

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report Nos. 70-687/90-05; 50-54/90-03

Docket Nos. 70-687; 50-54

License Nos. SNM-639; R-81 Priority 1 Category UHBR

Licensee: Cintichem, Incorporated  
P.O. Box 816  
Tuxedo, New York 10987

Facility Name: Reactor and Hot Laboratory

Inspection At: Tuxedo, New York

Inspection Conducted: June 20-21, 1990

Inspectors:

MAustin 7/19/90  
Michael A. Austin, Radiation Specialist, date  
Effluents Radiation Protection Section (ERPS)  
Facilities Radiological Safety and Safeguards  
Branch (FRS&SB)

Jason C. Jang 7-19-90  
Jason C. Jang, Sr. Radiation Specialist, date  
ERPS, FRS&SB

Approved by:

Robert J. Bores 7-20-90  
Robert J. Bores, Chief, ERPS, FRS&SB, date  
Division of Radiation Safety and Safeguards

Inspection Summary: Inspection on June 20-21, 1990 (Inspection Report Numbers  
70-687/90-05 and 50-54/90-03)

Areas Inspected: Special, unannounced inspection of the licensee's corrective actions taken for previously identified items and to review the status of the licensee's plan for decommissioning.

Results: This inspection closed 15 previously identified items for which the licensee's corrective actions were complete. Two items pertaining to dose calculation methods remain open pending implementation of the licensee's plans, which were determined to be acceptable. The licensee was in the process of developing a characterization study to be conducted as part of the overall decommissioning plan for the Reactor and Hot Laboratory.

## DETAILS

### 1.0 Individuals Contacted

J. Adler, Consultant  
\*L. Glander, Senior Health Physics Technician  
\*J. McGovern, Plant Manager  
\*T. Rice, Health Physicist Technician III  
\*J. Stewart, Health Physics Supervisor  
\*L. Thelin, Staff Health Physicist  
\*T. Vaughn, Manager, Health, Safety, and Environmental Affairs

\*Denotes those present at the exit interview on June 21, 1990.

### 2.0 Purpose

The purpose of this special inspection was to review the licensee's corrective actions on previously identified items and to review the status of the licensee's plan for decommissioning.

### 3.0 Review of Previously Identified Items

(Closed) Violation (70-687/89-80-04; 50-54/89-80-03): Ineffective training of Emergency Response personnel including HP personnel and the Emergency Director. The licensee's response to the NRC dated on April 19, 1990 was acceptable. The inspector reviewed the "Lesson Plans" which are part of the Emergency Preparedness Training Program during this inspection and the inspector determined that the licensee had a proper training program for emergency response personnel. This item is closed.

(Closed) Violation (70-687/89-80-05): Failure to identify fixed alpha contamination in excess of action levels. The inspector examined the floor areas of the laboratories located above the hot cells. The inspector reviewed licensee records of contamination surveys, dated March 30, 1990, performed in these laboratories. The inspector observed that the licensee had removed the linoleum tile in these areas in an attempt to remove the contamination from these floors. The licensee found that the concrete surface beneath these tiles was contaminated. The licensee informed the inspector that the cleanup of these laboratory areas is being incorporated into the overall decommissioning plan for the Reactor and Hot Laboratory. The inspector observed that these areas were properly posted and controlled pending their planned decommissioning. Based upon these licensee actions, this item is closed.

(Closed) Inspector Followup Item (IFI) (70-687/89-80-09; 50-54/89-80-09): Implementation of Quality Assurance/Quality Control (QA/QC) for the Environmental Laboratory. The licensee developed a QA/QC program based on the NRC recommendations and implemented this QA/QC program for the Environmental Laboratory, including background count and source check

control charts, gamma counting geometry for various sample types, and an interlaboratory comparison program. The inspector noted that the licensee created and filled a position of "HP QA Specialist" and that this individual reviewed QC parameters. This item is closed.

