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February 19, 1990

Mr. Donnie H. Grimsley
Director
Division of Freedom of Information
and Publication Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

FREEDOM OF INFORMATION ACT REQUEST
FOIA-90-80
Rec'd 2-22-90

Dear Mr. Grimsley:

Pursuant to the Freedom of Information Act, 5 U.S.C. § 552 et al. and the implementing regulations in Title 10 of the Code of Federal Regulations, I hereby request copies of the following documents:

1. SECY 88-309

2. SECY 89-224

3. SECY 89-369

4. SECY Memo to James M. Taylor dated January 31, 1990 and any materials provided by the NRC Staff to the Commission in response to such SECY memo.

5. Analysis of implications of the BEIR-V report with respect to the Commission Policy Statement on Exemption from Regulatory Control submitted by NRC Staff to the Commission on January 10, 1990.

6. Paper prepared by Office of General Counsel in mid-to-late 1989 on, among other things, the applicability of Superfund legislation to contaminated sites subject to the Atomic Energy Act of 1954, as amended.

7. Letter from Commission to NRC Staff dated August 22, 1989, requesting a description of the strategy to be implemented for contaminated sites, and any materials provided by the NRC Staff to the Commission in response to such letter.

If you have any questions, please call me at (202) 955-6600. I look forward to your prompt response.

Very truly yours,

Karen Unnerstall

Karen Unnerstall
Legal Assistant

#5

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

SECRETARIAT RECOR

JAN 10 1990

MEMORANDUM FOR: Chairman Carr
Commissioner Roberts
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick

FROM: James M. Taylor, Executive Director for Operations

SUBJECT: PRELIMINARY REVIEW OF BEIR V REPORT

On December 19, 1989, the National Academy of Sciences, National Research Council, Committee on the Biological Effects of Ionizing Radiation, released a report entitled "Health Effects of Exposure to Low Levels of Ionizing Radiation: BEIR V." This report is the latest in a series of reports prepared to advise the U.S. Government on the health consequence of radiation exposures and update the findings of the BEIR III report in 1980. The report contains information related to a number of topics, including estimates of risk from radiation exposure for cancer induction (solid tumors and leukemia), genetic effects, and prenatal exposure.

The staff noted in SECY-89-360, "Commission Policy Statement on Exemptions from Regulatory Control," that the BEIR V report would be available in December 1989 and that it might be appropriate to acknowledge the report in the policy statement. The staff has begun a detailed analysis of the BEIR V report and plans to provide further information on the subject. However, a preliminary examination of the BEIR V report has been made to determine if it contains information directly affecting the policy statement.

The Commission paper (SECY-89-360) contains a discussion of the information available to the staff on the health effects of radiation in Appendix A of the Policy Statement - "Dose and Health Effects Estimation." In that discussion, the staff calculated hypothesized incremental annual risk and hypothesized lifetime risk from continuing annual dose using a risk coefficient of 5×10^{-4} per rem. The BEIR V report indicates that the lifetime excess risk of death from cancer following an acute dose of 10 rem of low-LET radiation (e.g., beta or gamma radiation) is approximately 0.8 percent, or 8×10^{-4} per rem, and that the risk coefficient should be reduced, using a dose rate effectiveness factor of 2 or more, when the same dose is accumulated over weeks or months. Thus, the risk coefficient used by the NRC staff for low-LET radiation of 5×10^{-4} per rem is slightly more conservative than the BEIR V report which is approximately 4×10^{-4} per rem.

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The BEIR V report also contains other information which is relevant to the considerations of exemptions from regulatory control. In particular, the BEIR V committee estimated: (1) that the risks from exposure to radiation are similar for males and females, and (2) that the risk from exposure during childhood is estimated to be about twice as large as the risks for adults. The BEIR V committee noted that the atomic bomb survivors who were irradiated early in life are just now reaching the age at which cancer begins to become prevalent in the general population and that it remains to be determined whether cancer rates in this group of survivors will continue to be comparable to the increased cancer risk that has been observed among survivors who were adults at the time of exposure. The BEIR V committee also stated that the frequency of severe mental retardation in Japanese atomic bomb survivors exposed at 8 to 15 weeks of gestational age has been found to increase more steeply with dose that was expected at the time of the previous BEIR III report in 1980. In this respect, the BEIR V committee noted that "pending further information, the risk of this type of injury to the developing embryo must not be overlooked in assessing the health implications of low-level exposure for women of childbearing age."

