without Commission approval if the changes do not decrease the effectiveness of the plan. The licensee shall furnish the

change to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 and to affected off-site response organizations within six months after the change is made. Proposed changes that decrease the effectiveness of the approved emergency plan may not be implemented without prior application to and prior approval by the Commission.

PART 70 - DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

10. The authority citation for Part 70 continues to read as follows:

AUTHORITY: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2262); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846).

Section 70.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93-377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 70.3, 70.19(c), 70.21(c), 70.22(a), (b), (d)-(k), 70.24(a) and (b), 70.32(a)(3), (5), (6), (d), and (i), 70.36, 70.39(b) and (c),

70.41(a), 70.42(a) and (c), 70.56, 70.57(b), (c), and (d), 70.58(a)-(g)(3), and (h)-(j) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 70.7, 70.22a(a) and (d), 70.20b(c) and (e), 70.21(c), 70.24(b), 70.32(a)(6), (c), (d), (e), and (g), 70.36, 70.51(c)-(g), 70.56, 70.57(b) and (d), and 70.58(a)-(g)(3) and (h)-(j) are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 70.5, 70.20b(d) and (e), 70.38, 70.51(b) and (i), 70.52, 70.53, 70.54, 70.55, 70.58(g)(4), (k), and (l), 70.59 and 70.60(b) and (c) are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

11. In § 70.4, the introductory text is removed, all definitions are alphabetized, the lettering system for the definitions is deleted, and three new definitions are added to read as follows:

§ 70.4 Definitions.

* * * * *

"Alert means events may occur, are in progress, or have occurred that could lead to a release of radioactive material [s] but that the release is not expected to require a response by an offsite response organization to protect persons offsite.

* * * * *

"Effective dose equivalent" means the sum of the products of the dose equivalent to the body organ or tissue and the weighting factors applicable to each of the body organs or tissues that are irradiated. Weighting factors are: 0.25 for gonads, 0.15 for breast, 0.12 for red bone marrow, 0.12 for lungs, 0.03 for thyroid, 0.03 for bone surface, and 0.06 for each of the other five organs receiving the highest dose equivalent.

* * * * *

"Site Area emergency" means events may occur, are in progress, or have occurred that could lead to a significant release of radioactive material and that could require a response by offsite response organizations to protect persons offsite.

* * * * *

12. In § 70.22, paragraph (i) is revised to read as follows:

§ 70.22 Contents of applications.

* * * * *

(i)(1) Each application to possess enriched uranium or plutonium for which a criticality accident alarm system is required, uranium hexafluoride in excess of 50 kilograms in a single container or 1000 kilograms total, or in excess of 2 curies of plutonium in unsealed form or on foils or plated sources, must contain either:

(i) An evaluation showing that the maximum dose to a member of the public offsite due to a release of radioactive materials would not exceed 1 rem effective dose equivalent or an intake of 2 milligrams of soluble uranium, or

(ii) An emergency plan for responding to the radiological hazards of an accidental release of special nuclear material and to any associated chemical hazards directly incident thereto.

(2) One or more of the following factors may be used to support an evaluation submitted under paragraph (i)(1)(i) of this section:

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

(ii) All or part of the radioactive material is not subject to release during an accident or to criticality because of the way it is stored or packaged;

(iii) In the case of fires or explosions, the release fraction would be lower than 0.001 due to the chemical or physical form of the material;

(iv) The solubility of the material released would reduce the dose received;

(v) The facility design or engineered safety features in the facility would cause the release fraction to be lower than 0.001;

(vi) Operating restrictions or procedures would prevent a release large enough to cause a member of the public offsite to receive a dose exceeding 1 rem effective dose equivalent; or

(vii) Other factors appropriate for the specific facility.

(3) Emergency plans submitted under paragraph (i)(1)(ii) of this section must include the following information:

(i) Facility description: A brief description of the licensee's facility and area near the site.

