

New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials
Bureau of Pesticides & Radiation
50 Wolf Road, Albany, New York 12233-7255
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John P. Cahill
Commissioner

T. Michaels

OCT 5 1998

50-54

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

Dear Mr. McGovern:

Re: Order on Consent
Case #D200059005

This responds to your September 14, 1998 letter requesting that the subject Order on Consent be terminated.

As you know, the Order on Consent has been amended ten times since it was signed in 1990, to reflect the progress of the successful decommissioning of the facility. A review of the substantive requirements currently in the Order is enclosed.

We have reviewed the dose assessments and pathway analyses performed by both Cintichem and the Oak Ridge Institute for Science and Education for the US Nuclear Regulatory Commission. We concur with their projections that the dose to the maximally exposed member of the general public due to the residual radioactive material on the site would be less than 2 millirem per year. This Department's *Cleanup Guideline for Soils Contaminated with Radioactive Materials*, Division of Solid & Hazardous Materials Technical Administrative Guidance Memorandum 4003 ("TAGM 4003") sets a dose guideline of no more than 10 millirem per year due to residual radioactive material following remediation. It is to the credit of Cintichem personnel, Cintichem's contractors, and Hoffman-LaRoche that the remediated Cintichem site more than meets that guideline.

Based on our review of the data submitted in accordance with the Order, the results of DEC's confirmatory surveys and sampling on site, and the termination of the radioactive materials licenses issued to Cintichem by the New York State Labor

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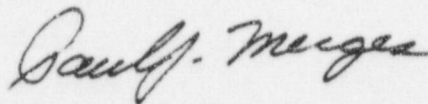
Mr. J. J. McGovern

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Department and the US Nuclear Regulatory Commission, we find that Cintichem has fulfilled its obligations under the Order and is released from all requirements set in it, effective today.

DEC staff appreciates Cintichem's cooperation over the past nine years. If you have any questions, please call Barbara Youngberg.

Sincerely,



Paul J. Merges, Ph.D.

Director, Bureau of Pesticides & Radiation

Enclosure

cc w/encl:

R. Aldrich, NYSDOL
T. Dragoun, NRC
K. Magar, Town of Tuxedo
T. Michaels, NRC
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New York State Department of Environmental Conservation

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Commissioner

Cintichem, Inc. Order on Consent (Case #D200059005)
Status of Order on Consent and Basis for Terminating Requirements
October 2, 1998

Each provision of the Order still effective as of October 2, 1998 is quoted here, followed by our basis for ending this requirement.

IV. Discharges through SPDES Outfall 001

(A) All waste water containing radioactive material shall be discharged from the site through the 001 outfall in accordance with the following:

(1) The outfall shall be sampled biweekly by grab sample. Samples shall be collected in the 001 outfall before the discharge enters the Indian Kill Stream. The samples shall be analyzed for strontium-90.

(2) The average concentration (averaged over any one calendar year) of radioactive material in the waste water discharged shall not exceed the effluent concentrations for releases to water in Section 380-11.7, Table II, Column 2 of 6 NYCRR Part 380. When more than one radionuclide is detected in the waste water, the sum of ratios rule (Section 380-11.7, Note 4) shall apply. The total activity released shall not exceed 10 millicuries in any one calendar year.

In our July 27, 1998 analysis supporting the July 28, 1998 Amendment No. 10, it was stated,

In accordance with the Order, Cintichem reported monthly the total activity and average concentration of radionuclides discharged through the 001 outfall. In 1997, the only radionuclide reported was strontium-90; the total activity reported discharged was 130 microcuries. The average concentration was $1.72 \text{ E-}9$ microcuries per milliliter ($\mu\text{Ci/ml}$). The ratio of the annual concentration to the applicable concentration in Table II, Column 2 of Part 380-9 ($5 \text{ E-}7 \mu\text{Ci/ml}$) is 0.003. To date in 1998, the total activity reported for the year is $33 \mu\text{Ci Sr-90}$, and the average concentration is $2.59 \text{ E-}10 \mu\text{Ci/ml}$. These data indicate that the discharge has been far below the applicable limits set in paragraph IV(A)(3) of the Order.