It should be noted that the risk coefficients used by the BEIR V committee and by the staff represent an average for all ages and both sexes. However, the information related to increased risks for exposure of children or exposure of the developing embryo/fetus lends technical support to the recommendation made in SECY-89-360 that there are certain practices that should not be approved for exemption, such as the introduction of radioactive materials into products to be consumed or used by children, even if the radiation doses are very small, or where there are practical alternatives to the use of radioactive materials.

The BEIR V committee also recognized that its risk estimates become more uncertain when applied to very low doses but noted that departures from a linear model at low doses could, however, either increase or decrease the risk per unit dose. The committee concluded that the new data upon which the report is based "do not contradict the hypothesis, at least with respect to cancer induction and hereditary genetic effects, that the frequency of such effects increases with low-level radiation as a linear, nonthreshold function of the dose."

Based upon its preliminary examination, the staff believes that the statements and risk estimates in the policy statement are consistent with those in the BEIR V report. [redacted] Ex 5

In preparing comments on the Environmental Protection Agency (EPA) Clean Air Act Standards, the staff noted that EPA used a risk estimate of 4×10^{-4} per rem, which is consistent with the BEIR V risk estimate. Thus a risk estimate consistent with the BEIR V Report was part of the EPA and NRC knowledge when making the recommendation to Congress to eliminate dual regulation of radionuclides under the Clean Air Act. Based on the review of BEIR V completed to date, there is no basis to change that position.

James M. Taylor
Executive Director
for Operations

Enclosure:
As stated

cc: SECY
OGC
GPA

RECOMMENDED CHANGES AND ADDITIONS TO
SECY-89-360

1. Page 11 - Modify the last sentence in the definition of "risk" to read as follows:

   The fatal cancer risk is considered, in general, to be either more likely or have a more severe outcome than the potential genetic and nonfatal cancer risks and the potential risk of developmental anomalies in fetuses. While the Commission recognizes that the risks from exposure to radiation are greater for children than adults, and that there are increased risks from exposure to the embryo/fetus, for purposes of this policy statement, the estimate of fatal cancer risk for all ages and both sexes is considered to be an appropriate measure of risk from practices being considered for exemption. (See Appendix A)

2. Page 29-30 - Modify the paragraph quoting the BEIR III committee to include a quote of the BEIR V committee. The following text would replace the end of the paragraph starting at "For example, . . . " on line 12 of page 29.

   For example, the Committee on the Biological Effects of Ionizing Radiation (BEIR V) of the National Academy of Sciences has stated that it "recognizes that its risk estimates become more uncertain when applied to very low doses. Departures from a linear model at low doses, however, could either increase or decrease the risk per unit dose."

3. Page 30 - Delete the words "In addition," at the beginning of the first complete paragraph.

4. Page 30 - Add the following paragraph after the paragraph discussing the UNSCEAR 1988 risk estimates.

   In December 1989, the National Academy of Sciences/National Research Council's Committee on the Biological Effects of Ionizing Radiation published a report entitled "Health Effects of Exposure to Low-Levels of Ionizing Radiation: BEIR V." This report contained risk estimates that are, in general, similar to the findings in the 1988 UNSCEAR report. The BEIR V report's estimate of lifetime excess risk of death from cancer following an acute dose of 10 rem of low-LET radiation was 0.8 percent. Taking into account a dose rate effectiveness factor of 2, the risk estimate is thus on the order of 4×10^{-4} per rem, consistent with the upper level of risk estimated by UNSCEAR.

5. Page 31 - Add the following sentence at the end of the top paragraph discussing the no-threshold hypothesis.

   In this respect, the BEIR V report notes that "in spite of evidence that the molecular lesions which give risk to somatic and genetic damage can be repaired to a considerable degree, the new data do not contradict the hypothesis, at least with respect to cancer induction and hereditary genetic effects, that the frequency of such effects increases with low-level radiation as a linear, nonthreshold function of the dose."

6. Page 32 - Change the ** footnote for Table 1 to read as follows:

   Risk coefficient of 5×10^{-4} per rem (5×10^{-2} per Sv) for low linear energy transfer radiation has been conservatively based on the results reported in UNSCEAR 1988 (Footnote 1) and BEIR V. Also, refer to NUREG/CR-4214 (Rev.1).

