UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

(95)

APR 29 1988

MEMORANDUM FOR: Commissioner Bernthal

FROM: Victor Stello, Jr.
Executive Director for Operations

SUBJECT: BASES FOR DE MINIMIS POLICY DEVELOPMENT BY OTHER AGENCIES (REF: MBB0314)

REFERENCE: (1) Cancer Risk Management, C. Travis, et. al., Environmental Science and Technology Vol. 21, No. 5, May 1987

(2) Qualitative and Quantitative Carcinogenic Risk Assessment, Section 3, Dose-Response Assessment, Environmental Protection Agency, June 1987

The purpose of this memorandum is to respond to your request made in the staff requirements memorandum (SRM) of March 30, 1988. The SRM was issued subsequent to the staff's briefing of the Commission on the status of efforts to apply de minimis and below regulatory concern concepts to Commission policies. You specifically requested information on the bases and analytical techniques used by other agencies in developing de minimis policy/regulations on toxic waste. The following information, based on the listed references, is intended to provide an overview response to your question.

Numerous State and Federal agencies, as well as the U.S. Environmental Protection Agency (EPA), have documented approaches for cleanup of hazardous waste sites. The common features of almost all approaches is that they are based on the assumption that allowable concentrations of hazardous materials in the environment can be defined for which no significant adverse effects on humans or the environment are expected.

As indicated in the staff's March 30, 1988 presentation, the acceptability of carcinogenic risks is frequently expressed in terms of an individual lifetime cancer risk level. Choices for the magnitude of this individual lifetime risk level are often made on a case-by-case basis and have ranged from $10^{-4}$ to $10^{-7}$. The method for determining acceptable levels of contamination in the context of a risk assessment is referred to as the "absolute approach" to the management of cleanups at hazardous waste sites, and is used by both Federal and State agencies. For example, in EPA's Superfund Public Health Evaluation Manual, methodologies to determine cleanup levels are identified which: (1) calculate the environmental migration of chemicals, (2) determine media-specific concentrations, and (3) use toxicity-based criteria for specific chemicals to evaluate risk levels.

For carcinogens, the projected site-specific human intake of a chemical (average over 70 years) is calculated by multiplying peak long-term concentration in an exposure medium by the human intake factor for that medium and adjusting the averaged result by a body weight factor. The resulting

chronic daily intake value is multiplied by a carcinogenic potency factor to calculate a lifetime risk for each chemical taken into the body through a specific intake pathway. The total lifetime risk is summed over all intake pathways and for all chemicals at a site. For potential carcinogens, cleanup levels are expected to maintain lifetime cancer risk in the range from $10^{-4}$ to $10^{-7}$ with $10^{-6}$ as a desirable target level. The carcinogenic potency factor is stated as being derived from data generated from standard tests in which standardized extrapolation techniques are applied. These factors are upper bound risk estimates or slope factors that are derived by the Environmental Protection Agency's (EPA) Carcinogens Assessment Group and are based, for the most part, on animal experiments involving exposures at doses at and somewhat below maximum tolerated levels (i.e., the highest dose that would not alter the animals normal life from effects other than cancer). Although extrapolation to low dose can be based on several models, EPA and several other agencies (California Department of Health Services, New Jersey Department of Environmental Protection) use a multistage linearized model unless data indicate a strong preference for another model. This model reflects the favored theory that carcinogenesis is a multistage process consisting of at least three distinct stages: initiation, promotion and progression. The multistage nature of the process has been experimentally demonstrated in cells of some animal tissue. At low doses, the multistage model relates exposure to risk on a linear basis.

The origin of the lifetime cancer risk goal is somewhat obscure but appears to have evolved from a Food and Drug Administration response in setting a threshold from which judgements could be made regarding a contaminant in beef. This risk goal concept was reinforced by the Supreme Court's 1980 benzene decision. With regard to the Food and Drug Administration (FDA) action, the 1958 Food Additives Amendment to the Food, Drug, and Cosmetics Act prohibited the use of food additives found to be carcinogenic. In 1962, by Congressional amendment, FDA was permitted to approve the use of a carcinogenic animal drug if the agency was convinced that no residue of a drug would be found in edible tissues of the treated animals. This course proved to be unworkable, for two reasons: progress in analytic chemistry was so rapid that proven methods of analysis quickly became obsolete, and improved detection methods showed that no drug administered to animals is ever entirely absent from animal tissues. The problem of enforcing the 1962 amendment was highlighted in the early 1970's when diethylstilbestrol residues were discovered in beef liver with highly sensitive analytic methods. As a result, FDA proposed sensitivity-of-method guidelines; namely, that any assay approved for controlling a carcinogenic drug must be capable of measuring residues that present more than an insignificant risk of cancer, and specified $10^{-6}$ lifetime risk of cancer as a quantitative criterion of insignificance.

In the 1980 benzene decision, the court recognized the existence of insignificant risks. In so doing, it offered quantitative bounds as follows: "If, for example, the odds are one in a billion that a person will die from cancer by taking a drink of chlorinated water, the risk clearly could not be considered significant. On the other hand, if the odds are one in a thousand that regular inhalation of gasoline vapors which are two percent benzene would be fatal, a reasonable person might well consider the risk significant and take

appropriate steps to decrease or eliminate it." In his concurring opinion, Chief Justice Burger stated: "Inherent in this statutory scheme is authority to refrain from regulation of insignificant or de minimis risks."

The staff believes the two references are especially relevant to your request. The first reviews risk management decisions made by regulatory agencies. The second is a section in "Qualitative and Quantitative Carcinogenic Risk Assessment," a document prepared for EPA in June 1987. A copy of the EPA's Superfund Public Health Evaluation Manual is also available. If you are interested, any or all of these documents can be made available to you.

Original signed by
Victor Stello

Victor Stello, Jr.
Executive Director for Operations

cc: Chairman Zech
Commissioner Roberts
Commissioner Carr
Commissioner Rogers
SECY
OGC
GPA

DISTRIBUTION
CIRC/CHRON/RF
SBJ.
VStello
EBeckjord
DRoss
BMorris
ZRosztoczy
RAlexander
WLahs

BERNTHAL MEMO

JTaylor
TRehm
HThompson, NMSS
TMurley, NRR
JMurray, OGC
EDO r/f

*See attached sheet for previous concurrences.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| OFC | :RPHEB | :RPHEB | :DRA | :DRA | :RES | :RES | :EDO |
| NAME | :WLahs/bh | :RAlexander | :ZRosztoczy | :BMorris | :DRoss | :EBeckjord | :VStello |
| DATE | : 4/25/88 | : 4/25/88 * | : 4/25/88 * | : 4/25/88 * | : /88 | : 4/26/88 | : /88 |

OFFICIAL RECORD COPY

(96)

PRESENTATION SCHEDULE
ACRS SUBCOMMITTEE ON WASTE MANAGEMENT
TOPIC: DE MINIMIS AND BELOW REGULATORY CONCERN

ROOM 1167, 1717 H STREET, N.W.
WASHINGTON, D. C.
May 4, 1988

| | | |
|---|---|---|
| 8:30 - 9:30 a.m. | Introduction and Executive Session | D. Moeller, Chairman |
| 9:30 - 9:40 a.m. | Welcome and Opening Remarks | D. Moeller |
| 9:40 - 10:30 a.m. | BRC Policy Statement | |
| | - Introduction | R. Bernero, NMSS |
| | - Background | K. Dragonette, NMSS |
| | - Policy Statement | |
| | - Expected Petition/Status | |
| 10:30 - 10:45 a.m. | ***** BREAK ***** | |
| 10:45 - 11:30 a.m. | Release and Decommissioning Criteria | L. Rouse, NMSS, and S. Neuder, RES |
| | - Residual Activity Standards | |
| | - Residual Activity in Soils | |
| 11:30 - 12:15 | Gemstones | D. Cool, NLMSS |
| 12:15 - 1:15 p.m. | ***** LUNCH ****** | |
| 1:15 - 1:45 p.m. | Current NEA/IAEA Activities | R. Cunningham, NMSS |
| 1:45 - 2:45 p.m. | Integral Approach to Issues | W. Lahs, RES |
| | - Reprise of Commission Briefing | |
| | - International Conference Status | |
| | - Initial Ideas | |
| 2:45 - 3:00 p.m. | ***** BREAK ***** | |
| 3:00 - 4:00 p.m. | Executive Session | |
| 4:00 p.m. | ADJOURN | |

(97) 94

H. Steul 1167

8:30 a.m.

ACNW ON
DEMINIMIS AND BELOW
REGULATORY CONCERN

MAY 4, 1988

| | | |
|---|---|---|
| 1. | BRC POLICY STATEMENT (K. DRAGONETTE, NMSS) | 45 minutes |
| | - BACKGROUND<br>- POLICY STATEMENT<br>- EXPECTED PETITION/STATUS | |
| 2. | RELEASE AND DECOMMISSIONING CRITERIA<br>(L. ROUSE, NMSS; S. NEUTER, RES) | 45 minutes |
| | - RESIDUAL ACTIVITY STANDARDS<br>- RESIDUAL ACTIVITY IN SOILS | |
| 3. | GEMSTONES (D. COOL, NMSS) | 45 minutes |
| 4. | CURRENT NEA/IAEA ACTIVITIES (R. CUNNINGHAM, NMSS) | 30 minutes |
| 5. | INTEGRAL APPROACH TO ISSUES (W. LAHS, RES) | 60 minutes |
| | - REPRISE OF COMMISSION BRIEFING<br>- INTERNATIONAL CONFERENCE STATUS<br>- INITIAL IDEAS | |

(98)

# ACRS (ACNW) BRIEFING

# DE MINIMIS & BELOW REGULATORY CONCERN POLICY DEVELOPMENT

MAY 4, 1988

54

# RES "REGULATORY EXEMPTION" ACTIVITIES PRIOR TO NOV 24, 1987 SRM

- RESPOND TO COMMENTS ON ANPR & TAKE APPROPRIATE ACTION
- COMPLETE CONTRACTOR WORK ON RESIDUAL RADIOACTIVITY RELEASE STANDARD – PROPOSE NRC POSITION
- RESPOND TO PRM FOR WASTE OIL DISPOSAL
- ADVISE COMMISSION ON CONSISTENCY OF RELEASE STANDARDS

# EXEMPTIONS FROM REGULATORY CONTROL -THEIR POTENTIAL USE IN THE DEVELOPMENT OF RADIATION PROTECTION POLICIES & REGULATIONS

## BACKGROUND

**RESPOND TO COMMISSION REQUESTS TO ADDRESS ISSUES SPECIFIED IN SRMs OF FEB 6 & NOV 24, 1987 & MAR 30,1988**

ADVISE ON HOW EXISTING & PROPOSED DE MINIMIS, BELOW REGULATORY CONCERN & RESIDUAL RADIOACTIVITY RELEASE STANDARDS ARE RELATED & HOW CONSISTENT RELEASE STANDARDS ARE ACHIEVED

DEVELOP COMMISSION POLICY STATEMENT THAT WOULD IDENTIFY A LEVEL OF RADIATION RISK BELOW WHICH GOVERNMENT REGULATION BECOMES UNWARRANTED