(ii) Types of accidents: An identification of each type of radioactive materials accident for which protective actions may be needed.

(iii) Classification of accidents: A classification system for classifying accidents as alerts or site area emergencies.

(iv) Detection of accidents: Identification of the means of detecting each type of accident in a timely manner.

(v) Mitigation of consequences: A brief description of the means and equipment for mitigating the consequences of each type of accident, including those provided to protect workers onsite, and a description of the program for maintaining the equipment.

(vi) Assessment of releases: A brief description of the methods and equipment to assess releases of radioactive materials.

(vii) Responsibilities: A brief description of the responsibilities of licensee personnel should an accident occur, including identification of personnel responsible for promptly notifying offsite response organizations and the NRC; also responsibilities for developing, maintaining, and updating the plan.

(viii) Notification and coordination: A commitment to and a brief description of the means to promptly notify offsite response organizations and request offsite assistance, including medical assistance for the treatment of contaminated injured onsite workers when appropriate. A control point must be established. The notification and coordination must be planned so that unavailability of some personnel, parts of the facility, and some equipment will not prevent the notification and coordination. The licensee shall also commit to notify the NRC operations center immediately after notification of the appropriate offsite response organizations and not later than one hour after the licensee declares an emergency.⁷

(ix) Information to be communicated: A brief description of the types of information on facility status, radioactive releases, and recommended protective actions, if necessary, to be given to offsite response organizations and to the NRC.

7 These reporting requirements do not supercede or release licensees of complying with the requirements under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Pub. L. 99-499 or other state or federal reporting requirements.

(x) Training: A brief description of the training the licensee will provide workers on how to respond to an emergency and any special instructions and orientation tours the licensee would offer to fire, police, medical and other emergency personnel.

(xi) Safe shutdown: A brief description of the means of restoring the facility to a safe condition after an accident.

(xii) Exercises: Provisions for conducting quarterly communications checks with offsite response organizations and annual onsite exercises to test response to simulated emergencies. Quarterly communications checks with offsite response organizations must include the check and update of all necessary telephone numbers. The licensee shall invite offsite response organizations to participate in the annual exercises. Participation of offsite response organizations in annual exercises although recommended is not required. Exercises must use scenarios not known to most exercise participants. The licensee shall critique each exercise using individuals not having direct implementation responsibility for the plan. Critiques of exercises must evaluate the appropriateness of the plan, emergency procedures, facilities, equipment, training of personnel, and overall effectiveness of the response. Deficiencies found by the critiques must be corrected.

(xiii) Hazardous chemicals: A certification that the applicant has met its responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986, Title III, Public Law 99-499, if applicable to the applicant's activities at the proposed place of use of the special nuclear material.

(4) The licensee shall allow the offsite response organizations expected to respond in case of an accident 60 days to comment on the

licensee's emergency plan before submitting it to NRC. The licensee shall provide any comments received within the 60 days to the NRC with the emergency plan.

§ 70.23 [Amended]

13. In § 70.23 (a)(11), footnote 2 is removed.

14. In § 70.32, paragraph (i) is revised to read as follows:

§ 70.32 Conditions of licensee

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(i) Licensees required to submit emergency plans in accordance with § 70.22(i) shall follow the emergency plan approved by the Commission. The licensee may change the approved plan without Commission approval if the changes do not decrease the effectiveness of the plan. The licensee shall furnish the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, with a copy to the appropriate NRC Regional Office specified in Appendix D, Part 20 of this chapter and affected offsite response organizations, a copy of each change within six months after the change is made. Proposed changes that

decrease the effectiveness of the approved emergency plan may not be implemented without prior application to and prior approval by the Commission.

* * * * *

Dated at Rockville, MD, this ____ day of _____, 1988.