The BEIR V report also contains other information which is relevant to the considerations of exemptions from regulatory control. In particular, the BEIR V committee estimated: (1) that the risks from exposure to radiation are similar for males and females, and (2) that the risk from exposure during childhood is estimated to be about twice as large as the risks for adults. The BEIR V committee noted that the atomic bomb survivors who were irradiated early in life are just now reaching the age at which cancer begins to become prevalent in the general population and that it remains to be determined whether cancer rates in this group of survivors will continue to be comparable to the increased cancer risk that has been observed among survivors who were adults at the time of exposure. The BEIR V committee also stated that the frequency of severe mental retardation in Japanese atomic bomb survivors exposed at 8 to 15 weeks of gestational age has been found to increase more steeply with dose that was expected at the time of the previous BEIR III report in 1980. In this respect, the BEIR V committee noted that "pending further information, the risk of this type of injury to the developing embryo must not be overlooked in assessing the health implications of low-level exposure for women of childbearing age."

It should be noted that the risk coefficients used by the BEIR V committee and by the staff represent an average for all ages and both sexes. However, the information related to increased risks for exposure of children or exposure of the developing embryo/fetus lends technical support to the recommendation made in SECY-89-360 that there are certain practices that should not be approved for exemption, such as the introduction of radioactive materials into products to be consumed or used by children, even if the radiation doses are very small, or where there are practical alternatives to the use of radioactive materials.

The BEIR V committee also recognized that its risk estimates become more uncertain when applied to very low doses but noted that departures from a linear model at low doses could, however, either increase or decrease the risk per unit dose. The committee concluded that the new data upon which the report is based "do not contradict the hypothesis, at least with respect to cancer induction and hereditary genetic effects, that the frequency of such effects increases with low-level radiation as a linear, nonthreshold function of the dose."

Based upon its preliminary examination, the staff believes that the statements and risk estimates in the policy statement are consistent with those in the BEIR V report. Ex. 5

October 31, 1988

POLICY ISSUE (Information)

SECY-88-308

For: The Commissioners

From: Victor Stello, Jr.
Executive Director for Operations

Subject: CONTAMINATED MATERIAL LICENSEE FACILITIES

Purpose: To respond to the Commission request for a list of contaminated facilities, and to provide relevant background information on the staff's decommissioning program.

Background: In a Staff Requirements Memorandum dated July 28, 1988, the Commission requested a list of contaminated facilities which fall beyond the NRC's release limits and will require decontamination. This request followed a Commission meeting on July 13, 1988, when the staff discussed contamination problems at Safety Light Corporation in Bloomsburg, Pennsylvania.

Discussion: We have enclosed a list of 31 non-reactor facilities which have a sufficient level of contamination to require special attention from the staff. We are providing additional information in order to place the enclosed list in perspective.

1. Current License Termination Procedures

Thousands of NRC licensees possess unsealed radioactive material, and therefore could have contaminated facilities. When a licensee requests license termination, it must provide documentation to demonstrate that all facilities have been properly decontaminated, and that all sealed radiation sources and radioactive waste have been transferred to authorized recipients. Where appropriate, NRC inspectors inspect decommissioned sites to verify the absence of excess residual contamination prior to license termination. We also have conducted our own independent surveys at the larger facilities through the use of a team from the Oak Ridge Associated Universities. In 1987, about 400 licenses were terminated, and about 150 closeout surveys were performed by inspectors.

CONTACT:
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B/1

2. Rulemaking on Financial Assurance for Decommissioning

In the past, the potential lack of adequate licensee funds to pay for decommissioning has been a concern. The Commission recently addressed this problem with a new decommissioning rule (53 FR 24018, June 27, 1988). The rule requires licensees who possess specified large quantities of unsealed radioactive material to submit decommissioning funding plans. Licensees who possess intermediate amounts of radioactive material must either provide a funding plan or provide financial assurance in fixed amounts ranging from $75,000 to $750,000. Licensees who possess small amounts of radioactive material are exempt from the financial requirements of the rule.

The rule was effective for new licensees on July 27, 1988, and existing licensees must provide financial assurances by July 27, 1990. It is anticipated that the rule will reduce future decommissioning problems related to lack of licensee funds.

