70-687

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

MAR 02 1993

MEMORANDUM FOR: Stuart A. Treby, Assistant General Counsel for Rulemaking and Fuel Cycle
Office of the General Counsel

FROM: John H. Austin, Chief
Decommissioning and Regulatory Issues Branch
Division of Low-Level Waste Management and Decommissioning, NMSS

SUBJECT: NRC REGULATORY AUTHORITY AT CINTICHEM, INC.

I am requesting a legal opinion from the Office of the General Counsel (OGC) regarding the extent of the Nuclear Regulatory Commission's authority over decommissioning activities at the Cintichem, Inc. site near Tuxedo, New York. Cintichem is presently licensed by both the NRC and the State of New York. The licensee is presently waiting for decisions by the NRC and State of New York on the acceptability of the licensee's proposed radiological criteria for decommissioning. NRC and State review of these proposed criteria has identified several technical issues that we are presently resolving. Independent of the outcome of the technical review, however, we need to clarify the extent to which NRC has authority over byproduct material in the form of contamination at the site where that material does not coexist with special nuclear material (SNM).

On February 24, 1993, staff members from OGC, the Division of Low-Level Waste Management and Decommissioning (LLWM), the Office of State Programs, and Region I met to discuss this issue. The facility currently holds three licenses for the possession and use of radioactive materials. License R-81 was issued by the U.S. Atomic Energy Commission (AEC) for the operation of a 5-megawatt reactor. License SNM-639 was issued by the AEC for the possession and use of special nuclear material. The third license held by the facility, No. 0729-0322, was issued by the New York State Department of Labor (see Enclosure 1 for additional information on the facility and the status of the facility decommissioning activities).

During the meeting, OGC staff indicated the view that NRC retains regulatory authority byproduct material contamination only if it coexists with uranium and plutonium contamination. This view was based on New York's Agreement State status; the license amendment authorizing the decommissioning of the facility (see Enclosure 2); a March 12, 1991 cooperative agreement between NRC, the New York State Department of Environmental Conservation, and the licensee (see Enclosure 3); and a May 13, 1982 letter from Leland Rouse, then Chief of the Advanced Fuel and Spent Fuel Licensing Branch to Marcus Voth, Manager of Nuclear Operations for the Union Carbide Corporation (see Enclosure 4).

The licensee has indicated to NRC staff that, to date, they have not detected

090067

9303100353 930302
NMSS ADOCK 07000687
CF

NLXQ

NRC FILE CENTER COPY

any uranium or plutonium in the soil or groundwater at the site. In addition, the licensee indicated that all special nuclear material used in the production of radiopharmaceuticals has been removed from the site. Therefore, it appears at this time that the byproduct material contamination is not commingled with special nuclear material at the site.

Consequently, I request that OGC review and respond to the following items:

1. Confirm that NRC only has authority to control byproduct material contamination at the facility as a part of decommissioning (in order to establish residual soil contamination criteria) when it is commingled with SNM;

2. Confirm that, if NRC's regulatory authority ceased when the uranium or plutonium, including any associated contamination, was removed from the site in accordance with applicable decommissioning criteria, the State of New York now exercises full and complete authority over the facility, except for the reactor building and associated structures which remain subject to NRC's authority via the R-81 license;

3. Confirm that NRC does not have authority to control removal of byproduct material contamination incident to the licensee's activities under the R-81 license; and

4. Determine, as a legal matter, whether License No. SNM-639 must remain in effect until all decommissioning activities are complete at the site or may it be terminated now.

The licensee has indicated that decommissioning operations at the Cintichem facility have slowed pending a decision by NRC and NYSDEC on the licensee's proposed residual soil contamination criteria. In a meeting at the site in February, the licensee informed the NRC and NYSDEC of the need to have approved criteria before April 1993 or it will incur a large cost associated with disposal of partially filled waste containers at the Barnwell low-level waste disposal facility in South Carolina. Until the issues outlined above are resolved, we cannot complete our evaluation of the proposed decommissioning criteria. As such, I am requesting that you provide guidance as soon as possible on these issues.