ESTABLISH A GENERIC NUMBER FOR EXPOSURE THAT IS BELOW REGULATORY CONCERN

## RECENT & NEAR-TERM ACTIONS

STATUS REPORT ON MARCH 14, 1988

TECHNIQUES USED BY OTHER AGENCIES - RESPONSE ON APRIL 29, 1988

OPTIONS PAPER ESTABLISHING GENERIC NUMBER- AUGUST 1, 1988

INTERNATIONAL WORKSHOP - OCTOBER 17-19, 1988

# IMPACT OF GEMSTONE ISSUE ON PROPOSED DE MINIMIS/BRC POLICY

- ROLE OF JUSTIFICATION OF PRACTICE CONCEPT QUESTIONED
- STAFF VIEWPOINT:
  - NEED FOR POLICY POSITION BASED ON NEGLIGIBLE RISK (WHAT ARE OTHER AGENCIES DOING ?)
  - NEED FOR BRC POLICY TO ALLOW CONSIDERATION OF COST/RISK REDUCTION CONSIDERATIONS

Note: 1. ~ order of magnitude difference in de minimis risk level definition

2. value differences in risk coefficients

# MAJOR TOPICS DISCUSSED AT COMMISSION MEETING

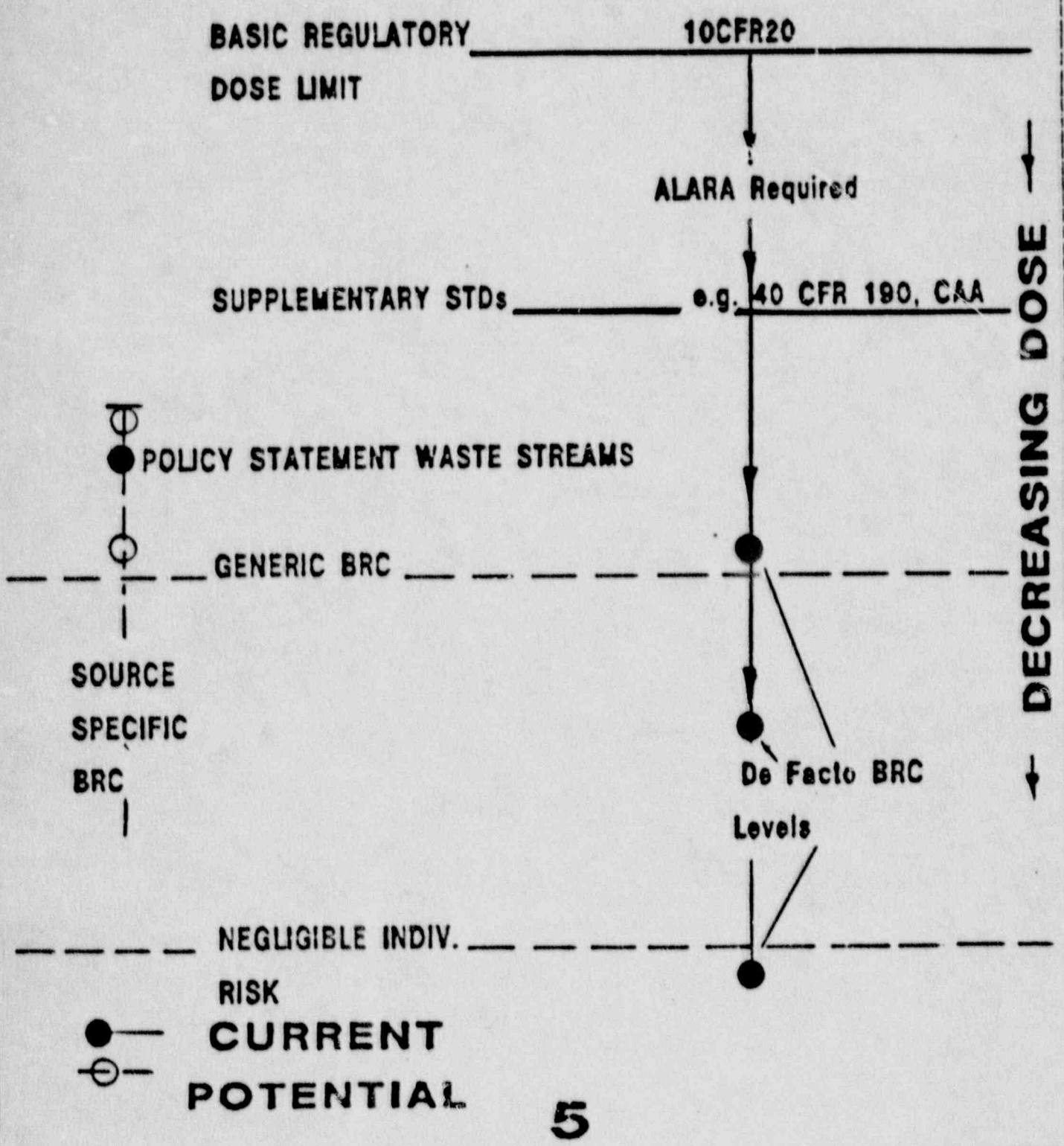
RADIATION PROTECTION FRAMEWORK & THE TERMS & CONCEPTS ASSOCIATED WITH REGULATORY CUTOFFS

POLICY DEVELOPMENT CONSIDERATIONS- IN LIGHT OF CURRENT NRC, EPA & INTERNATIONAL ACTIVITIES

PLANS FOR INTERNATIONAL SYMPOSIUM

PRELIMINARY RESOURCE ESTIMATES FOR BROAD & SPECIFIC POLICIES

# RADIATION PROTECTION FRAMEWORK



## NATIONAL AND INTERNATIONAL PICTURE

- CANADIAN ATOMIC ENERGY CONTROL BOARD (CAECB)
  BRC--5 MREMS/YR DOSE LIMIT FOR DISPOSAL OF WASTE (1985)

- U.K. NATIONAL RADIOLOGICAL PROTECTION BOARD (NRPB)
  DE MINIMIS--5 MREMS/YR ALL SOURCES COMBINED, .5 MREMS/YR INDIVIDUAL SOURCES

- ENVIRONMENTAL PROTECTION AGENCY (EPA)
  BRC--4 MREMS/YR DOSE LIMIT PER WASTE STREAM (1988)

- NUCLEAR REGULATORY COMMISSION (NRC)
  BRC--POLICY ON PETITIONS FOR RULEMAKING (1986)

- NUCLEAR REGULATORY COMMISSION (NRC)
  BRC--RECOMMENDATIONS FOR GENERIC RULEMAKING ON RADIOACTIVE WASTE (1988)

- NUCLEAR REGULATORY COMMISSION (NRC)
  DE MINIMIS--NEGLECT DOSES UP TO 1 MREM/YR IN COLLECTIVE DOSE EVALUATIONS
  (REVISED PART 20, 1988)

- NUCLEAR REGULATORY COMMISSION (NRC)
  DE FACTO BRC LEVELS IN THE REGULATIONS

- NATIONAL COUNCIL FOR RADIATION PROTECTION (NCRP)
  DE MINIMIS--RECOMMENDS 1 MREM/YR AS A "NEGLIGIBLE INDIVIDUAL RISK LEVEL"

- INTERNATIONAL ATOMIC ENERGY ASSOCIATION (IAEA)
  DE MINIMIS 1 MREM/YR (TO INDIVIDUALS), 50 MREM/YR (SKIN DOSE), 100 MAN-REM
  (COLLECTIVE)

# POLICY DEVELOPMENT CONSIDERATIONS

"SOURCE SPECIFIC" VS "GENERIC" BRC LEVELS

CHARACTERIZATION OF CUTOFF LEVELS

CHARACTERIZATION OF SOURCES ON A NATIONAL BASIS

ROLE OF COST/ RISK TRADEOFFS

CONVERSION OF BRC DOSE LEVELS TO RISK

DIFFICULTIES IN ESTABLISHING "NEGLIGIBLE RISK" LEVELS

# BRC WASTE STREAMS
# COMMENTS ON ANPR

93 LETTERS REC"D - 58 OPPOSED

GENERIC VS. SOURCE SPECIFIC - EVENLY SPLIT

RULEMAKING DESIREABLE

CRITERIA CODIFIED - NO ADDITIONAL CRITERIA NEEDED

CRITERIA FOR ANY SITE & SPECIFIC DISPOSAL SITE

DOSE CUTOFF - 1-10 mrem/yr

SUGGESTIONS FOR SAFE SITE LIMIT

# MAJOR AUTHORITIES & REGULATIONS IMPACTING REGULATORY CUTOFF POLICIES

EPA

- GENERALLY APPLICABLE ENVIRONMENTAL RADIATION STANDARDS (AEA)
- SAFE DRINKING WATER ACT
- CLEAN AIR ACT

NRC

- EXEMPTION AUTHORITY (ATOMIC ENERGY ACT SECTIONS 57d, 62& 81)
- LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985

# NRC/NEA WORKSHOP ON RULES FOR EXEMPTION FROM REGULATORY CONTROL

INTENT: FOCUS INTERNATIONAL REGULATORY ATTENTION & DEVELOP CONSENSUS ON CONTENT OF EXEMPTION POLICY

PLACE & TIME: PAN AMERICAN HEALTH ORGANIZATION CONFERENCE FACILITIES WASHINGTON, DC, OCT 17-19,1988

STRUCTURE: PARTICIPANTS-INVITED EXPERTS FROM NATIONAL & INTERNATIONAL REGULATORY AUTHORITIES; PRESENTATIONS OF INVITED PAPERS

# INITIAL IDEAS ON POLICY DEVELOPMENT

GOAL: RESPOND TO COMMISSION REQUEST FOR GENERIC NUMBER FOR EXPOSURES BELOW REGULATORY CONCERN

PROVIDE FLEXIBILITY TO DEVELOP REASONABLE & PRUDENT EXEMPTIONS FROM REGULATORY CONTROL FOR: LOW LEVEL WASTE STREAM DISPOSAL, DECONTAMINATED & DECOMMISSIONED STRUCTURES & SITES, CONSUMER PRODUCTS, etc

APPROACH: MULTIPLE (3) INDIVIDUAL DOSE VALUES TO DEFINE GRADED DEGREE OF JUSTIFICATION FOR EXEMPTIONS

# RESIDUAL RADIOACTIVITY

Dr. Stan Neuder

## ACCEPTABLE SURFACE CONTAMINATION LEVELS

| NUCLIDE | AVERAGE | MAXIMUM | REMOVABLE |
|---|---|---|---|
| U-nat, U-235, U-238, and associated decay products | 5,000 dpm $\alpha$/100 cm$^2$ | 15,000 dpm $\alpha$/100 cm$^2$ | 1,000 dpm $\alpha$/100 cm$^2$ |
| Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129 | 100 dpm/100 cm$^2$ | 300 dpm/100 cm$^2$ | 20 dpm/100 cm$^2$ |
| Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133 | 1000 dpm/100 cm$^2$ | 3000 dpm/100 cm$^2$ | 200 dpm/100 cm$^2$ |
| Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above. | 5000 dpm $\beta$-$\gamma$/100 cm$^2$ | 15,000 dpm $\beta$-$\gamma$/100 cm$^2$ | 1000 dpm $\beta$-$\gamma$/100 cm$^2$ |

## NEW GUIDANCE ADDRESSES

External Exposure Rate

Volumetric Distribution

Surface Distribution

## APPLICATION OF NEW GUIDANCE

Soils and Structures (Stage 1)