3. General Accounting Office Audits

In 1976, the General Accounting Office (GAO) expressed concern to NRC that files for licenses terminated by the Atomic Energy Commission before 1965 did not contain adequate documentation of decontamination. In response, NRC arranged for a contractor (Oak Ridge National Laboratory) to review over 16,000 terminated license files. Twelve contaminated sites were eventually identified. For seven sites, the NRC staff arranged for the responsible parties to either decontaminate the site or stabilize and restrict access to the contaminated areas. The Department of Energy (DOE) accepted responsibility for the other five sites under the Formerly Utilized Site Remedial Action Program (FUSRAP).

For over a year, the GAO has been conducting another audit of the NRC decommissioning programs. The GAO has not yet informed us of its findings.

4. Current Special Cases

In the enclosed list, the staff has identified 31 non-routine cases for which considerable staff effort has been, or will be, expended to ensure proper decommissioning of the sites. None of the contaminated sites appears to present an immediate health hazard. However, all sites have significant contamination which must be removed before the sites can be released for unrestricted use, or stabilized in place.

About 20 sites on the list involve large piles of tailings or soil contaminated with low levels of source material (uranium and thorium). Most of the processing facilities which generated the waste are now shut down. Both the licensees and the staff have had difficulty in determining the best option for decommissioning these sites. The staff has specifically budgeted resources to cover decommissioning of these types of sites.

A preliminary review indicates that the new decommissioning rule will require funding plans to be submitted for 28 cases. (The other three sites are unlicensed.) However, it is anticipated that some licensees may not have adequate financial resources to provide for decommissioning. In any event, the staff will continue to work to ensure adequate decommissioning at all sites, including the three unlicensed sites. For cases where there is a question of Department of Energy or Department of Defense responsibility, the staff will pursue the matter as appropriate. It may also be eventually necessary to seek assistance from the Environmental Protection Agency for use of the Superfund, if other approaches are not successful.

It is the staff's goal to eventually eliminate all cases where there are inadequate decommissioning plans or funding arrangements. Although the problem cases will not be resolved easily, we expect that the situation will steadily improve, and that implementation of the new decommissioning rule will substantially reduce the number of new problem cases in the future.

Victor Stello, Jr.
Executive Director
for Operations

Enclosure:
List of Contaminated Sites

DISTRIBUTION:
Commissioners
OGC
OI
OIA
GPA
REGIONAL OFFICES
EDO
ACRS
ACNW
ASLBP
ASLAP
SECY

6. Babcock and Wilcox
Parks Township, PA
Docket No.: 070-00364

Remarks:

Active nuclear service operations. Buried uranium waste. Approved decommissioning plan for building with plutonium contamination.

7. BP Chemicals America Inc.
Lima, OH
Docket No.: 040-07604

Remarks:

Inactive uranium processor. Contaminated buildings, soil, and ponds. Decommissioning plan approved. Decommissioning underway.

8. Budd Co.
Philadelphia, PA
Docket No.: 030-19963

Remarks:

Formerly a hot cell operation. About 0.5 Ci cobalt-60 remaining. Licensee has recently made inquiries about possible decontamination.

9. Cabot Corporation
Boyertown, PA and
Reading, PA
Docket No.: 040-06940

Remarks:

Active rare earth processor. Large volume of uranium/thorium waste. Decontamination plan being reviewed by NRC staff.

10. Chemetron Corp.
Cleveland, OH
Docket No.: 040-08724

Remarks:

Inactive uranium processor. Large volumes of contaminated soil in two locations. Licensee recently amended decommissioning plan. Delays in decommissioning due to financial problems; parent company is in bankruptcy.

11. Dow Chemical Co.
Midland, MI
Docket No.: 040-00017

Remarks:

Inactive. Large volume of thorium waste in storage in Midland and Bay City. Decontamination plan being prepared by licensee based on discussions with staff.

12. Fansteel, Inc.
Muskogee, OK
Docket No.: 040-07580

Remarks:

Currently extracts tantalum and columbium from slags and ores. Large volume of uranium/thorium waste in sludge ponds. Staff has requested licensee to provide a decommissioning plan.

13. General Services Administration
Watertown Arsenal Site
Watertown, MA
Docket No.: NONE

Remarks:

Former Manhattan Engineering District site. Soil contaminated with depleted uranium. GSA contractor expects to begin decontamination in October 1988.

14. Kerr-McGee Cimarron Plant
Crescent, OK
Docket No.: 070-01193

Remarks:

Produced fuel for DOE reactors. Several hundred thousand cubic feet of uranium-contaminated soil. Buildings being decontaminated. Final decommissioning plan being negotiated by licensee, NRC, and the State of Oklahoma.