The source of the Sr-90 in the discharge through 001 is the soil and bedrock under the northeast corner of Building 2. Groundwater from that area collects in the carpenter shop excavation (under Building 3, sampling point S-4). From there, it is pumped to the retention pond, and is then discharged through the 001 outfall. Since the beginning of 1997, the Sr-90 concentration in the water collecting in the carpenter shop excavation has averaged about 40 pCi/l or 4.0×10^{-8} $\mu\text{Ci/ml}$. All other sources of radioactive material have been removed from the site. There is no reason to expect an increase in the concentration of radioactive material discharged through the 001 outfall.

Data on the radioactive material discharged through the 001 outfall from June 1998 through August 18, 1998 are consistent with previous data. In those three months, Cintichem reported discharging a total of 6.2 μCi Sr-90, for a year-to-date concentration of 5×10^{-10} $\mu\text{Ci/ml}$, well below the limit set in the Order.

This paragraph required that all waste water containing radioactive material be discharged through the 001 outfall. In the past year, the primary source of waste water containing radioactive material has been the water that collected in the excavation in the southwest corner of Building 3 (i.e., S-4). That water was pumped to the retention pond and the retention pond water was pumped to the 001 outfall. When the Order is terminated, Cintichem will no longer be required to pump the S-4 water to the retention pond. If the excavation is not pumped out periodically, the water will have two possible paths: seeping back into the groundwater before reaching the reservoir, or moving over land and entering the reservoir.

To analyze the impacts of that discharge, it is assumed that all of the Sr-90 formerly discharged through the 001 outfall instead enters the reservoir. Cintichem reported monthly the total activity of Sr-90 that was discharged through 001. In the past year, the predominant source of that Sr-90 was S-4. Therefore, the total activity discharged is a good estimate of the activity that could reach the reservoir in one month, if the S-4 water took a direct route to the reservoir (this highly unlikely). In the period from July 1997 to July 1998, the maximum activity discharged in one month was 10.67 μCi , in May 1998. This number is used in the following analysis as a worst-case estimate of the activity that could enter the reservoir in one month.

In a February 1993 report [*Potential Effects of Cintichem proposed residual soil criteria on the water Quality of the Indian Kill Reservoir*, prepared for Cintichem by Leggette, Brashears & Graham, Inc.], it was stated that the Sterling Forest Water Company withdraws an average of 150,000 gallons of water per day from the Indian Kill Reservoir. (This number has probably increased since 1993, but it will be used, to be conservative.) For a 30-day month, the total water withdrawn would be 4.5 million gallons of water.

If the monthly total of 10.67 μCi of Sr-90 entered the reservoir and mixed only with the water withdrawn by the Sterling Forest Water Company (again, highly unlikely), the resulting concentration of Sr-90 would be 0.6 pCi/l. This is an extreme upper bound and demonstrates that the release of the S-4 water to the reservoir will not result in a contravention of the Department's water quality standard for Sr-90 in Class A surface waters (8 pCi/l), nor from

a radiological standpoint, will it impair the use of the Indian Kill Reservoir as a source of drinking water.

Therefore, there is no need to continue to require that Cintichem pump the S-4 water to the 001 outfall.

IV. Discharges through SPDES Outfall 001

(B) All wastewater discharged from the site through the 001 outfall shall comply with the requirements of this subparagraph.

(1) The following limitations and monitoring requirements apply to wastewater discharged through the 001 outfall:

<u>Parameter</u>	<u>Daily Maximum</u>	<u>Units</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow	Monitor	GPD	Monthly	Estimate
pH (range)	(6.0-9.0)	SU	Monthly	Composite
Copper, Total	.05	mg/l	Monthly	Composite
Iron, Total	3.3	mg/l	Monthly	Composite
Zinc, Total	0.15	mg/l	Monthly	Composite
Lead, Total	0.025	mg/l	Monthly	Composite
Solids, Total Susp.	35	mg/l	Monthly	Composite
Oil & Grease	15	mg/l	Monthly	Composite

(2) The monthly sampling event shall consist of a flow-weighted composite made up of release from boiler house operations and the retention pond (S-12) during a representative time period of approximately 24 hours.