For the U. S. Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

DRAFT CONGRESSIONAL LETTER

Dear Mr. Chairman:

The Commission has voted to approve and sent to the Office of the Federal Register for publication the enclosed final amendments to the Commission's rules in 10 CFR Parts 30, 40, and 70. In 1981, the NRC issued orders that required about 30 fuel cycle and other radioactive material licensees to submit emergency plans to the NRC. The final amendments place a requirement for such emergency plans in the regulations. The emergency plans include, among other things, a description of the means and equipment to mitigate the consequences of an accident and to promptly notify offsite response organizations if an accident occurs that might result in a significant release of radioactive material.

A proposed rule was published for public comment in the Federal Register on April 20, 1987. Eighteen comments were received. The changes made in the rule as a result are minor.

Sincerely,

Eric S. Beckjord, Director
Office of Nuclear Regulatory Research

Enclosure: Federal Register Notice

DRAFT PUBLIC ANNOUNCEMENT

NRC ADOPTS EMERGENCY PLANNING AMENDMENTS
FOR FUEL CYCLE AND OTHER RADIOACTIVE MATERIALS LICENSEES

The Nuclear Regulatory Commission is amending its regulations to formalize emergency planning requirements for certain fuel cycle and radioactive materials licensees.

The changes give the force of regulation to strengthen emergency planning requirements set out in NRC orders issued in February 1981 to nuclear fuel fabrication plant licensees and other licensed users of large quantities of radioactive material. The licensees who would be required to submit emergency plans under the proposed regulation have already submitted plans under the 1981 orders.

Emergency preparedness requirements--including arrangements for notification of offsite response organizations and the NRC--apply to licensees whose radioactive material possession limits and processes are such that accidents could theoretically result in a significant release of radioactive material. The NRC estimates that approximately 30 licenses are required to have emergency plans under the proposed rule.

Affected licensees must make provisions for conducting annual onsite emergency drills. Offsite response organizations must be invited to participate in the drills, but their participation would not be required.

The regulation requires licensees to allow the offsite organizations expected to respond in case of an accident 60 days to comment on the licensee's emergency plan before the licensee submitted it to the NRC.

In developing the rule, the NRC considered the need for emergency planning for nonradioactive hazardous chemicals. NRC licensees required to have an emergency plan because of the hazard presented by radioactive materials at their facility might also have nonradioactive hazardous chemicals onsite.

The Emergency Planning and Community Right-to-Know Act of 1986 (a part of the Superfund Reauthorization and Amendments Act of 1986) establishes a comprehensive program under the auspices of the Environmental Protection Agency and the Federal Emergency Management Agency. It sets out requirements for community involvement, emergency notification, and response in case of an offsite release of hazardous chemicals.

The NRC's rule requires radioactive material licensees who are subject to radiological emergency planning requirements to also certify that they are in compliance with the Emergency Planning and Community Right-to-Know Act for any hazardous chemicals they may possess.

On January 4, 1986, an accident caused one fatality and several worker injuries at an NRC-licensed fuel cycle facility, the Sequoyah Fuels Corporation uranium hexafluoride plant in Gore, Oklahoma. The death and injuries were caused by exposure to hydrofluoric acid fumes. Following the accident the NRC formed a lessons-learned group that reviewed the accident and recommended improvements. Requirements incorporated into the rule as a result of the recommendations include:

- (1) The emergency plan must describe the responsibilities of individual licensee personnel in case of an accident, as well as individual responsibilities for developing, maintaining, and updating the plan.
- (2) Licensees must train their employees on how to respond to an emergency and to offer instruction and orientation tours to fire, police, medical, and other offsite emergency personnel.
- (3) Licensees must conduct annual exercises to test response to simulated emergencies. Offsite response organizations must be invited to participate.

An NRC staff report, "Regulatory Analysis of Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees," (NUREG-1140) contains accident scenarios and dose calculations that form the technical basis for the rule. Copies may be purchased from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013, telephone (202) 275-2060.

The rule was originally for public comment on April 20, 1987. No major changes have been made as a result of the comments received.

The new requirements will become effective on (_____ days after publication in the Federal Register on _____).