15. Kerr-McGee Chemical Corp.
West Chicago, IL
Docket No.: 040-02061

Remarks:

Produced thorium for AEC and produced rare earths commercially. Large volume of thorium tailings. Submitted decontamination plan. Supplemental FES to be issued by end of 1988. Involved in ASLB proceedings.

16. Kawkawlin Landfill
Bay City, MI
Docket No.: NONE

Remarks:

Thorium-magnesium waste transferred to hazardous waste disposal cells from licensed Wellman-Dynamics site in Bay City. It is believed that there is no current radiological hazard, and the State is performing radiological monitoring.

17. Mallinckrodt, Inc.
St. Louis, MO
Docket No.: 040-06563

Remarks:

Active columbium/tantalum processor. Large volume of thorium-contaminated waste. All newly generated waste shipped off site. DOE has taken responsibility for old waste under FUSRAP.

18. MolyCorp
Washington, PA
Docket No.: 040-08778

Remarks:

Produced ferro-columbium alloy from ores containing thorium; currently shutdown. Large contaminated slag pile; low-level contamination on and off site. NRC staff reviewing licensee-proposed cleanup plan.

19. MolyCorp
York, PA
Docket No.: 040-08794

Remarks:

Processes ores containing uranium and thorium to extract rare earths. Has 15,000, 55-gallon drums of licensable waste; already shipped 10,000 to California plant. Some contaminated soil and other waste on site. Decommissioning scheduled by 1991.

20. Permagrain Products, Inc.
Karthaus, PA
Docket No.: 030-13573

Remarks:

Active irradiator. Other inactive facilities, including storage tanks and drainage systems, are contaminated, primarily with strontium-90. State of Pennsylvania owns the property, has agreed to fund cleanup.

21. Radiation Technology, Inc.
Rockaway, NJ
Docket No.: 030-07022

Remarks:

Active irradiator. Damaged sealed sources stored on site. Low-level soil contamination. Staff is requiring licensee to submit decontamination and source disposal plans by March 1989.

22. Remington Arms Co.
Independence, MO
Docket.: 040-08767

Remarks:

Inactive uranium munitions facility. Army has taken responsibility for decontamination.

23. Safety Light Corporation
Bloomsburg, PA
Docket No.: 030-05980

Remarks:

Manufacturer of luminescent devices, currently with tritium. Buildings, soil, and groundwater contaminated with tritium, strontium-90, cesium-137, and radium-226. Region I taking action to require decontamination plan.

24. Schott Glass Technologies, Inc.
Duryea, PA
Docket No.: 040-07924

Remarks:

Production of thorium glass ended in 1980. Less than 500kg source material in scrap glass at landfill on site. NRC is reviewing decommissioning plan.

25. Shieldalloy Metallurgical Corp.
Cambridge, OH
Docket No.: 040-08948

Remarks:

Processed ferro-columbium metals in the past. Large volume of thorium waste. Decommissioning plan under revision based on staff comments.

26. Shieldalloy Metallurgical Corporation
Newfield, NJ
Docket No.: 040-07102

Remarks:

Processing ores containing thorium and uranium for production of ferro-columbian and ferro-vanadium. Large volume of thorium waste in slag piles. Decommissioning plan submitted as part of license renewal application.

27. Texas Instruments
Attleboro, MA
Docket No.: 070-00033

Remarks:

Made fuel for DOE reactors. Possible buried uranium wastes. Being decommissioned.

28. UNC Recovery Systems
Wood River Junction, RI
Docket No.: 070-00820

Remarks:

Performed uranium scrap recovery, some Navy fuel processing. Decontamination complete. Awaiting results of confirmatory survey to complete decommissioning.

29. West Lake Landfill
St. Louis County, MO
Docket No.: 040-08801

Remarks:

Uranium wastes from Manhattan Project. Not part of FUSRAP program. Disposal options still being considered.

30. Westinghouse Electric Corp.
Waltz Mill Site
Madison, PA
Docket No.: 070-00698

Remarks:

Defueled test reactor (shutdown) and contaminated hot cells. Other active nuclear service operations. Decontamination will be addressed as part of license renewal process.

31. Whittaker Corp.
Greenville, PA
Docket No.: 040-07455

Remarks:

Prior to 1974, produced ferro-columbium from ores containing source material. Part of site decontaminated. Final decommissioning plan being reviewed as part of license renewal process.