Cintichem has now obtained a SPDES General Permit for Storm Water Discharges from Construction Activities, Permit Number NYR00C518. The SPDES provisions in the Order are no longer necessary.

V. Release of Surface Runoff

(A) Retention pond

(1) Releases from the retention pond to the 001 outfall shall be on a batch-release basis. A water sample shall be collected prior to each batch release. The water may be released prior to sample analysis. If more than one sample is collected in one calendar day, the samples may be composited for analysis. The samples shall be analyzed for strontium-90 within 15 working days of the day the sample was collected.

(2) In the event of heavy rainfall or surface run-off entering the retention pond, water may be continuously pumped from the retention pond to the 001 outfall if this is necessary to preserve the integrity of the pond. In that case, the retention pond shall be sampled every four hours. If more than one sample is collected in one calendar day, the samples may be composited for analysis. The samples shall be analyzed for strontium-90 within 15 working days of the day the sample was collected.

(3) Strontium-90 detected in releases from the retention pond shall be considered waste water subject to the limits set in Paragraph IV(C) of this Order.

In our analysis for Amendment No. 10, we stated,

The concentration of Sr-90 in the retention pond has ranged from a maximum of 59 +/- 4 pCi/l, in February 1993 to less than the required detection limit of 1.5 pCi/l. The Sr-90 concentration has not exceeded 8 pCi/l since February 1997. In 1997, the average concentration was 3.3 pCi/l. In 1998 (as of May 28, 1998), most sample results have been less than a detection limit of 1 pCi/l. In the past year (June to May), the highest concentration detected was 3.3 +/-1.1 pCi/l.

The data demonstrate that the Sr-90 in the retention pond water is now less than the Department's water quality standard for Sr-90 in [Class A] surface water. However, because these monitoring results are used to assess the activity and concentration of radioactive material discharged to the 001 outfall, the sampling should continue until the NRC licenses are terminated. There is no need to require sampling of the retention pond for radionuclides after that. This monitoring requirement should expire when the NRC licenses are terminated.

The US Nuclear Regulatory Commission (NRC) licenses were terminated on August 19, 1998; therefore, the sampling is no longer required to comply with Part 380. In addition, data on the concentration of Sr-90 in the retention pond from June 1998 through August 18, 1998 continue to support the conclusions quoted above: during that time period, the highest concentration of Sr-90 in the retention pond was 2.3 pCi/l, and the mean concentration of Sr-90 was 1.5 pCi/l.

This paragraph also set the requirement that the retention pond water be pumped to the 001 outfall for release. Based on the fact that the Sr-90 concentration in the retention pond has been less than the Department's water quality standard for Class A surface water for more than 18 months, there is no need, from a radiological standpoint, to continue pumping this water to the 001 outfall. In addition, the Sr-90 in the retention pond water originates at S-4, the excavation in the southwest corner of Building 3. Once the Order is terminated, Cintichem will no longer need to pump the S-4 water to the retention pond.

(B) S-7 Runoff

Cintichem may allow surface water runoff from S-7 to flow into the reservoir. Respondents shall collect a monthly grab sample at S-7 and analyze those samples for the following metals: antimony, chromium, copper, lead, selenium, and zinc.

Cintichem has now obtained a SPDES General Permit for Storm Water Discharges from Construction Activities, Permit Number NYR00C518. The SPDES provisions in the Order are no longer necessary.

XXI. In accordance with Paragraph XXXIV of the 1990 Order, Respondents filed a declaration of covenants and restrictions with the Orange County Clerk to give all parties who may acquire any interest in the site notice of this Order. The Department will consent to the removal of such declaration upon the fulfillment of the terms of this Order. However, the Department retains the right to require that the filed covenant and restrictions remain in place if the Department determines, even after the completion of the NRC approved decommissioning, that such covenant and/or restrictions are necessary.