(Closed) Violation (70-687/89-80-10; 50-54/89-80-10): (1) Isotopic gamma analysis for composite air particulate samples, (2) iodine-131 analysis for milk samples based on the Land Use Census.

(1) The licensee's response to the NRC dated on April 19, 1990 regarding isotopic gamma analysis on the air particulates was not acceptable because the NRC determined that the described licensee technique was for gross gamma analysis rather than the required isotopic analysis. The licensee, however, has established an air particulate gamma counting geometry for the Ge(Li) gamma spectrometry system. The inspector reviewed the calibration results and found them satisfactory. The licensee will incorporate isotopic analysis for air particulate samples in the near future, no later than July 14, 1990. Based on the licensee's plans and actions in this area, this sub-item is closed.

(2) The inspector noted that subsequent to the inspection in October 1989, the licensee collected and analyzed a milk sample in November 1989. The inspector stated that the general intent of the milk sampling requirement is to monitor the milk several times during the grazing season when the bulk of the feed comes from grazing rather than from supplemental feeding, such as occurs near the end of the grazing season. However, since a sample was collected and properly analyzed, the second sub-item of violation is withdrawn.

(Closed) IFI (50-54/89-80-11): Definition/utilization of Sr-90 equivalent. The inspector reviewed the technical bases for the methodology used by the licensee to determine the radioactivity released in liquid effluents in terms of Sr-90 equivalent. The inspector determined that the licensee no longer uses this methodology, and the licensee currently analyses and records the individual concentrations of all identified isotopes. This item is closed.

(Closed) Violation (70-687/89-80-11; 50-54/89-80-12): (1) The licensee did not analyze the gaseous effluent releases weekly to identify each noble gas radionuclide present as required by Section 3.9.2(2) of the Technical Specifications. (2) Inappropriate analytical technique for radioactive liquid effluents.

(1) The licensee stated that the gaseous effluent sample from the stack will be analyzed weekly using a gamma spectrometry system [Ge(Li)] in the very near future for dose projections. The licensee has initiated actions to ensure samples can be collected and analyzed appropriately with the Ge(Li) system.

(2) The licensee is using improved analytical techniques for all radioactive liquid samples such that all liquid effluents can now be properly quantified prior to release.

These sub-items are closed based on the licensee's plans and actions to date.

(Open) IFI (50-54/89-80-13): Dose calculation method for gaseous effluents using the gamma fractional abundance. As stated in the above, the licensee will use gamma analytical results for dose calculations rather than using the currently assigned gamma fractional abundance method. The approach to resolving this item appears adequate, however, this item will remain open until the implementation can be verified during a subsequent inspection.

(Closed) IFI (70-687/89-80-12; 50-54/89-80-14): Calibration of stack gas monitor. The licensee performed the calibration for the stack monitor using a National Institute for Science and Technology traceable Xe-133 source. The inspector reviewed the calibration results and found them to be satisfactory. This item is closed.

(Closed) Unresolved Item (70-687/89-80-14; 50-54/89-80-15): Possible breakthrough of the effluent charcoal cartridges. The licensee modified the charcoal cartridge sampling housing to hold four (4) charcoal cartridges in series to collect any iodine breakthrough. All cartridges are analyzed to assess total iodine releases. This item is closed.

(Open) IFI (70-687/89-80-15; 50-54/89-80-16): The gamma fractional abundance method may not be useful for dose calculation based on the actual stack gas sample analysis performed by the NRC. The licensee will measure weekly stack gas samples using a gamma spectrometry system and all measured radionuclides will be used for the dose calculation as stated above for IFI 50-54/89-80-13. This item will remain open until implementation can be verified during a subsequent inspection.

(Closed) Violation (50-54/89-80-17): Analytical results for liquid effluent sample exceeded the Technical Specification limits. The inspector reviewed revised procedures and examined records which demonstrated that the licensee has upgraded its analytical techniques and has initiated the routine practice of analyzing its liquid effluent radioactivity on a batch discharge basis. Therefore, because of these improvements in sampling and analytical methods, this item is closed.