Equipment and Materials (Stage 2)

## NEW GUIDANCE - PATHWAY CONSIDERATIONS

Direct External Exposure

Resuspension-Inhalation

Agriculture-Ingestion

Secondary Transfer-Ingestion

Groundwater-Ingestion

TABLE 1 Derived Residual Radioactivity Inventory and Surface Activity Limits for Unrestricted Release of Licensed Facilities (Note: Additional Radionuclides will be added later)

| Radionuclide | Derived Inventory Limits ($\mu Ci/m^2$) | Derived Surface Activity Limits ($dpm/100\ cm^2$) |
|---|---|---|
| $^{54}Mn$ | 4.2 E+0 | 2 E+2 |
| $^{55}Fe$ | 7.7 E+3 | 3 E+5 |
| $^{58}Co$ | 3.6 E+0 | 1 E+2 |
| $^{60}Co$ | 1.3 E+0 | 5 E+1 |
| $^{63}Ni$ | 4.6 E+5 | 2 E+7 |
| $^{65}Zn$ | 5.0 E+0 | 2 E+2 |
| $^{90}Sr+^{90}Y$ | 4.6 E+2 | 2 E+4 |
| $^{95}Zr$ | 5.0 E+0 | 2 E+2 |
| $^{99}Tc$ | 8.4 E+4 | 3 E+6 |
| $^{125}I$ | 2.9 E+2 | 1 E+4 |
| $^{129}I$ | 5.6 E+2 | 1 E+4 |
| $^{131}I$ | 1.2 E+1 | 4 E+2 |
| $^{230}Th$ | 7.7 E+1 | 3 E+3 |
| $^{232}Th$ | 1.5 E+1 | 6 E+2 |
| $^{232}U$ | 3.6 E+1 | 1 E+3 |
| $^{234}U$ | 1.9 E+2 | 7 E+3 |
| $^{235}U$ | 4.6 E+1 | 2 E+3 |
| $^{231}Th$ | 5.0 E+2 | 2 E+4 |
| $^{231}Pa$ | 1.7 E+2 | 6 E+3 |
| $^{238}U$ | 2.0 E+2 | 7 E+3 |
| $^{234}Th$ | 1.8 E+2 | 7 E+3 |
| $^{234}Pa$ | 1.8 E+0 | 7 E+1 |

MEMORANDUM APRIL 6, 1988
STELLO to BECKJORD (RES),
THOMPSON(NMSS), MURLEY(NRR)

There is an urgent need for developing guidance to ensure consistent Agency decisions regarding acceptable levels of contamination for the release of lands and facilities for unrestricted use....

I therefore direct the RES staff to prepare an interim policy statement consistent with the Commission-directed below regulatory concern policies which, as a minimum, would document (1) the criteria attendant to existing decommisioning practice and (2) the longer range NRC plans for follow-on policy guidance and rulemaking. This interim policy statement should be issued in FY 1988.

PRIMARY DOSE LIMIT-BRC

Cost-Effectiveness

Past Experiences

Health Risk

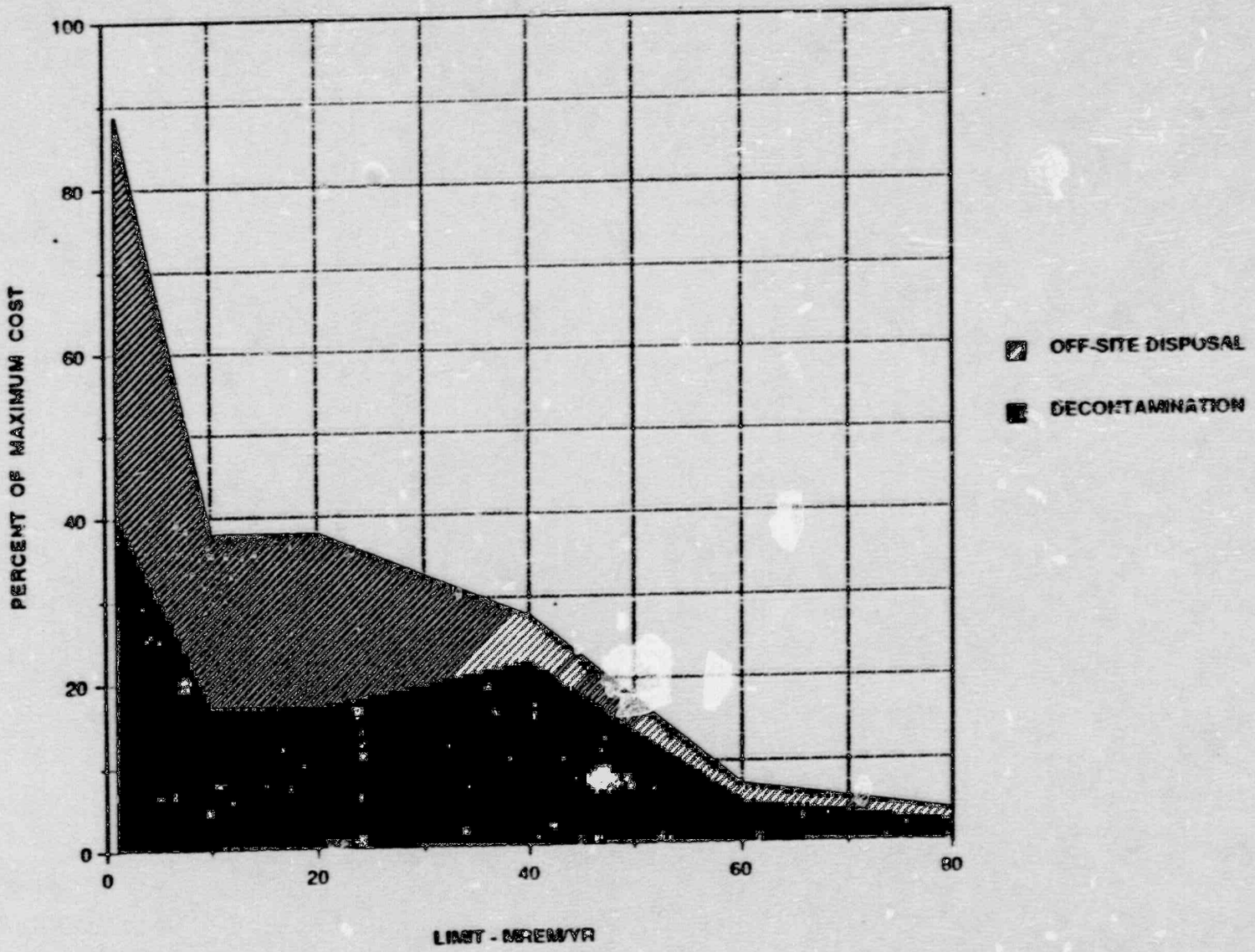
## INTERIM POLICY

- Primary Dose Limit
- Secondary Limits
  - External exposure limit
  - Inventory limit
  - Surface (dpm) limit

TABLE 2 Comparison of the Average Derived Surface Activity Limits with the Average Regulatory Guide 1.86 Limits

| Radionuclide | Derived Surface Activity Limit (dpm/100 $cm^2$) | Reg. Guide 1.86 Surface Activity Limit (dpm/100 $cm^2$) |
|---|---|---|
| $^{54}Mn$ | 2 E+2 | 5 E+3 |
| $^{55}Fe$ | 3 E+5 | 5 E+3 |
| $^{58}Co$ | 1 E+2 | 5 E+3 |
| $^{60}Co$ | 5 E+1 | 5 E+3 |
| $^{63}Ni$ | 2 E+7 | 5 E+3 |
| $^{65}Zn$ | 2 E+2 | 5 E+3 |
| $^{90}Sr+^{90}Y$ | 2 E+4 | 1 E+3 |
| $^{95}Zr$ | 2 E+2 | 5 E+3 |
| $^{99}Tc$ | 3 E+6 | 5 E+3 |
| $^{125}I$ | 1 E+4 | 1 E+2 |
| $^{129}I$ | 1 E+4 | 1 E+2 |
| $^{131}I$ | 4 E+2 | 1 E+3 |
| $^{230}Th$ | 3 E+0 | 1 E+2 |
| $^{232}Th$ | 6 E+2 | 1 E+3 |
| $^{232}U$ | 1 E+3 | 1 E+3 |
| $^{234}U$ | 7 E+3 | 5 E+3 |
| $^{235}U$ | 2 E+3 | 5 E+3 |
| $^{231}Th$ | 2 E+4 | 5 E+3 |
| $^{231}Pa$ | 6 E+3 | 5 E+3 |
| $^{238}U$ | 7 E+3 | 5 E+3 |
| $^{230}Th$ | 7 E+3 | 5 E+3 |
| $^{234}Pa$ | 7 E+1 | 5 E+3 |
| Reference Uranium Mixture | 7 E+3 | 5 E+3 |

FIGURE COST VERSUS LIMIT FOR 0.5 CM DEPTH



# RELEASE AND DECOMMISSIONING CRITERIA

## CURRENT PRACTICES

## FOR

## RESIDUAL ACTIVITY

## SURFACE CONTAMINATION

## SOILS

# RESIDUAL ACTIVITY CRITERIA
# FOR
# SURFACE CONTAMINATION

GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL.

- o REGULATORY GUIDE 1.86, TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS

- o BACKGROUND AND BASIS
  - WITH RELATIVELY MINOR CHANGES, USED SINCE 1950'S.
  - NOT DERIVED ON DOSE BASIS; CONSIDERED TO BE SUFFICIENTLY LOW TO BE OF NEGLIGIBLE SIGNIFICANCE TO HEALTH AND SAFETY AND SUFFICIENTLY HIGH TO BE PRACTICAL OF ATTAINMENT AND MEASUREMENT.
  - "GUIDELINES" REFERENCED ABOVE INCORPORATED AS LICENSE CONDITION ON FUEL CYCLE LICENSES.

