UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

SEP 25 1996

Mr. Nick Orlando
U.S. Nuclear Regulatory Commission
Mail Stop T8F37
Washington, DC 20555

Dear Mr. Orlando:

The purpose of this letter is to provide our comments regarding ground water issues raised at the Cintichem, Inc. decommissioning project (Docket #s 50-54, 70-687). We have reviewed the report dated July 3, 1996 provided by Jay Adler of Cintichem, Inc. Our comments regarding this report are included in the following.

Cintichem, Inc. justifies the levels of radionuclides in the ground water by demonstrating this water can not be used for drinking. However, this is not a valid argument. Therefore, before the Cintichem facility meets free release criteria the bedrock and ground water issues must be resolved. To meet free release criteria, all water at the facility; as stated in the Safe Drinking Water Act and 40CFR141.16; must meet a concentration below which unfiltered water would deliver a total effective dose equivlant equal to or less than 4 mrem/yr to a member of the public.

These conclusions were reached in consultation with members of the Fresh Water Protection Section. The reader may refer to the next page for the methodology used to obtain our conclusions.

Sincerely,

Paul A. Giardina, Chief
Radiation and Indoor Air Branch

Enclosures [2]

cc: Richard Balla, PSPS

Enclosure

Enclosure 1

The Cintichem facility is located within the boundaries of the Ramapo River Basin Sole Source Aquifer (SSA), a groundwater protection designation conferred under the authority of Section 1424(e) of the federal Safe Drinking Water Act. For your information, we have attached a fact sheet on the Ramapo SSA (Enclosure 2).

As a result of this SSA designation, groundwater in both unconsolidated and consolidated (bedrock) formations at the facility are classified as at least Class IIA Current Source of Drinking Water. Consequently, the report prepared by Cintichem concluding that groundwater is unsuitable for use as a water supply, and therefore should not be evaluated using the federal drinking water standards is incorrect.

We have not had access to the full documentation regarding the sophistication of the groundwater monitoring system at the facility or the investigation itself. We, therefore, cannot comment on its worthiness. Nevertheless, please note that groundwater flow in fractured systems is inherently complex. Contaminant investigations in fractured systems are, therefore, difficult at best, and generally require investigation utilizing both geophysics and monitoring wells. Even in the optimal case, monitoring wells may not intersect significant fractures in close proximity to the well, and may therefore fail to detect significant contamination. On the other hand, if several fractures are intersected by a relatively long well screen, dilution may mask significant contamination. Caution must be exercised when conducting the investigation, and interpreting the results. Based on the information provided, it appears that additional investigation of the sources and extent of the groundwater contamination at the nuclear reactor facility may be warranted.

methodology and changes the drinking water standard for ^{90}Sr from 8 pCi/l to 42 pCi/l. Recently, the NRC staff has used EPA's proposed drinking water standard of 42 pCi/l for ^{90}Sr in determining whether sites are suitable for unrestricted use. Requiring Cintichem to meet this standard also satisfies the requirements outlined in NYSDEC's Technical Administrative Guidance Memorandum entitled "Cleanup Guideline for Soils Contaminated with Radioactive Materials," September 1993, provided the total effective dose equivalent due to all residual radioactive material will not exceed 10 millirem per year (above background). In their recent letter to NRC staff, EPA Region II also indicated that potential doses to the public from groundwater at the site should be evaluated against a total effective dose equivalent of 4 mRem/year. However, please note that EPA has specified that the groundwater sample used to determine the concentration of radioactive material should not be filtered prior to analysis. Therefore, the NRC staff has concluded that 42 pCi/l for ^{90}Sr, as determined using an unfiltered groundwater sample, is the applicable standard for groundwater at the Cintichem site and will be used by the NRC staff in determining whether the residual radioactive material at Cintichem's Tuxedo, New York facility meets NRC's criteria for unrestricted use and termination of the NRC license.

If you have any questions concerning the staff's review of Mr. Adler's letter, please contact Nick Orlando at (301) 415-6749. Development of this letter has been coordinated with the staffs of NYSDEC and EPA Region II.