The licensee has indicated that decommissioning operations at the Cintichem facility have slowed pending a decision by NRC and NYSDEC on the licensee's proposed residual soil contamination criteria. Until the issues outlined above are resolved LLWM cannot complete our evaluation of the proposed residual soil contamination criteria. As such, I am requesting that you provide guidance as soon as possible on these three issues. If you have any questions, please contact me at 504 2566.

Dominick A. Orlando, Project Manager
Decommissioning and Regulatory
Issues Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

Enclosures: As stated

Ticket N/A

DISTRIBUTION:	Central File	NMSS r/f	RBangart	WBrach
JSurmeier	PLohaus	TJohnson	LLWM r/f	RFonner
DFutoma	TDragoun, RI	TMichaels	DSollenberger	

SUBJECT ABSTRACT:NRC REGULATORY AUTHORITY AT CINTICHEM

Mark Small Boxes in Concurrence Block to Define Distribution Copy Preference
In small Box on "OFC:" line place a: **C = Cover E = Cover & Enclosure N = No Copy**

OFC :	LLDR	C	LLDR		LLDR					
NAME:	DOrlando		MWeber		JAustin					
DATE:	2/26/93	H	/ /93		/ /93					

Path & File Name: OFFICIAL RECORD COPY
In small Box on "DATE:" line place a: **M = E-Mail Distribution Copy H = Hard Copy**

PDR : YES ___ NO ___ Category: Proprietary ___ or CF Only ___
ACNW: YES ___ NO ___ Delete file after distribution Yes ___ No ___
IG: YES ___ NO ___

MAR 02 1993

We have been working on these issues with Kathryn Winsberg, Dave Futoma, and Chip Cameron of your office. If you have any questions or require additional information, please contact me at 504-2560 or Nick Orlando at 504-2566.

Original Signed By

John H. Austin, Chief
Decommissioning and Regulatory
Issues Branch
Division of Low-Level Waste Management
and Decommissioning, NMSS

Enclosures: As stated

Ticket N/A w/o Enclosures

DISTRIBUTION:	Central File	NMSS r/f	RBangart	WBrach
JSurmeier	PLohaus	TJohnson	LLWM r/f	RFonner
DFutoma	TDragoun, RI	TMichaels	DSollenberger	FCameron

SUBJECT ABSTRACT: NRC REGULATORY AUTHORITY AT CINTICHEM

Mark Small Boxes in Concurrence Block to Define Distribution Copy Preference
In small Box on "OFC:" line place a: **C = Cover E = Cover & Enclosure N = No Copy**

OFC :	LLDR	E	LLDR	E	LLDR	E				
NAME:	DOrlando		MWeber		JAustin					
DATE:	3/2/93	H	3/2/93	H	3/2/93					

Path & File Name: OFFICIAL RECORD COPY
In small Box on "DATE:" line place a: **M = E-Mail Distribution Copy H = Hard Copy**

PDR : YES ___ NO ✓
ACNW: YES ___ NO ✓
IG: YES ___ NO ✓

Category: Proprietary ___ or CF Only ✓
Delete file after distribution Yes ✓ No ___

MAR 02 1993

DRAFT

BACKGROUND INFORMATION ON THE CINTICHEM FACILITY

The Cintichem, Inc. facility is located in the town of Tuxedo, in the southwest corner of Orange County, New York. The facility consists of approximately 100 acres of land owned by the licensee, Cintichem, Inc. a subsidiary of Hoffman-LaRoche, Inc. The site is located on Long Meadow Road in the Sterling Forrest Industrial Park about 3.25 miles northwest of the town of Tuxedo. The facility currently holds three licenses for the possession and use of radioactive materials. License R-81 was issued by the U.S. Atomic Energy Commission (AEC) in September 1961 for the operation of the reactor in Building 1. This license will expire in June, 2000. License SNM-639 was issued by the AEC for the possession and use of special nuclear material in October 1962. This license was most recently renewed in January 1992 as part of the approval for the Cintichem facility decommissioning plan and will expire in December 1996. The third license held by the facility, No. 0729-0322, was issued by the New York State Department of Labor in February 1964. It has been renewed three times and will expire in February 1993.