The only substantive requirements remaining in the Order as of this date are described above. Cintichem has fulfilled them. The company submitted its last monthly report on September 14, 1998. Therefore, under the terms of the Order, the Department consents to the removal of the declaration of covenants.

I. Previous Order and Amendments Superseded

The provisions of the June 1990 Consent Order and the three amendments of that Order are replaced by the provisions of this amendment, except for Paragraphs XXI through XXIII of the 1990 Order, which remain in effect.

Paragraphs XXI through XXIII of the 1990 Order (copy attached) required Cintichem to "obtain and provide to the Department financial assurance in the form of an irrevocable letter of credit in the amount of five million dollars (\$5,000,000) for the completion of work as described in paragraphs II, III, IV, VI, X, XI, XIII, and XVI of this Order and for any repairs, remediation or mitigation work determined to be necessary." A standby trust was also required.

Paragraphs II, IV, VI, X, XI, XIII, and XVI were deleted when the Order was amended in 1995 (Amendment No. 4). Paragraph III set the original groundwater monitoring requirements. They were amended many times and deleted by the July 28, 1998 amendment of the Order (Amendment No. 10).

The only areas where the Department had prime jurisdiction over the remediation on site was in the excavations in Building 4 and in the old Union Carbide Landfill. We performed confirmatory surveys and sample analyses in all those areas and concluded that the decontamination criteria had been met. No further repairs, remediation, or mitigation work is necessary in those areas. Therefore, the financial assurance is no longer required for compliance with the Order.

Attachment

Paragraphs XXI through XXIII from 1990 Order on Consent
Case No. D200059005

XXI. Within 45 days after the effective date of this Order, Respondents shall obtain and provide to the Department financial assurance in the form of an irrevocable letter of credit in the amount of five million dollars (\$5,000,000) for the completion of work as described in paragraphs II, III, IV, VI, VII, X, XI, XIII, and XVI of this Order and for any repairs, remediation or mitigation work determined to be necessary. Respondents shall establish an irrevocable standby trust fund, with an initial deposit of one thousand dollars (\$1,000.00). The irrevocable letter of credit and the irrevocable trust fund agreement shall meet the following requirements:

(A) Letter of Credit

(1) Is identical to the wording specified in Appendix D for letters of credit, which is attached hereto and made a part hereof;

(2) Is issued by a New York State or federally chartered bank, savings bank, or savings and loan association, which has its principal office in New York, unless otherwise approved by the Department; and

(3) Is accompanied by a letter from Respondents referring to the Letter of Credit by number, issuing institution and date and providing the following information: the name and address of the facility and/or site which is the subject of the Order and the amount of funds securing the Respondents' performance of all their obligations under the Order.

(B) Standby Trust

(1) Is identical to the wording specified in Appendix E, which is attached hereto and made a part hereof;

(2) The irrevocable standby trust fund shall be the depository for all funds paid pursuant to a draft by the Department against a letter of credit or payments made under the performance bond as directed by the Department;

(3) The trustee shall be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or New York agency;

(4) Is accompanied by an executed certification of acknowledgment that is identical to the wording specified in Appendix F.

XXII. Respondents shall establish and maintain the standby trust fund until terminated by the written agreement of the Department, the trustee and Respondents, or of the trustee and the Department if Respondents cease to exist. Respondents shall maintain the letter of credit until the Department provides written notification to Respondents that the financial assurance is no longer required for compliance with this Order. In the event that the Department determines that Respondents have failed

Paragraphs XXI through XXIII from 1990 Order on Consent
Case No. D200059005

to perform any of their obligations under this Order, the Department may proceed to have the financial assurance deposited into the standby trust; provided, however, that before the Department draws on the letter of credit the Department shall notify Respondents in writing of the obligation(s) which they have not performed, and Respondents shall have a reasonable time, not to exceed thirty (30) calendar days, unless approved in writing by the Department, to perform such obligations(s).

XXIII. At any time, Respondents may apply to the Department to substitute other financial assurances in a form, manner and amount acceptable to the Department.