# ACCEPTABLE SURFACE CONTAMINATION LEVELS

| NUCLIDES | AVERAGE | MAXIMUM | REMOVAL |
|---|---|---|---|
| U-NAT, U-235, U-238, AND AND ASSOCIATED DECAY PRODUCTS | 5,000 DPM $\alpha$/100 $CM^2$ | 15,000 DPM $\alpha$/100 $CM^2$ | 1,000 DPM $\alpha$/100 $CM^2$ |
| TRANSURANICS, RA-226, RA-228, TH-230, TH-228, PA 231, AC-227, I-125, I-129 | 100 DPM/100 $CM^2$ | 300 DPM/100 $CM^2$ | 20 DPM/100 $CM^2$ |
| TH-NAT, TH-232, SR-90, RA-223, RA-224, U-232, I-126, I-131, I-133 | 1000 DPM/100 $CM^2$ | 3000 DPM/100 $CM^2$ | 200 DPM/100 $CM^2$ |
| BETA-GAMMA EMITTERS (NUCLIDES WITH DECAY MODES OTHER THAN ALPHA EMISSIONS OR SPONTANEOUS FISSION) EXCEPT SR-90 AND OTHERS NOTED ABOVE. | 5000 DPM $\beta\gamma$/100 $CM^2$ | 15,000 DPM $\beta\gamma$/100 $CM^2$ | 1000 DPM $\beta\gamma$/100 $CM^2$ |

# RESIDUAL ACTIVITY CRITERIA FOR SOILS

- EPA -- INTERIM RECOMMENDATIONS ON DOSES TO PERSONS EXPOSED TO TRANSURANIUM ELEMENTS IN THE GENERAL ENVIRONMENT

- BRANCH TECHNICAL POSITION --DISPOSAL OR ONSITE STORAGE OF THORIUM OR URANIUM WASTES FROM PAST OPERATIONS

- BACKGROUND AND BASIS
  - DEVELOPMENT OF EPA RECOMMENDATIONS INITIATED IN EARLY 1970'S, PROPOSED AS FEDERAL RADIATION PROTECTION GUIDANCE IN 1977, AND PRESENTLY BEING PURSUED AS FINAL GUIDELINES.
  - EPA GUIDANCE FOR TRANSURANIUM SOIL CONTAMINATION REPORTED AS BASED ON RISK ($10^{-6}$/YR) USING 1 MRAD/YR TO LUNG, 3 MRAD/YR TO BONE.
  - STAFF TECHNICAL POSITION PUBLISHED IN 1981 (46 FR 52061) USED PROPOSED EPA GUIDANCE AS BASIS FOR DEALING WITH LARGE VOLUME, LOW CONCENTRATION URANIUM AND THORIUM SOIL CONTAMINATION CASES.
  - STAFF TECHNICAL POSITION PROVIDES BASIS FOR UNRESTRICTED RELEASE AS OPTION 1 AND THREE OTHER OPTIONS WITH SPECIFIC REQUIREMENTS FOR LICENSE TERMINATION.

## ACCEPTABLE SOIL CONTAMINATION LEVELS

| | Kind of Material | Soil Concentration Level for Unrestricted Area (pCi/g of soil) |
|---|---|---|
| Branch Technical Position (46 FR 52061) | Natural Uranium (U-238+ U-234) with Decay Products Present and in Equilibrium | 10 |
| | Depleted Uranium or Natural Uranium that has been separated from its decay products, soluble or insoluble | 35 |
| | Natural Thorium (Th-232 + Th-228) with decay products present and in equilibrium | 10 |
| | Enriched uranium, soluble or insoluble | 30 |
| Derived Positions | Plutonium (Y) or (W) | 25 |
| | Americium-241 (W) | 30 |
| | All Byproduct Material | Case-by-case determination |

Basis — Lung dose, 10 mrems/yr; bone dose, 60 mrems/yr; external radiation, 10 microroentgens/hr above background at one meter from surface.

# OTHER OPTIONS FOR RELEASE OF URANIUM/THORIUM SOIL CONTAMINATION

| | Maximum Concentrations (pCi/g) Branch Technical Position Disposal Options | | |
|---|---|---|---|
| | 2 | 3 | 4 |
| Natural thorium | 50 | - | 500 |
| Natural uranium (with daughters present) | - | 40 | 200 |
| Depleted uranium | | | |
| Soluble | 100 | - | 1000 |
| Insoluble | 300 | - | 3000 |
| Enriched uranium | | | |
| Soluble | 100 | - | 1000 |
| Insoluble | 250 | - | 2500 |

Basis: Burial at 4 feet, deed restrictions for Options 3 and 4, assumes intrusions: Option 2, 170 mrems/yr whole body or organ dose; Option 3, 0.02 working level; Option 4, 500 mrems/yr whole body or organ dose, 0.02 working level for nat U.

# GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL

U.S. Nuclear Regulatory Commission
Division of Industrial and
Medical Nuclear Safety
Washington, DC 20555

August 1987

The instructions in this guide, in conjunction with Table 1, specify the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. The limits in Table 1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control is considered on a case-by-case basis.

1. The licensee shall make a reasonable effort to eliminate residual contamination.

2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.

4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:

   a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree of residual surface contamination.

   b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table 1. A copy of the survey report shall be filed with the Division of Industrial and Medical Nuclear Safety, U. S. Nuclear Regulatory Commission, Washington, DC 20555, and also the Administrator of the NRC Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

   a. Identify the premises.

   b. Show that reasonable effort has been made to eliminate residual contamination.

   c. Describe the scope of the survey and general procedures followed.

   d. State the findings of the survey in units specified in the instruction.

   Following review of the report, the NRC will consider visiting the facilities to confirm the survey.

TABLE 1

ACCEPTABLE SURFACE CONTAMINATION LEVELS

| NUCLIDES[a] | AVERAGE[b c f] | MAXIMUM[b d f] | REMOVABLE[b e f] |
|---|---|---|---|
| U-nat, U-235, U-238, and associated decay products | 5,000 dpm $\alpha$/100 $cm^2$ | 15,000 dpm $\alpha$/100 $cm^2$ | 1,000 dpm $\alpha$/100 $cm^2$ |
| Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129 | 100 dpm/100 $cm^2$ | 300 dpm/100 $cm^2$ | 20 dpm/100 $cm^2$ |
| Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133 | 1000 dpm/100 $cm^2$ | 3000 dpm/100 $cm^2$ | 200 dpm/100 $cm^2$ |
| Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above. | 5000 dpm $\beta\gamma$/100 $cm^2$ | 15,000 dpm $\beta\gamma$/100 $cm^2$ | 1000 dpm $\beta\gamma$/100 $cm^2$ |

[a] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d] The maximum contamination level applies to an area of not more than 100 $cm^2$.

[e] The amount of removable radioactive material per 100 $cm^2$ of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

[f] The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

U.S. ATOMIC ENERGY COMMISSION

June 1974

# REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

## REGULATORY GUIDE 1.86

# TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS

## A. INTRODUCTION

Section 50.51, "Duration of license, renewal," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that each license to operate a production and utilization facility be issued for a specified duration. Upon expiration of the specified period, the license may be either renewed or terminated by the Commission. Section 50.82, "Applications for termination of licenses," specifies the requirements that must be satisfied to terminate an operating license, including the requirement that the dismantlement of the facility and disposal of the component parts not be inimical to the common defense and security or to the health and safety of the public. This guide describes methods and procedures considered acceptable by the Regulatory staff for the termination of operating licenses for nuclear reactors. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

## B. DISCUSSION

When a licensee decides to terminate his nuclear reactor operating license, he may, as a first step in the process, request that his operating license be amended to restrict him to possess but not operate the facility. The advantage to the licensee of converting to such a possession-only license is reduced surveillance requirements in that periodic surveillance of equipment important to the safety of reactor operation is no longer required. Once this possession-only license is issued, reactor operation is not permitted. Other activities related to cessation of operations such as unloading fuel from the reactor and placing it in storage (either onsite or offsite) may be continued.

A licensee having a possession-only license must retain, with the Part 50 license, authorization for special nuclear material (10 CFR Part 70, "Special Nuclear Material"), byproduct material (10 CFR Part 30, "Rules of General Applicability to Licensing of Byproduct Material"), and source material (10 CFR Part 40, "Licensing of Source Material"), until the fuel, radioactive components, and sources are removed from the facility. Appropriate administrative controls and facility requirements are imposed by the Part 50 license and the technical specifications to assure that proper surveillance is performed and that the reactor facility is maintained in a safe condition and not operated.

A possession-only license permits various options and procedures for decommissioning, such as mothballing, entombment, or dismantling. The requirements imposed depend on the option selected.

Section 50.82 provides that the licensee may dismantle and dispose of the component parts of a nuclear reactor in accordance with existing regulations. For research reactors and critical facilities, this has usually meant the disassembly of a reactor and its shipment offsite, sometimes to another appropriately licensed organization for further use. The site from which a reactor has been removed must be decontaminated as necessary, and inspected by the Commission to determine whether unrestricted access can be approved. In the case of nuclear power reactors, dismantling has usually been accomplished by shipping fuel offsite, making the reactor inoperable, and disposing of some of the radioactive components.

Radioactive components may be either shipped offsite for burial at an authorized burial ground or secured

on the site. Those radioactive materials remaining on the site must be isolated from the public by physical barriers or other means to prevent public access to hazardous levels of radiation. Surveillance is necessary to assure the long term integrity of the barriers. The amount of surveillance required depends upon (1) the potential hazard to the health and safety of the public from radioactive material remaining on the site and (2) the integrity of the physical barriers. Before areas may be released for unrestricted use, they must have been decontaminated or the radioactivity must have decayed to less than prescribed limits (Table I).

The hazard associated with the retired facility is evaluated by considering the amount and type of remaining contamination, the degree of confinement of the remaining radioactive materials, the physical security provided by the confinement, the susceptibility to release of radiation as a result of natural phenomena, and the duration of required surveillance.

## C. REGULATORY POSITION

### 1. APPLICATION FOR A LICENSE TO POSSESS BUT NOT OPERATE (POSSESSION-ONLY LICENSE)

A request to amend an operating license to a possession-only license should be made to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545. The request should include the following information:

a. A description of the current status of the facility.

b. A description of measures that will be taken to prevent criticality or reactivity changes and to minimize releases of radioactivity from the facility.

c. Any proposed changes to the technical specifications that reflect the possession-only facility status and the necessary disassembly/retirement activities to be performed.

d. A safety analysis of both the activities to be accomplished and the proposed changes to the technical specifications.

e. An inventory of activated materials and their location in the facility.

### 2. ALTERNATIVES FOR REACTOR RETIREMENT

Four alternatives for retirement of nuclear reactor facilities are considered acceptable by the Regulatory staff. These are:

a. **Mothballing.** Mothballing of a nuclear reactor facility consists of putting the facility in a state of protective storage. In general, the facility may be left intact except that all fuel assemblies and the radioactive fluids and waste should be removed from the site. Adequate radiation monitoring, environmental surveillance, and appropriate security procedures should be established under a possession-only license to ensure that the health and safety of the public is not endangered.

b. **In-Place Entombment.** In-place entombment consists of sealing all the remaining highly radioactive or contaminated components (e.g., the pressure vessel and reactor internals) within a structure integral with the biological shield after having all fuel assemblies, radioactive fluids and wastes, and certain selected components shipped offsite. The structure should provide integrity over the period of time in which significant quantities (greater than Table I levels) of radioactivity remain with the material in the entombment. An appropriate and continuing surveillance program should be established under a possession-only license.

c. **Removal of Radioactive Components and Dismantling.** All fuel assemblies, radioactive fluids and waste, and other materials having activities above accepted unrestricted activity levels (Table I) should be removed from the site. The facility owner may then have unrestricted use of the site with no requirement for a license. If the facility owner so desires, the remainder of the reactor facility may be dismantled and all vestiges removed and disposed of.

d. **Conversion to a New Nuclear System or a Fossil Fuel System.** This alternative, which applies only to nuclear power plants, utilizes the existing turbine system with a new steam supply system. The original nuclear steam supply system should be separated from the electric generating system and disposed of in accordance with one of the previous three retirement alternatives.