(Closed) Violation (50-54/89-80-18): Analytical method for the reactor pool water. The licensee revised its procedure and was analyzing the reactor pool water using the gamma spectrometry system [Ge(Li)]. The reactor pool water samples are being analyzed in a timely manner, so that the short-lived nuclides could also be measured. This item is closed.

(Closed) IFI (70-687/89-05-01): Effect of possible moisture intrusion on charcoal bed efficiency; (Closed) Unresolved Item (70-687/89-80-13): Deterioration of charcoal bed efficiency; and (Closed) Unresolved Item (70-687/90-80-02): Impact of filter bank bypass on charcoal bed efficiency.

The inspector confirmed that the licensee opened the underground cavity surrounding the ductwork upstream and downstream of the main filter bank. The inspector also observed that iodine production activities in the Hot Laboratory were terminated and the licensee is in the process of decommissioning the facility. As a result of the licensee's investigation into the source of the groundwater contamination and discovery of the filter bypass situation, it was determined that moisture intrusion from groundwater into the exhaust air was not occurring, and so the effect of moisture on the charcoal bed efficiency was no longer a concern. The effect of opening the underground cavity to atmospheric pressure allowed any exhaust duct leakage to draw outside air into the ductwork. This eliminated the situation in which hot cell exhaust air was drawn out of the ductwork and bypassed the filter bank. The cessation of Hot Laboratory production operations eliminated the iodine source term from the hot cell exhaust air. This precludes the determination of charcoal bed efficiency for iodines. For these reasons, the above three items related to charcoal bed efficiency are closed.

(Closed) Violation (70-687/90-80-01; 50-54/90-80-01): Radioactive liquid effluents were released from the onsite holding pond directly to the Indian Kill Reservoir prior to being analyzed. The corrective and preventive actions documented in the licensee letter dated April 2, 1990 were acceptable to the NRC. The inspector reviewed these corrective and preventive actions during this inspection and these actions were acceptable. This item is closed.

(Closed) Violation (70-687/90-03-01; 50-54/90-01-01): Failure to perform adequate contamination survey of an item prior to its unconditional release. The inspector reviewed the records of an extensive survey performed by the licensee on March 24, 1990, of all items stored in and outside the Butler Building. The inspector reviewed the green tag survey log book that was revised to fully document the required surveys. The inspector toured inside and around the Butler Building and observed that items were stored in an orderly manner and housekeeping was greatly improved. Based upon these observations of licensee actions, this item is closed.

## 5.0 Decommissioning Plan

The inspector held discussions with various licensee representatives regarding the status of plans for the decommissioning of the Reactor and Hot Laboratory facilities. The licensee was in the process of developing a characterization study which will be conducted to help determine the direction of the subsequent decontamination effort. Licensee representatives stated that the characterization study would cover

Buildings 1 and 2, all related process water systems, all related waste storage areas, and some of the property surrounding the buildings; however, Building 4 would not be characterized nor decontaminated at this time and radiological activities in Building 4 would remain under the authority of a New York State license. The licensee contracted a consultant company to prepare the necessary characterization study. At the time of the inspection, the licensee had not yet decided if the actual implementation of the characterization study would be performed by the licensee or the consultant company. In discussions with licensee representatives and the consultant, the inspector determined that the consultant had pertinent experience in decommissioning nuclear facilities and was making appropriate use of the various regulatory guidance documents (e.g., NUREG/CR-2082, "Monitoring for Compliance with Decommissioning Termination Survey Criteria"). The development and implementation of the characterization/decommissioning plan will be reviewed in future inspections.

#### 6.0 Exit Interview

The inspectors met with the licensee representatives (denoted in Section 1.0) at the conclusion of the inspection on June 21, 1990. The inspectors summarized the purpose and findings of the inspection.