The Cintichem facility was constructed between 1957 and 1960 by the Union Carbide Nuclear Company. The facility was originally designed as a research reactor but was converted to a radioisotope production facility in 1963. Cintichem produced radioisotopes for use in medical applications, including ^{99}Mo, ^{131}I and ^{133}Xe, from 1963 until 1990. A 5-megawatt, swimming pool type reactor in Building 1 used enriched uranium targets to produce various fission products. The targets were then transported, via a water filled canal, to a bank of 5 hot cells located in Building 2. Further processing and production of radioisotopes was carried out in these hot cells.

In February 1990, the licensee reported to NRC Region I that an uncontrolled release of radioactively contaminated water from the reactor building to an on-site retention pond had occurred. This release was the result of the failure of the walls of the gamma pit on February 9 and the hold up tank on February 12. The gamma pit is a water filled pool which is located at the end of the canal in Building 2 and was used for the temporary storage of radioactive materials. The holdup tank is a subterrianian concrete vessel located adjacent the reactor building that was used to decay short-lived isotopes in the reactor coolant. The licensee shutdown the reactor on February 9, 1990. The identification, within a short period of time, of the failure of these two concrete vessels demonstrated to NRC that the licensee could not provide reasonable assurance that continued operation of the facility would be carried out in compliance with Nuclear Regulatory Commission requirements. On February 13, 1990, NRC issued an Order Modifying License for Licensees R-81 and SNM-639 requiring that the facility remain shutdown until existing leaks were identified and repaired. In May 1990 Cintichem informed NRC that they intended to decommission the reactor and hot cell building and the Class A radioactive waste storage building.

Chronology of Recent and Relevant Decommissioning Actions Undertaken by Cintichem, the State of New York and NRC

October 1990	Cintichem submitted a decommissioning plan to NRC for review and approval.
September 1991	NRC completed the review of the licensee's decommissioning plan and the development of an Environmental Assessment and Safety Evaluation Report for the decommissioning of the facility.

Enclosure 1

November 1991	NRC issued an Order authorizing dismantling of the reactor facility and disposition of the reactor component parts.
January 1992	NRC issued an amendment to License No SNM-639 renewing the license until 1996 and authorizing the decommissioning of the hot cell building. Condition G of this license amendment required the licensee to develop criteria for contaminated soil that would remain on-site after decommissioning of the facility has been completed. NRC indicated that the radioactive material left in soil at the site could not cause an individual at the site to receive a dose that exceeded 10 mrem/year from all radionuclides and all dose pathways.
October 1992	Cintichem submitted the final proposed residual soil criteria to NRC and the State of New York Department of Environmental Conservation (NYSDEC) for review and approval. These proposed criteria included soil contamination levels for both soil that would remain on the surface and soil that would remain or be placed below the surface of the ground.

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 39, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Cintichem, Inc.	3. License number: SNM-639 Amendment No. 6
2. Sterling Forest Research Center Tuxedo, NY 10987	4. Expiration date: December 15, 1996
	5. Docket or Reference No.: 70-687

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
A. Uranium- 235 (≥ 20% enriched)	A. Any form	A. 350 gm. of contained U-235
B. Plutonium	B. Encapsulated Sources	B. 80 gm. Pu-Be neutron source
C. Any Radioactive Material between Atomic Nos. 3 and 83 inclusive mingled with SNM and authorized for possession under New York State byproduct license No. 729-0322	C. Any	

9. Authorized Use: For possession and storage at the site of the Cintichem, Inc. facility in Tuxedo, NY. Use as necessary in the decommissioning of the reactor building, hot laboratory building and waste storage building and areas associated with the operations carried out under license SNM-639.

10. Conditions:

A. Licensed material shall be possessed, used and stored at the Cintichem, Inc. facility located on Long Meadow Road in Tuxedo, NY.

B. Licensed material shall be used or under the supervision of the decommissioning Project Manager.

9201240021 4pp.

Enclosure 2

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number
SNM-639, Amendment No. 6

Docket or Reference number
70-687

C. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including all enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations and procedures in the licensee's application and correspondence are more restrictive than the regulations.