### 3. SURVEILLANCE AND SECURITY FOR THE RETIREMENT ALTERNATIVES WHOSE FINAL STATUS REQUIRES A POSSESSION-ONLY LICENSE

A facility which has been licensed under a possession-only license may contain a significant amount of radioactivity in the form of activated and contaminated hardware and structural materials. Surveillance and commensurate security should be provided to assure that the public health and safety are not endangered.

a. Physical security to prevent inadvertent exposure of personnel should be provided by multiple locked barriers. The presence of these barriers should make it extremely difficult for an unauthorized person to gain access to areas where radiation or contamination levels exceed those specified in Regulatory Position C.4. To prevent inadvertent exposure, radiation areas above 5 mR/hr, such as near the activated primary system of a power plant, should be appropriately marked and should not be accessible except by cutting of welded closures or the disassembly and removal of substantial structures

and/or shielding material. Means such as a remote-readout intrusion alarm system should be provided to indicate to designated personnel when a physical barrier is penetrated. Security personnel that provide access control to the facility may be used instead of the physical barriers and the intrusion alarm systems.

b. The physical barriers to unauthorized entrance into the facility, e.g., fences, buildings, welded doors, and access openings, should be inspected at least quarterly to assure that these barriers have not deteriorated and that locks and locking apparatus are intact.

c. A facility radiation survey should be performed at least quarterly to verify that no radioactive material is escaping or being transported through the containment barriers in the facility. Sampling should be done along the most probable path by which radioactive material such as that stored in the inner containment regions could be transported to the outer regions of the facility and ultimately to the environs.

d. An environmental radiation survey should be performed at least semiannually to verify that no significant amounts of radiation have been released to the environment from the facility. Samples such as soil, vegetation, and water should be taken at locations for which statistical data has been established during reactor operations.

e. A site representative should be designated to be responsible for controlling authorized access into and movement within the facility.

f. Administrative procedures should be established for the notification and reporting of abnormal occurrences such as (1) the entrance of an unauthorized person or persons into the facility and (2) a significant change in the radiation or contamination levels in the facility or the offsite environment.

g. The following reports should be made:

(1) An annual report to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, describing the results of the environmental and facility radiation surveys, the status of the facility, and an evaluation of the performance of security and surveillance measures.

(2) An abnormal occurrence report to the Regulatory Operations Regional Office by telephone within 24 hours of discovery of an abnormal occurrence. The abnormal occurrence will also be reported in the annual report described in the preceding item.

h. Records or logs relative to the following items should be kept and retained until the license is terminated, after which they may be stored with other plant records:

(1) Environmental surveys,

(2) Facility radiation surveys,

(3) Inspections of the physical barriers, and

(4) Abnormal occurrences.

## 4. DECONTAMINATION FOR RELEASE FOR UNRESTRICTED USE

If it is desired to terminate a license and to eliminate any further surveillance requirements, the facility should be sufficiently decontaminated to prevent risk to the public health and safety. After the decontamination is satisfactorily accomplished and the site inspected by the Commission, the Commission may authorize the license to be terminated and the facility abandoned or released for unrestricted use. The licensee should perform the decontamination using the following guidelines:

a. The licensee should make a reasonable effort to eliminate residual contamination.

b. No covering should be applied to radioactive surfaces of equipment or structures by paint, plating, or other covering material until it is known that contamination levels (determined by a survey and documented) are below the limits specified in Table 1. In addition, a reasonable effort should be made (and documented) to further minimize contamination prior to any such covering.

c. The radioactivity of the interior surfaces of pipes, drain lines, or ductwork should be determined by making measurements at all traps and other appropriate access points, provided contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement should be assumed to be contaminated in excess of the permissable radiation limits.

d. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated in excess of the limits specified. This may include, but is not limited to, special circumstances such as the transfer of premises to another licensed organization that will continue to work with radioactive materials. Requests for such authorization should provide:

(1) Detailed, specific information describing the premises, equipment, scrap, and radioactive contaminants and the nature, extent, and degree of residual surface contamination.

and/or shielding material. Means such as a remote-readout intrusion alarm system should be provided to indicate to designated personnel when a physical barrier is penetrated. Security personnel that provide access control to the facility may be used instead of the physical barriers and the intrusion alarm systems.

b. The physical barriers to unauthorized entrance into the facility, e.g., fences, buildings, welded doors, and access openings, should be inspected at least quarterly to assure that these barriers have not deteriorated and that locks and locking apparatus are intact.

c. A facility radiation survey should be performed at least quarterly to verify that no radioactive material is escaping or being transported through the containment barriers in the facility. Sampling should be done along the most probable path by which radioactive material such as that stored in the inner containment regions could be transported to the outer regions of the facility and ultimately to the environs.

d. An environmental radiation survey should be performed at least semiannually to verify that no significant amounts of radiation have been released to the environment from the facility. Samples such as soil, vegetation, and water should be taken at locations for which statistical data has been established during reactor operations.

e. A site representative should be designated to be responsible for controlling authorized access into and movement within the facility.

f. Administrative procedures should be established for the notification and reporting of abnormal occurrences such as (1) the entrance of an unauthorized person or persons into the facility and (2) a significant change in the radiation or contamination levels in the facility or the offsite environment.

g. The following reports should be made:

(1) An annual report to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, describing the results of the environmental and facility radiation surveys, the status of the facility, and an evaluation of the performance of security and surveillance measures.

(2) An abnormal occurrence report to the Regulatory Operations Regional Office by telephone within 24 hours of discovery of an abnormal occurrence. The abnormal occurrence will also be reported in the annual report described in the preceding item.

h. Records or logs relative to the following items should be kept and retained until the license is terminated, after which they may be stored with other plant records:

(1) Environmental surveys,

(2) Facility radiation surveys,

(3) Inspections of the physical barriers, and

(4) Abnormal occurrences.

## 4. DECONTAMINATION FOR RELEASE FOR UNRESTRICTED USE

If it is desired to terminate a license and to eliminate any further surveillance requirements, the facility should be sufficiently decontaminated to prevent risk to the public health and safety. After the decontamination is satisfactorily accomplished and the site inspected by the Commission, the Commission may authorize the license to be terminated and the facility abandoned or released for unrestricted use. The licensee should perform the decontamination using the following guidelines:

a. The licensee should make a reasonable effort to eliminate residual contamination.

b. No covering should be applied to radioactive surfaces of equipment or structures by paint, plating, or other covering material until it is known that contamination levels (determined by a survey and documented) are below the limits specified in Table 1. In addition, a reasonable effort should be made (and documented) to further minimize contamination prior to any such covering.

c. The radioactivity of the interior surfaces of pipes, drain lines, or ductwork should be determined by making measurements at all traps and other appropriate access points, provided contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement should be assumed to be contaminated in excess of the permissable radiation limits.

d. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated in excess of the limits specified. This may include, but is not limited to, special circumstances such as the transfer of premises to another licensed organization that will continue to work with radioactive materials. Requests for such authorization should provide:

(1) Detailed, specific information describing the premises, equipment, scrap, and radioactive contaminants and the nature, extent, and degree of residual surface contamination.

(2) A detailed health and safety analysis indicating that the residual amounts of materials on surface areas, together with other considerations such as the prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

e. Prior to release of the premises for unrestricted use, the licensee should make a comprehensive radiation survey establishing that contamination is within the limits specified in Table 1. A survey report should be filed with the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, with a copy to the Director of the Regulatory Operations Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report should:

(1) Identify the premises.

(2) Show that reasonable effort has been made to reduce residual contamination to as low as practicable levels.

(3) Describe the scope of the survey and the general procedures followed, and

(4) State the finding of the survey in units specified in Table 1.

After review of the report, the Commission may inspect the facilities to confirm the survey prior to granting approval for abandonment.

## 5. REACTOR RETIREMENT PROCEDURES

As indicated in Regulatory Position C.2, several alternatives are acceptable for reactor facility retirement. If minor disassembly or "mothballing" is planned, this could be done by the existing operating and maintenance procedures under the license in effect. Any planned actions involving an unreviewed safety question or a change in the technical specifications should be reviewed and approved in accordance with the requirements of 10 CFR §50.59.

If major structural changes to radioactive components of the facility are planned, such as removal of the pressure vessel or major components of the primary system, a dismantlement plan including the information required by §50.82 should be submitted to the Commission. A dismantlement plan should be submitted for all the alternatives of Regulatory Position C.2 except mothballing. However, minor disassembly activities may still be performed in the absence of such a plan, provided they are permitted by existing operating and maintenance procedures. A dismantlement plan should include the following:

a. A description of the ultimate status of the facility.

b. A description of the dismantling activities and the precautions to be taken.

c. A safety analysis of the dismantling activities including any effluents which may be released.

d. A safety analysis of the facility in its ultimate status.

Upon satisfactory review and approval of the dismantling plan, a dismantling order is issued by the Commission in accordance with §50.82. When dismantling is completed and the Commission has been notified by letter, the appropriate Regulatory Operations Regional Office inspects the facility and verifies completion in accordance with the dismantlement plan. If residual radiation levels do not exceed the values in Table 1, the Commission may terminate the license. If these levels are exceeded, the licensee retains the possession-only license under which the dismantling activities have been conducted or, as an alternative, may make application to the State (if an Agreement State) for a byproduct materials license.

## TABLE I

## ACCEPTABLE SURFACE CONTAMINATION LEVELS

| NUCLIDE[a] | AVERAGE[b c] | MAXIMUM[b d] | REMOVABLE[b e] |
|---|---|---|---|
| U-nat, U-235, U-238, and associated decay products | 5,000 dpm $\alpha$/100 cm$^2$ | 15,000 dpm $\alpha$/100 cm$^2$ | 1,000 dpm $\alpha$/100 cm$^2$ |
| Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129 | 100 dpm/100 cm$^2$ | 300 dpm/100 cm$^2$ | 20 dpm/100 cm$^2$ |
| Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133 | 1000 dpm/100 cm$^2$ | 3000 dpm/100 cm$^2$ | 200 dpm/100 cm$^2$ |
| Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above. | 5000 dpm $\beta$-$\gamma$/100 cm$^2$ | 15,000 dpm $\beta$-$\gamma$/100 cm$^2$ | 1000 dpm $\beta$-$\gamma$/100 cm$^2$ |

[a]Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b]As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c]Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d]The maximum contamination level applies to an area of not more than 100 cm$^2$.

[e]The amount of removable radioactive material per 100 cm$^2$ of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

The Assistant Secretary finds that good cause exists for not publishing the supplement to the Puerto Rico State Plan as a proposed change and making the Regional Administrator's approval effective upon publication for the following reasons:

1. The standards are identical to the Federal standards which were promulgated in accordance with Federal law meeting requirements for public participation.

2. The standards were adopted in accordance with the procedural requirement of State Law and further participation would be unnecessary.

The decision is effective October 23, 1981.

(Sec. 18 Pub. L. 91-596, 84 Stat. 1608 (29 U.S.C. 667))

Signed at New York City, New York, this 15th day of June 1981.

**Roger A. Clark,**

*Regional Administrator.*

[FR Doc. 81-30743 Filed 10-22-81; 8:45 am]

BILLING CODE 4510-26-M

## NUCLEAR REGULATORY COMMISSION

### Advisory Committee on Reactor Safeguards, Subcommittee on Callaway Plant; Location Change

The ACRS Subcommittee on Callaway Plant will hold a meeting on November 4 and 5, 1981, at the HOLIDAY INN-WEST, 1900 I-70 Drive Southwest, Columbia, MO instead of the Hilton Inn.

Notice of this meeting was published in the Federal Register on October 19, 1981 (46 FR 51329), and all other items remain the same except for the location change as indicated above.

Dated: October 19, 1981.