Sincerely,

Michael F. Weber, Chief
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

License Nos. SNM-639
R-81
Docket Nos. 70-687
50-54
Attachment: As stated
cc: Cintichem dist list

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(mrem) per year), were converted to effective dose equivalents. This is consistent with NRC's dose calculation methodology and changes the drinking water standard for ^{90}Sr from 8 pCi/l to 42 pCi/l. Recently, the NRC staff has used EPA's proposed drinking water standard of 42 pCi/l for ^{90}Sr in determining whether sites are suitable for unrestricted use. Requiring Cintichem to meet this standard, also satisfies the requirements outlined in NYSDEC's Technical Administrative Guidance Memorandum entitled "Cleanup Guideline for Soils Contaminated with Radioactive Materials," September 1993, provided the total effective dose equivalent (TEDE) due to all residual radioactive material will not exceed 10 mrem per year (above background). In their recent letter to NRC staff, EPA Region II also indicated that potential doses to the public from groundwater at the site should be evaluated against a TEDE of 4 mrem per year. However, please note that EPA has specified that the groundwater sample used to determine the concentration of radioactive material should not be filtered prior to analysis. Therefore, the NRC staff has concluded that 42 pCi/l for ^{90}Sr, as determined using an unfiltered groundwater sample, is the applicable standard for groundwater at the Cintichem site. This standard will be used by the NRC staff in determining whether the residual radioactive material at Cintichem's Tuxedo, New York facility meets NRC's criteria for unrestricted use and termination of the NRC license.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

Mr. James J. McGovern
President/Plant Manager
Cintichem, Inc.
P.O. Box 816
Tuxedo, New York 10987

Dear Mr. McGovern:

This is in response to Jay Adler's letter to Thomas Dragoun, dated July 3, 1996, in which Cintichem summarized the radiological status of bedrock at its Tuxedo, New York facility, and proposed that the radiological status of the groundwater at one point at the site be determined using the results from the analysis of groundwater collected from the deeper of two wells located near the foundation of the hot lab building. The results from the deeper well, MW-2D, indicate that the groundwater meets the Environmental Protection Agency's (EPA's) drinking water standard for ^{90}Sr in 40 CFR 141.16, while the results from the shallower of the two wells, MW-2S, indicate that the groundwater in this well exceeds the EPA's current standard for ^{90}Sr. Cintichem used the limited flow from the shallower well as the rationale for excluding it from consideration as an appropriate location for evaluating the radiological status of the groundwater at the site.

NRC staff has reviewed your letter and has concluded that the assessment of the radiological status of the bedrock is acceptable as submitted. However, the NRC staff does not agree with your rationale for excluding MW-2S as an appropriate location from which to determine the radiological status of the groundwater at the site. Based on NRC staff discussions with staff of the EPA's Region II office, the Cintichem facility is located in the Ramapo River Basin Sole Source Aquifer (see attached letter from Paul A. Giardina to Dominick A. Orlando, dated September 25, 1996). EPA considers all groundwater in a Sole Source Aquifer, and therefore all groundwater at the Cintichem facility, as a potential source of drinking water. The New York State Department of Environmental Conservation (NYSDEC) also considers all groundwater at the Cintichem site a potential source of drinking water. Therefore, unless Cintichem can demonstrate to the NRC staff that both EPA and NYSDEC have concluded that MW-2S is not an appropriate sampling location for the Sole Source Aquifer, the NRC staff would consider both MW-2S and MW-2D as appropriate sampling locations for evaluating the status of groundwater at the facility.

Mr. Adler's letter also stated that ^{90}Sr concentrations in groundwater obtained from MW-2S during the past year (June 1995 to June 1996) have ranged from 10 picocuries per liter (pCi/l) to 79 pCi/l, with a mean of 38 pCi/l. The EPA drinking water standard in 40 CFR 141.16 for ^{90}Sr is 8 pCi/l. 8 pCi/l for ^{90}Sr was included in Cintichem's proposed residual radioactive material limits that were submitted to NRC staff in July 1992 and approved by NRC staff in August 1993. In mid-1991, EPA published proposed drinking water standards for radionuclides. These proposed drinking water standards, although keeping the same dose basis as the current standard (4 mrem/yr), were converted to effective dose equivalents. This is consistent with NRC's dose calculation

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LETTER TO: James McGovern

FROM: M. Weber

SUBJECT: REVIEW OF GROUNDWATER LIMITS

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Secretary: Betty Garret Phone No.: 415-7441

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