1. October 19, 1990,
2. January 11, 1991,
3. January 14, 1991,
4. January 28, 1991,
5. February 19, 1991,
6. March 8, 1991,
7. April 17, 1991,
8. April 24, 1991,
9. May 21, 1991,
10. June 25, 1991,
11. July 17, 1991,
12. August 6, 1991,
13. October 2, 1991, and
14. January 8, 1992.

D. In addition to the statements, representations and procedures made in the aforementioned letters the licensee will conduct decommissioning operations in accordance with the statements, representations and procedures outlined in the licensee's request to renew license SNM-639 dated September 15, 1989, and letter dated June 29, 1990 unless the statements, representations and procedures in the aforementioned letters are not appropriate to the decommissioning activities or the Commission's regulations are more restrictive.

E. The licensee may make minor changes to the conditions described in this license, without a license amendment, provided that:

1. These changes do not involve an unreviewed safety question;

2. The changes do not cause a significant increase in radiation exposure to employees or;

3. The changes do not cause a decrease in the protection of the public health and safety and the environment offered by the existing license condition.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number
SNM-639, Amendment No. 6

Docket or Reference number
70-687

A change shall be deemed to involve an unreviewed safety question if an accident analysis for the change (i) results in consequence values exceeding the values of the accident analysis described in the licensee's decommissioning plan, as supplemented, or the probability of occurrence for the types of events there evaluated is judged to increase; (ii) reveals a possibility for an accident of a different type than previously evaluated or; (iii) the margin of safety defined in the basis for any technical specification is reduced.

Prior to initiating any changes to the license conditions allowed under Condition E the licensee shall prepare a safety evaluation of the effect of the change. This evaluation shall be reviewed and approved by the licensee's Nuclear Safeguards Committee and, as appropriate, the licensee's Radiation Safety/ALARA Committee and shall provide the basis for determining that the change will not involve an unreviewed safety question, a significant increase in radiation exposure to employees or a decrease in the protection of the public health and/safety and the environment offered by the existing license condition. Records of evaluations and approvals of changes shall be maintained by the licensee.

F. The licensee shall decontaminate the reactor building, hot laboratory building, waste storage buildings and areas associated with the operations carried out under license SNM-639 to the unrestricted release criteria specified in NRC Regulatory Guide 1.86 and New York State criteria outlined in Table 5 of Section 38.29 of 12 NYCRR 38. In those instances where NRC and New York State criteria differ the more restrictive criteria will apply. In addition to the criteria outlined above the licensee shall ensure that:

1. Prior to demolition all buildings and structures exhibit exposure rates of less than 5 uR/hr above background at one meter;

2. The results of all soil characterization data are submitted to, approved by, and verified by NRC prior to release of the site. NRC's evaluation will ensure that exposure to this soil will not result in a dose to the public in excess of the criteria established in Condition G, following unrestricted release of the site.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number
SNM-639, Amendment No. 6

Docket or Reference number
70-687

G. The licensee shall develop residual soil contamination limits that the licensee intends to use as unrestricted release criteria. These criteria will be based on the principle that residual contamination shall be as low as reasonably achievable (ALARA). The licensee shall submit these limits to NRC for evaluation, within 6 months of the effective date of this amendment. This deadline may be extended by the Commission if the licensee demonstrates good cause based on technical feasibility (including circumstances that arise which were not foreseeable or were beyond the control of the licensee). Upon review and approval by NRC, the licensee shall ensure that all soil remaining on-site at the completion of the decommissioning operations is within these criteria.

H. As outlined in the licensee's decommissioning plan, as supplemented, the licensee shall complete the decommissioning within 36 months of the effective date of this amendment. This deadline may be extended by the Commission if the licensee demonstrates good cause based on technical feasibility (including circumstances that arise which were not foreseeable or were beyond the control of the licensee) or risk reduction considerations.

I. The licensee shall maintain records of information important to safe and effective decommissioning at the Cintichem facility located on Long Meadow Road in Tuxedo, NY per the provisions of 10 CFR 70.38.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date January 16, 1992

By John H. Austin

John H. Austin, Chief
Decommissioning and Regulatory
Issues Branch
Division of of Low-Level Waste
Management and Decommissioning
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555