John C. Hoyle,

*Advisory Committee, Management Officer.*

[FR Doc. 81-30733 Filed 10-22-81; 8:45 am]

BILLING CODE 7590-01-M

### Disposal or Onsite Storage of Thorium or Uranium Wastes From Past Operations

**AGENCY:** Nuclear Regulatory Commission (NRC).

**ACTION:** Discussion of options for NRC approval of applications for disposal or onsite storage of thorium or uranium wastes; interim use and public comment.

**SUMMARY:** This notice discusses five options for NRC approval of disposal or onsite storage of thorium or uranium wastes from past nuclear operations. The options are contained in a Branch Technical Position for administration by the Uranium Fuel Licensing Branch, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards.

**DATES:** Comments on the options for disposal or onsite storage of thorium or uranium are encouraged. Such comments will be considered in any subsequent revision of the Branch Technical Position. Comments are due December 22, 1981.

Note.—Comments received after the expiration date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before that date.

**FOR FURTHER INFORMATION CONTACT:** Ralph G. Page, Chief, Uranium Fuel Licensing Branch, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, Washington, D.C. 20555, telephone 301-427-4309.

**SUPPLEMENTARY INFORMATION:**

#### I. Introduction

Some of the sites formerly used for processing thorium and uranium are known today to be contaminated with residual radioactive materials. Some are currently covered by NRC licenses. Others were once licensed, but the licenses to possess and use material have expired. In many cases, the total amount of contaminated soil is large, but the activity concentrations of radioactive materials are believed sufficiently low to justify their disposal on privately owned lands or storage onsite rather than their transport to a licensed radioactive materials disposal (commercial) site. In many instances packaging and transporting these wastes to a licensed disposal site would be too costly and not justified from the standpoints of risk to the public health or cost-benefit. Furthermore, because of the total volume of these wastes, limited commercial waste disposal capacity, and restrictions placed on receipt of long-lived wastes at commercial sites, it is not presently feasible to dispose of these wastes at commercial low-level waste disposal sites.

Effective January 28, 1981, NRC regulations in 10 CFR 20, "Standards for Protection Against Radiation", were amended (45 FR 71761-71762) to delete § 20.304 which provided general authority for disposal of radioactive materials by burial in soil. Under the amended regulations, licensees must apply for and obtain specific NRC approval to dispose of radioactive materials in this manner under the provisions of 10 CFR 20.302. A case-by-case review was believed needed to assure that burial of radioactive wastes would not present an unreasonable health hazard at some future date.

The deleted provisions of § 20.304 previously permitted burial of up to 100 millicuries of thorium or natural uranium at any one time, with a yearly limitation of 12 burials for each type of material at each site. The only disposal standards specified were (1) burial at a minimum depth of four feet, and (2) successive burials separated by at least six feet. Thus a total of 1.2 curies of these materials were permitted to be disposed of each year by burial in a 12 foot by 18 foot or larger plot of ground.

Under the amended regulations, it is incumbent on an applicant who wants to bury radioactive wastes to demonstrate that local land burial is preferable to other disposal alternatives. The evaluation of the application takes into account the following information:

- Types and quantities of material to be buried
- Packaging of waste
- Burial location
- Characteristics of burial site
- Depth of burial
- Access restrictions to disposal site
- Radiation safety procedures during disposal operations
- Recordkeeping
- Local burial restrictions, if any

For applications involving disposal of soils contaminated with low level concentrations of thorium and uranium (other than concentrations not exceeding EPA cleanup standards), the matters of principal importance are:

- Concentrations of thorium and uranium (either in secular equilibrium with their daughters or without daughters present)
- Volume of contaminated soil
- Costs for offsite and onsite disposal
- Availability of offsite burial space
- Disposal site characteristics
- Depth of burial and accessibility of buried wastes
- State and local government views

#### II. Branch Technical Position

There are five acceptable options for disposal or onsite storage of thorium and uranium contaminated wastes. Applications for disposal or storage will be approved if the guidelines discussed under any option are met. Applications for other methods of disposal may be submitted and these will be evaluated on their own merits.

1. Disposal of acceptably low concentrations (which meet EPA cleanup standards) of natural thorium with daughters in secular equilibrium, depleted or enriched uranium, and

uranium ores with daughters in secular equilibrium with no restriction on burial method.

Under this option, the concentrations of natural thorium and depleted or enriched uranium wastes are set sufficiently low that no member of the public is expected to receive a radiation dose commitment from the disposed materials in excess of 1 millirad per year to the lung or 3 millirads per year to the bone from inhalation and ingestion, under any foreseeable use of the material or property. These radiation dose guidelines were recommened by the Environmental Protection Agency (EPA) for protection against transuranium elements present in the environment as a result of unplanned contamination (42 FR 60956–60959). In addition, the concentrations are sufficiently low so that no individual may receive an external dose in excess of 10 microroentgens per hour above background. This is compatible with guidelines EPA proposed as cleanup standards for inactive uranium processing sites (46 FR 2556–2563).

For natural uranium ores having daughters in equilibrium, the concentration limit is equal to that set by the EPA (46 FR 2556–2563) for radium-226 (i.e., 5 pCi/gm, including background) and its decay products.

The concentrations specified below are believed appropriate to apply. It is expected, however, that currently licensed operations will be conducted in such a manner as to minimize the possibility of soil contamination and when such occurs the contamination will be reduced to levels as low as reasonably achievable.

| Kind of material | Concentration (pCi/gm) |
|---|---|
| Natural thorium (Th-232 plus Th-228) if all daughters are present and in equilibrium | 10 |
| Depleted uranium | 35 |
| Enriched uranium | 30 |
| Natural uranium (Note: U-238 plus U-234) if all daughters are present and in equilibrium | 10 |

The analysis upon which the Branch Technical Position is based is available for inspection at the Commission's Public Document Room at 1717 H St., N.W., Washington, D.C.

The concentrations specified under this option may be compared with naturally occurring thorium and uranium ore concentrations of 1.3 pCi/gm in igneous rock and uranium concentrations of 120 pCi/gm in Florida phosphate rock and 50–80 pCi/gm in Tennessee bituminous shale. (Concentration limits for natural thorium and natural uranium ore wastes containing daughters not at secular equilibrium can be calculated on a case-by-case basis using the applicable isotopic activities data.

2. Disposal of certain low concentrations of natural thorium with daughters in secular equilibrium and depleted or enriched uranium with no daughters present when buried under prescribed conditions with no subsequent land use restrictions and no continuing NRC licensing of the material.

Under this option the concentrations of natural thorium and uranium are set sufficiently low so that no member of the public will receive a radiation dose exceeding those discussed under option 1 when the wastes are buried in an approved manner absent intrusion into the burial grounds. This option will require establishing prescribed conditions for disposal in the license, such as depth and distribution of material, to minimize the likelihood of intrusion. Burial will be permitted only if it can be demonstrated that the buried materials will be stabilized in place and not be transported away from the site.

Acceptability of the site for disposal will depend on topographical, geological, hydrological and meteorological characteristics of the site. At a minimum, burial depth will be at least four feet below the surface. In the event that there is an intrusion into the burial ground, no member of the public will likely receive a dose in excess fo 170 millirems to a critical organ. An average dose not exceeding 170 millirems to the whole body for all members of a general population is recommended by international and national radiation expert bodies to limit population doses. With respect to limiting doses to individual body organs, the concentrations are sufficiently low that no individual will receive a dose in excess of 170 millirems to any organ from exposure to natural thorium, depleted uranium or enriched uranium.

The average activity concentration of radioactive material that may be buried under this option in the case of natural thorium (Th-232 plus Th-228) is 50 pCi/gm, if all daughters are present and in equilibrium; for enriched uranium it is 100 pCi/gm if the uranium is soluble and 250 pCi/gm if insoluble; for depleted uranium it is 100 pCi/gm if the uranium is soluble and 300 pCi/gm if insoluble. Natural uranium ores containing radium 226 and its daughters are not included under this option, because of possible radon 222 emanations and resultant higher than acceptable exposure of individuals in private residences if houses were built over buried materials.

3. Disposal of low concentrations of natural uranium ores, with all daughters in equilibrium, when buried under prescribed conditions in areas zoned for industrial use and the recorded title documents are amended to state that the specified land contains buried radioactive materials and are conditioned in a manner acceptable under state law to impose a covenant running with the land that the specified land may not be used for residential building. (There is no continuing NRC licensing of the material.)

Disposal will be approved if the burial criteria outlined in option 2 (including burial at a minimum of 4 feet) are met. Depending upon local soil characteristics, burials at depths greater than 4 feet may be required. In order to assure protection against radon 222 releases (daughter in decay chain of uranium 238 and uranium 234), it is necessary that the recorded title documents be amended to state in the permanent land records that no residential building should be permitted over specified areas of land where natural uranium ore residues (U-238 plus U-234) in concentrations exceeding 10 pCi/gm has been buried. Industrial building is acceptable so long as the concentration of buried material does not exceed 30 pCi/gm of uranium (i.e., Ra-226 shall not exceed 20 pCi/gm).

4. Disposal of land-use-limited concentrations of natural thorium or natural uranium with daughters in secular equilibrium and depleted or enriched uranium without daughters present when buried under prescribed conditions in areas zoned for industrial use and the recorded title documents are amended to state that the land contains buried radioactive material and are conditioned in a manner acceptable under state law to impose a covenant running with land that the land (1) may not be excavated below stated depths in specified areas of land unless cleared by appropriate health authorities, (2) may not be used for residential or industrial structures over specified areas where radioactive materials in concentrations higher than specified in options 2 and 3 are buried, and (3) may not be used for agricultural purposes in the specified areas. (There is no continuing NRC licensing of the disposal site.)

Under this option, conditions of burial will be such that no member of the public will receive radiation doses in excess of those discussed under option 1 absent intrusion into the burial ground. Criteria for disposal under these conditions is predicated upon the assumption that intentional intrusion is less likely to occur if a warning is given

in land documents of record not to excavate below burial depths in specified areas of land without clearance by health authorities; not to construct residential or industrial building on the site; and not to use specified areas of land for agricultural purposes. Because of this, we believe it appropriate to apply a maximum critical organ exposure limit of 500 millirems per year to thorium and uranium buried under this restriction instead of 170 millirems as used in options 2 and 3. In addition, any exposure to such materials is likely to be more transient than assumed (essentially continual exposure) under those options. These two factors combine to increase the activity concentration limits calculated under option 2 by about 10. Thus, the average concentration that may be buried under this option for thorium (Th-232 plus Th-228) is 500 pCi/gm if all daughters are present and in equilibrium; for enriched uranium it is 1000 pCi/gm if the uranium is soluble and 2800 pCi/gm if insoluble; and for depleted uranium it is 1000 pCi/gm if the uranium is soluble and 3000 pCi/gm if insoluble.

With respect to natural uranium with daughters present and in equilibrium, the concentration that may be buried under this option is 500 pCi/gm of U-238 plus U-234, i.e., 100 pCi/gm Ra-226. This concentration is based on a limited exposure of 2.4 hours per day to limit the radon dose to less than 0.5 working level month (WLM) which is equivalent to continuous exposure to 0.02 working level (WL). Depending upon local soil characteristics, burials at depths greater than 4 feet may be required.

SUMMARY OF MAXIMUM CONCENTRATIONS PERMITTED UNDER DISPOSAL OPTIONS

| Type of material | Disposal Options | | | |
|---|---|---|---|---|
| | 1[1] | 2[2] | 3[3] | 4[4] |
| Natural Thorium (Th-232 + Th-228) with daughters present and in equilibrium | 10 | 50 | ---- | 500 |
| Natural uranium (U-238 + U-234) with daughters present and in equilibrium | 10 | ---- | 40 | 500 |
| Depleted uranium | | | | |
| Soluble | 35 | 100 | ---- | 1,000 |
| Insoluble | 35 | 300 | ---- | 3,000 |
| Enriched uranium | | | | |
| Soluble | 30 | 100 | ---- | 1,500 |
| Insoluble | 30 | 750 | ---- | 3,500 |

[1] Based on EPA proposed standards
[2] Concentrations based on limiting individual doses to 170 mrem/yr
[3] Concentration based on limiting radon exposure to 0.02 working level of daughters
[4] Concentrations based on limiting individual doses to 500 mrem/yr and, in cases of natural uranium, limiting exposure to 0.02 working level of radon.

5. Storage of licensed concentrations of thorium and uranium onsite pending the availability of an appropriate disposal site.

When concentrations exceed those specified in option 4, long term disposal other than at a licensed disposal site will not normally be a viable option under the provisions of 10 CFR 20.302. In such cases, the thorium and uranium may be permitted to be stored onsite under an NRC license until a suitable method of disposal is found. License conditions will require that radiation doses not exceed those specified in 10 CFR Part 20 and be maintained as low as reasonably achievable.

Before approving an application to dispose of thorium or uranium under options 2, 3, or 4, NRC will solicit the view of appropriate State health officials within the State in which the disposal would be made.

Dated at Silver Spring, Maryland this 19th day of October, 1981.

**Richard E. Cunningham,**

*Director, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards.*

[FR Doc. 81-30333 Filed 10-22-81; 8:45 am]

BILLING CODE 7590-01-M

## OFFICE OF PERSONNEL MANAGEMENT

### Postponement of Application Deadline for Fund-Raising Privileges Among Federal Employees by Private Voluntary Organizations

Section 5.43 of the "Manual on Fund-Raising Within the Federal Service for Voluntary Health and Welfare Agencies" sets December 1 of each year as the deadline by which national voluntary agencies must submit applications for participation in the Combined Federal Campaign (CFC) to be conducted in the fall of the following year. This year's deadline is being postponed from December 1, 1981, to February 1, 1982. In June 1981, the U.S. Office of Personnel Management (OPM) announced that the eligibility criteria for participation in the 1982-83 CFC are being reviewed. The deadline date is being postponed to avoid national voluntary agencies having to revise their applications to meet eligibility criteria which may be changed.

**Donald J. Devine,**

*Director.*

[FR Doc. 81-30720 Filed 10-22-81; 8:45 am]

BILLING CODE 6325-01-M

## OFFICE OF THE UNITED STATES TRADE REPRESENTATIVE

### Resolution of Complaint of Price-Undercutting of Subsidized Cheese Imports

On October 1, 1981, the United States Trade Representative received a letter from the Secretary of Agriculture informing him of the Secretary's finding that imported Grade A Swiss type cheese produced in Finland has been offered for sale in the United States at duty-paid wholesale prices which are five cents per pound less than the domestic wholesale market price of similar cheese produced in the United States.

In accordance with Section 702(c)(2) of the Trade Agreements Act of 1979 (the Act) (19 U.S.C. 1202 note), the Office of the United States Trade Representative notified Finland of the price undercutting determination made by the Secretary of Agriculture, requested that corrective action be taken, and asked for appropriate assurances concerning the commitments made in the Arrangement Between the United States and Finland Concerning Cheese.

On October 14, 1981, Finland notified the United States Trade Representative that measures have been taken to ensure that the duty-paid wholesale price of imported Grade A Swiss type cheese produced in Finland will not be less than the domestic wholesale market price of similar cheese produced in the United States. In addition, Finland gave assurance that it will respect the price commitments in the Arrangement. Since the above notification by Finland has occurred within the 15-day period provided in Section 702(c)(3) of the Act, the United States Trade Representative has notified the Secretary of Agriculture of his belief that no further action is required.

**William E. Brock,**

*United States Trade Representative.*

[FR Doc. 81-30334 Filed 10-22-81; 8:45 am]

BILLING CODE 3190-01-M

## SECURITIES AND EXCHANGE COMMISSION

[Release No. 22216; 70-6360]

### Arkansas Power & Light Co.; Proposed Issuance and Sale of First Mortgage Bonds

October 19, 1981.

Arkansas Power & Light Company

# BACKGROUND

- Gems have been irradiated in reactors since the 1950's on a limited basis
- Irradiation can be Neutrons, Alpha, Beta, or Gamma
- Neutron-irradiated Blue Topaz became very popular in Mid-1980's
- Induced radioactivity in Blue Topaz ranges up to 10 nanocuries per gram
- Primary radionuclides are
  - Scandium-46
  - Tantalum-182
  - Manganese-54

# POLICY ISSUES

- 10 CFR Part 30 allows "Exempt Concentrations" which may be considered as BRC limits
- 10 CFR Part 30 prohibits radioactivity in food, beverages, or cosmetics
- "Justification" - 1965 AEC/NRC Policy prohibits frivolous radioactive products such as jewelry

## COMMISSION DECISION ON GEMS

- NRC will accept license applications for distribution of radioactive gems
- Radioactivity levels must be below "Exempt Concentrations"
- Set aside "frivolous" issue
- Key issue is low health risk; radioactivity in gems is in the Below Regulatory Concern range
- Commission directed staff to expedite policy development on BRC issues

## POTENTIAL HEALTH RISK FROM GEMS

- Cancer risk is very low
- Localized dose to skin: "Worst Case" several hundred millirems per year (100 mrem first year)
- Whole body dose equivalent: a few millirems or less per year
- Dose decreases over time due to decay
- Doses can be much higher if gems are not held for decay properly
- Cutting or grinding gems could cause significant internal exposures

# TECHNICAL ISSUES

- **Measurement Techniques**
- **Induced radioactivity varies widely depending on mineral content**
- **Risk from cutting or grinding gems**
- **Applying a BRC limit to gems**

## COMPARISON OF ALLOWABLE LEVELS

- Transportation Exemption Levels
  - 74 Bq/g (2 nCi/g)

- European "De Facto" Exemption Levels
  - 74 - 370 Bq/g (2 - 10 nCi/g)

- NRC 10 CFR Part 30.70 Exemption Levels
  - 15 Bq/g (0.4 nCi/g)

# IRRADIATED GEMS

- Background
- Policy Issues
- Commission Decision on Gems
- Potential Health Risk From Gems
- Technical Issues
- Comparison of Allowable Levels
- Application Information

## INTERNATIONAL ACTIVITIES

- History
- Basic Criteria
- General Philosophy for Exemption
- Framework for Exemption Levels
- Guidance for Trivial Levels
- General Procedure for Exemption Analysis

## HISTORY

- IAEA Basic Safety Standards provide for exemption of certain sources or practices from the system of notification, registration and licensing.

- Group of Experts not in 1985 and outlined a framework for below regulatory concern exception.

- ICRP outlined basis for exemption in waste disposal areas in Publication 46 "Radiation Protection Principles for the Disposal of Solid Radioactive Waste."

- Joint NEA/IAEA expert group meeting in March 1988 prepared draft consensus guidance.

## BASIC CRITERIA

- "Radiation Protection must be optimized"
- "Individual risks must be sufficiently low"

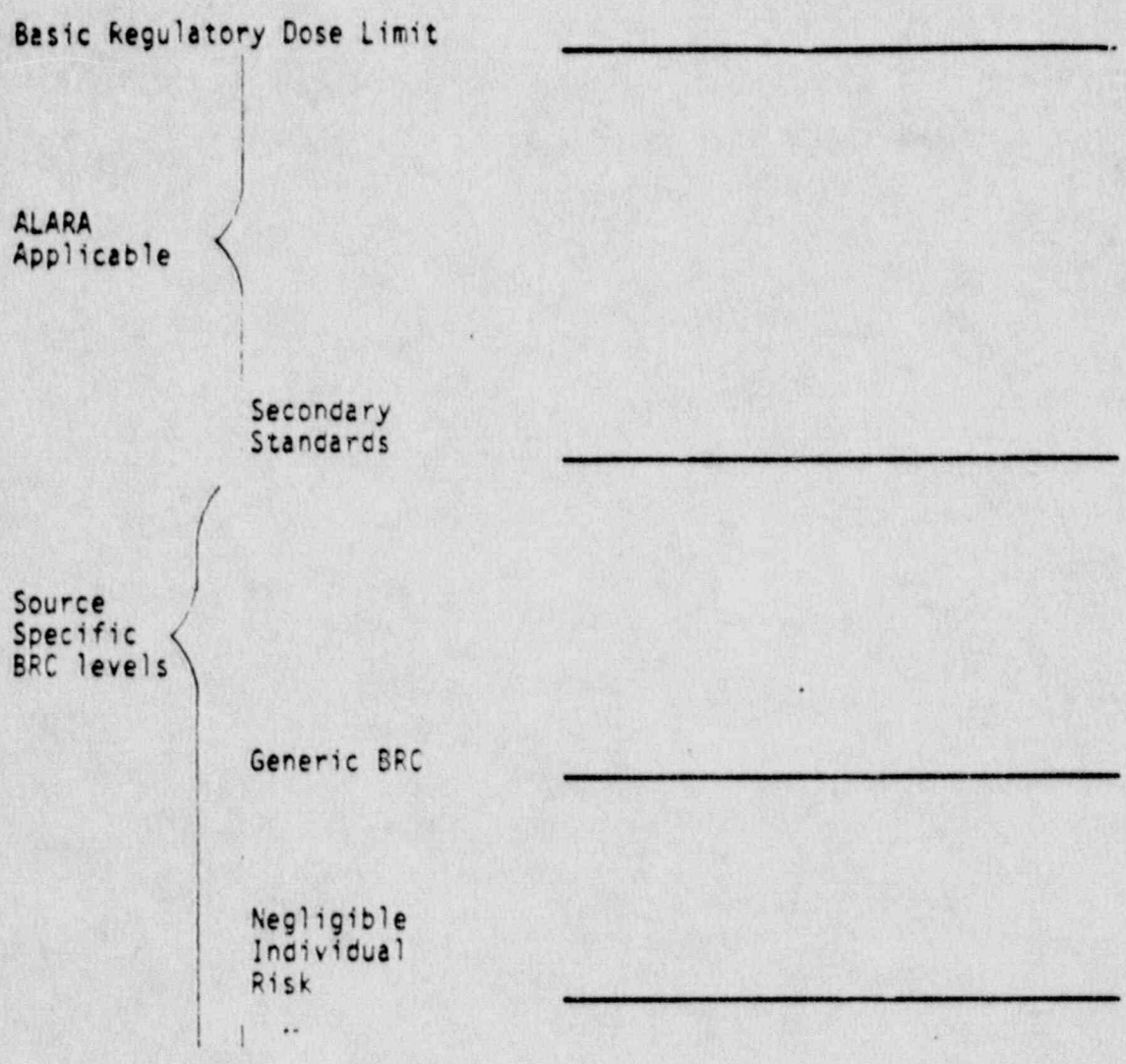
## GENERAL PHILOSOPHY FOR EXEMPTION

- The use of additional controls on a practice of source of exposure does not result in an additional reduction in the dose received.

- The costs of the regulatory controls is not balanced by the benefits of dose reduction that could be achieved.

## FRAMEWORK FOR EXEMPTION LEVELS

- Dose Limits
  - values that are not be be exceeded, even by licensed activities
  - represent boundary of exposures considered to be unacceptable
- Below Regulatory Concern
  - values that may be considered for reducing or eliminating regulatory controls
  - represent range of doses when costs do not achieve further reductions, or are not balanced by benefits
- Trivial Dose
  - values where regulatory controls are unnecessary
  - represent dose that can be judge as the point at which individuals who are aware of the risks they run would not commit significant resources of their own to reduce them


Basic Regulatory Dose Limit
ALARA Applicable
Secondary Standards
Source Specific BRC levels
Generic BRC
Negligible Individual Risk

## GUIDANCE FOR TRIVIAL LEVELS

- Level of individual effective dose equivalent of some 10's of uSv per year can reasonably be regarded as trivial by regulatory authorities

- Collective dose levels should be small, and determined as optimal (ALARA). This may be on the order of about 1 man Sv per year of practice.

## GENERAL PROCEDURE

- o Analysis of exemption
  - characteristics of the practice to be exempted
  - characteristics of the sources in the practice
- o Calculation of individual and collective doses involved
- o Specification of exemption conditions
  - constraint on total activity
  - chemical and physical form of materials
  - identification of location or activity material may be released to
- o Establish method for determining compliance
- o Periodic reanalysis of basis for exemption to determine if adjustments are appropriate

# LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT

## SECTION 10: RADIOACTIVE WASTE BELOW REGULATORY CONCERN

REQUIRED THE COMMISSION TO ESTABLISH STANDARDS AND PROCEDURES AND THE TECHNICAL CAPABILITY TO ACT IN AN EXPEDITED MANNER ON PETITIONS TO EXEMPT SPECIFIC WASTE STREAMS FROM NRC REGULATION AND DO SO IN SIX MONTHS (JULY 1986).

# NRC RESPONSE TO DATE

- POLICY STATEMENT AND STAFF IMPLEMENTATION PLAN PUBLISHED AUGUST 29,1986.

- ADAPTED IMPACTS-BRC COMPUTER CODE FOR PC AND PUBLISHED DRAFT USER GUIDE JULY 1986

- ADVANCED NOTICE OF PROPOSED RULEMAKING (ANPRM) PUBLISHED DECEMBER 2, 1986

# POLICY STATEMENT

- ADDRESSES DISPOSAL ALTERNATIVES
- INTENDED FOR MULTIPLE PRODUCERS
- BURDEN IS ON PETITIONERS

# BELOW REGULATORY CONCERN PETITION DECISION CRITERIA

## DECISION CRITERIA

### GENERAL

1. NO SIGNIFICANT ENVIRONMENTAL IMPACT
5. SIGNIFICANT SOCIETAL COST REDUCTION

### DOSES

2. EXPECTED INDIVIDUAL DOSES SMALL
3. COLLECTIVE DOSES SMALL
4. INSIGNIFICANT ACCIDENT CONSEQUENCES

### WASTE

6. COMPATIBLE WITH PROPOSED TREATMENT/DISPOSAL
7. USABLE ON A NATIONAL SCALE
8. CHARACTERIZED WASTE AND ACCEPTABLE VARIABILITY
9. REAL WASTE DATA
10. NEGLIGIBLE POTENTIAL FOR RECYCLE

### IMPLEMENTATION

11. COMPLIANCE PROGRAMS FEASIBLE
12. NO LICENSE NEEDED FOR OFFSITE TREATMENT/DISPOSAL
13. STANDARD TREATMENT/DISPOSAL PRACTICES
14. NO REGULATORY OBSTACLES

## STAFF IMPLEMENTATION PLAN

- DESCRIBES INFORMATION NEEDED IN PETITIONS
- DISCUSSES THE RATIONALE FOR DECISION CRITERIA
- ESTABLISHES RULEMAKING PROCEDURES

# IMPACTS-BRC CODE

- TOOL NRC WILL USE
- INCLUDES ALTERNATIVE DISPOSAL METHODS
- ADDRESSES RANGE OF IMPACTS (PROCESSING, TRANSPORT, DISPOSAL, POST DISPOSAL)

ANPRM

GENERAL QUESTION OF "WHETHER AND HOW TO PROCEED ON THE MATTER OF EXEMPTING SLIGHTLY CONTAMINATED RADIOACTIVE MATERIALS"

SIX SPECIFIC QUESTIONS

## SPECIFIC QUESTIONS

1) CODIFY DECISION CRITERIA AND CONTINUE ON WASTE STREAM BASIS?

2) TAKE A CONCENTRATION/QUANTITY OR DOSE LIMIT APPROACH?

3) BETTER WAYS TO ADDRESS MULTIPLE EXPOSURE POTENTIAL?

4) GUIDANCE INSTEAD?

5) DEFER TO EPA?

6) RELY ON INTERNATIONAL WORK?

# UTILITY BRC PETITIONS

ELECTRIC POWER RESEARCH INSTITUTE (EPRI)

- RESEARCH/TECHNICAL BASIS FOR 8 WASTE STREAMS
- 2 YEAR/$2 MILLION EFFORT

EDISON ELECTRIC INSTITUTE (EEI) EXPECTS TO FILE 4 PETITIONS FOR THE 8 WASTE STREAMS (1988)

- COMPACTABLE DRY TRASH FROM PWRS AND BWRS
- WASTE OIL FROM PWRS AND BWRS
- SOIL FROM PWRS AND BWRS AND BWR GRIT
- PWR SECONDARY SIDE RESINS

# Application Information

- Basic Information
- Background Information
- Information specifically identified in the regulations (e.g., 10 CFR 30.33, 32.11)
- Information on instrumentation, counting, sampling and quality assurance programs
- Information needed for support of exemption from 10 CFR 32.11(c)
- Fee Information

# OVERVIEW OF NRC'S RESPONSE TO SECTION 10 OF THE LOW-LEVEL RADIOACTIVE WASTE POLICY AMENDMENTS ACT OF 1985
July 1987

Section 10: Radioactive Waste Below Regulatory Concern required the Nuclear Regulatory Commission (NRC) to establish standards and procedures and the technical capability to act in an expedited manner on petitions to exempt specific waste streams from NRC regulation and to do so in six months (i.e., by July 1986).

Q: What has been NRC's response to date?

A: NRC has responded with three actions. A Commission Policy Statement and Staff Implementation Plan were published August 29, 1986 (51 FR 30839). A computer code for calculating radiological impacts from unregulated disposal was adapted for personal computer use and a draft user guide was published in July of 1986 (Volume 2 of NUREG/CR-3585). An advance notice of proposed rulemaking was published on December 2, 1986 (51 FR 43367).

Q: What was the purpose of the Policy Statement and Staff Implementation Plan?

A: These two documents provide guidance to potential rulemaking petitioners. Existing Commission rules in 10 CFR 2.802 set forth the procedures for submitting rulemaking petitions for Commission consideration. The Policy Statement and Staff Implementation Plan provide additional guidance for those petitions that relate to the exemption of slightly contaminated wastes. The statement and plan establish the standards and procedures that will permit the Commission to act upon rulemaking petitions in an expedited manner as required by Section 10 of the Act.

Q: Does the Policy Statement grant approval for below regulatory concern disposals?

A: No. Rulemaking on petitions is required.

Q: What opportunities exist for public input on rulemaking petitions to exempt waste streams?

A: Petitions will be published for public comment when received. Although the petitions will be handled in an expedited manner as required by Section 10 of the Act, any proposed rule that would grant part or all of any petition must follow the normal rulemaking procedure and be noticed for public comment.

Q: Have any rulemaking petitions been filed in response to the Policy Statement?

A: No, but petitions may be filed at any time.

Q: How does the Policy Statement address protection of the public health and safety?

A: The Policy Statement sets out fourteen decision criteria the Commission expects to follow when addressing the overall impacts of the disposals, maximum potential exposures to individuals from routine and accidental events, and potential cumulative exposures. Both short-term and long-term potential exposures from handling, transport, treatment, disposal and post disposal are to be considered. The criteria also address the need for a comprehensive understanding of the properties of any wastes proposed for exemption and the need for licensees to be able to determine that actual wastes comply with concentration or quantity limits that will be set.

Q: What methods of treatment and disposal of slightly contaminated wastes may petitioners propose as alternatives to disposal in licensed disposal sites?

A: Petitioners may propose alternatives such as onsite burial or incineration, burial at sanitary landfill or hazardous waste facilities, or treatment or incineration at municipal or hazardous facilities.

Q: What does below regulatory concern mean?

A: A Commission finding that the radioactive content is below regulatory concern means that the potential radiological exposures from treatment, handling, or disposal of the wastes are so small that they do not require or warrant regulation. For example, below regulatory concern wastes may be suitable for disposal in a sanitary landfill and the landfill operator would not need to monitor incoming wastes, keep records, or conduct environmental monitoring for radionuclides. The landfill operator would be exempt from all regulation by NRC. However, NRC's exemption would not relieve anyone from the applicable rules of state, local or federal agencies which cover the nonradiological properties of the wastes.

Q: Who is expected to file rulemaking petitions?

A: Staff are aware that trade or professional organizations representing groups or categories of licensees (e.g., hospitals, pharmaceutical manufacturers, or power reactors) are considering filing petitions but individual licensees or anyone can file a petition.

Q: What was the purpose of the advance notice of proposed rulemaking?

A: The notice asked for public input on the general question of whether and how NRC should proceed on the matter of exempting slightly contaminated wastes. The Commission recognized that NRC-initiated rulemaking might facilitate processing of rulemaking petitions on individual waste streams or provide more generic options.

Q: What issues were addressed in the advance notice?

A: Six specific questions were asked. The Commission asked if it should: (1) codify the decision criteria from the Policy Statement and continue on a waste stream basis? (2) take a more generic approach involving radionuclide concentrations or quantities or dose limits? (3) consider better ways to address the potential for exposures to multiple waste sources? (4) issue additional guidance instead of developing new regulations? (5) defer to the Environmental Protection Agency in this area totally or in part? or (6) rely on international standards and guidance?

Q: What was the public response?

A: Over 90 comment letters were submitted in response to the advance notice. Commenters expressed diverse views on the merits of below regulatory concern disposal and offered a variety of suggestions. For example, many commenters opposed the concept of any level of radioactivity being below regulatory concern and others urged NRC to proceed promptly on generic rulemaking. Commenters also addressed each of the specific questions raised in the advance notice.

Q: What are the NRC's next steps on the generic rulemaking?

A: NRC staff are currently analyzing the comments received on the Advanced Notice of Proposed Rulemaking. Based on the comments and other considerations, the Commission will decide whether and how to proceed with a generic rulemaking addressing wastes below regulatory concern. If the decision is to proceed, staff would initiate technical and environmental studies to support rulemaking. After completion of the supporting studies, a proposed rule would be published for comment.

Enclosures:
1: 8/29/86 FRN
2: 12/2/86 FRN