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February 10, 1997

NOTE TO: File

FROM: Timothy C. Johnson, Section Chief (Original signed by:)
Facilities Decommissioning Section
Low-Level Waste and Decommissioning
Projects Branch/DWM/NMSS

SUBJECT: TRANSMITTAL OF DRAFT LICENSE CONDITIONS TO CHEMETRON FOR REVIEW

On February 6, 1997, I faxed the attached draft license conditions, related to the Bert Avenue site remediation, to B. Koh and T. Adams for their review.

Docket No. 040-08724
License No. SUB-1357

Attachment: As stated

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

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Low-Level Waste and Decommissioning
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Docket No. 040-08724
License No. SUB-1357

Attachment: As stated

Chemetron Corporation Inc.

SUB 1357
Amendment No. 6

1615 South Congress Avenue
Suite 200
Delray Beach, FL 33444

October 31, 1990

040-08724

A. Depleted	A. Uranium Oxide	A. 2,000 kilograms

9. Authorized Use:

For possession in accordance with the statements, representations, and conditions specified in the applications dated April 21, 1993 and May 6, 1993, for the purpose of decontaminating the facilities and grounds so that they can be released for unrestricted use.

10. Authorized Place of Use:

The McGean-Rohco facilities located at 2910 Harvard Avenue, Newburgh Heights, Ohio, and the McGean-Rohco property located between 28th and 29th Streets at Bert Avenue, Newburgh Heights, Ohio.

11. Release of equipment and material for unrestricted use from the facility to offsite areas or from contaminated to clean areas onsite shall be in accordance with the enclosed Annex, "Guidelines for Decontaminating of Facilities for Byproduct, Source, or Special Nuclear Material," dated August 1987.

12. DELETED

13. Mr. Theodore G. Adams is designated as Radiation Safety Officer.

Attachment

14. The licensee is authorized to remediate the McGean-Rohco Complex buildings and equipment in accordance with the "Site Remediation Plan Chemetron Remediation Project Harvard and Bert Avenue Sites Chemetron Corporation, Inc. Newburgh Heights, Ohio" dated October 1, 1993, November 1, 1993, and November 11, 1993, with supplemental correspondence dated February 7, 1994, April 15, 1994, July 8, 1994, and July 22, 1994. The licensee shall implement radiological controls and training in accordance with the "Radiological Control Plan," Revision 1, December 1993, and the "Radiation Worker Handbook and Training Manual," Revision 1, January 1994. Prior to releasing any buildings and equipment for unrestricted use, the licensee shall perform surveys of residual contamination criteria in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated August 1987. The licensee shall either ship radioactive wastes, generated during the remediation of the McGean-Rohco Complex, to a licensed low-level radioactive waste disposal site or store the wastes in Buildings 14 and 16. Buildings 14 and 16 shall be secured and monitored while wastes are in storage.

15. a. The licensee is authorized to remediate the Harvard Avenue site in accordance with 10 CFR 20.2002 and the licensee's "Site Remediation Plan, Chemetron Remediation Project, Harvard Avenue and Bert Avenue Sites," dated October 1, 1993, and November 11, 1993; and revised on February 28, 1995, including letters dated February 7, 1994, March 2, 1994, March 9, 1994, April 15, 1994, December 19, 1994, December 22, 1994, July 27, 1995, October 31, 1995, February 20, 1996, May 7, 1996, and May 17, 1996.

b. The procedure for licensee-initiated and approved changes as described in Revision 1 to the "Site Remediation Plan, Chemetron Remediation Project, Harvard Avenue and Bert Avenue Sites," dated February 28, 1995, may be used provided that:

i. review of all proposed changes to the "Site Remediation Plan" by the Project Manager or his designee is in accordance with Administrative Procedure AP-06 "Field Changes;"

ii. the licensee submits to the NRC for approval any changes that would result in an unreviewed safety question, a change in a license condition, or changes that would have a significant adverse affect on the quality of the work, the remediation objectives, or health and safety;

iii. the licensee documents the changes made.

c. Chemetron shall use the unrestricted use criteria listed in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Material" for surfaces of buildings and equipment, and the Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations," for soils. Specific values are given below --

Soils:

Depleted uranium on the surface:	1.3 Bq/gm (35 pCi/gm) (total uranium)
Thorium	0.37 Bq/gm (10 pCi/gm) (total thorium)
Radium-226 on the surface	0.18 Bq/gm (5 pCi/gm)
Radium-226 subsurface	0.56 Bq/gm (15 pCi/gm)

Equipment and building surfaces:

5,000 dpm alpha/100 cm^2; average over 1 m^2
5,000 dpm beta-gamma/100 cm^2; average over 1 m^2
15,000 dpm alpha/100 cm^2; maximum over 100 cm^2
15,000 dpm beta-gamma/100 cm^2; maximum over 100 cm2
1,000 dpm alpha/100 cm_2; removable
1,000 dpm beta-gamma/100 cm^2; removable

Exposure rate:

Soils	2.6 pC/kg/hr (10 uR/hr) average above background at 1 meter
	5.2 pC/kg/hr (20 uR/hr) maximum above background at 1 meter

Equipment and buildings:

1.3pC/kg/hr (5uR/hr) above background at 1 meter

Chemetron shall use 7.4 Bq/gm (200 pCi/gm) as the Option 2 disposal limit for depleted uranium to be placed in the Harvard Avenue disposal cell.

d. Wastes and the clean fill and soil cover placed into the Harvard Avenue disposal cell shall be placed in no greater than one foot loose lifts and compacted to 95 percent of the maximum dry density as determined in accordance with ASTM-D698, "Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))," or 90 percent of the maximum dry density as determined in accordance with ASTM-D1557, "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))." Density testing should be performed over the entire lift thickness. The wastes shall be covered with a clean fill and soil cover having a final cover depth of at least 4 ft. A vegetative cover shall be placed over the clean fill and soil

cover. The bottom of the waste layer shall be greater than 10 ft. above the highest groundwater elevation.

e. The licensee shall conduct an air sampling program at the Harvard Avenue site work areas and perimeters. If airborne concentrations exceed 1.1E-21 Bq/ml (3.0E-14 uCi/ml) at site perimeter, an investigation shall be conducted to determine if dust suppression measures should be used during the excavation of the contaminated soil to minimize airborne releases. The minimum detectable activity of the air sampler and assay method shall be less than 1.1E-21 Bq/ml (3.0E-14 uCi/ml).

f. During the remediation operations, liquid and airborne effluents shall be sampled and analyzed to ensure that releases meet the requirements of 10 CFR Part 20, Appendix B. If liquid waste radioactivity concentrations exceed the requirements in 10 CFR Part 20 and require processing, the licensee shall request NRC approval of the proposed processing system.

g. The licensee shall conduct a final survey and sampling program in areas surrounding the disposal cell in accordance with NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination" (Reference 30). Radioactivity levels shall not exceed the averaging criteria in NUREG/CR-5849.

The licensee shall conduct a final radiation survey and sampling program to ensure that wastes placed in the disposal cell are less than 7.4 Bq/gm (200 pCi/gm) when averaged over a 100 m^2 (1070 ft^2) area and meet the averaging criteria in NUREG/CR-5849. The final survey and sampling program shall consist of performing radiation scans over 100 percent of each 0.3 m (1 ft) lift and taking one sample for gamma spectroscopic analysis in every 10 m (33 ft) x 10 m (33 ft) area at every third lift. The licensee shall composite the samples over the three lifts. If scans or samples indicate activity that exceeds 7.4 Bq/gm (200 pCi/gm), the licensee shall take further samples and determine compliance with the averaging criteria in NUREG/CR-5849. These criteria address averaging concentrations over any 100 m^2 (1070 ft^2) area and using the $(100/A)^{1/2}$ elevated area criteria.

Material that exceeds the averaging criteria in NUREG/CR-5849 shall be removed and shipped off-site to a licensed low-level waste disposal site.

16. a. The licensee is authorized to remediate the Bert Avenue site in accordance with 10 CFR 20.2002 and the licensee's "Site Remediation Plan, Chemetron Remediation Project, Harvard Avenue and Bert Avenue Sites," Revision 1 dated February 28, 1995, including letters dated April 15, 1994, July 27, 1995, October 31, 1995, February 20, 1996, May 17, 1996, June 21, 1996, and September 17, 1996. The licensee shall implement radiological controls in accordance with the "Radiological Control Plan," Revision 2, November 1996, as modified using the procedures in Administrative Procedure AP-06, "Field Changes."

b. The procedure for licensee-initiated and approved changes as described in Revision 1 to the "Site Remediation Plan, Chemetron Remediation Project, Harvard Avenue and Bert Avenue Sites," dated February 28, 1995 may be used provided that:

i. Review of all proposed changes to the "Site Remediation Plan" by the Project Manager or his designee is in accordance with Administrative Procedure AP-06 "Field Changes;"

ii. The licensee submits to NRC, for approval, any changes that would result in an unreviewed safety question, a change in a license condition, or changes that would have a significant adverse affect on the quality of the work, the remediation objectives, or health and safety;

iii. The licensee documents the changes made.

c. Chemetron shall use the unrestricted use criteria listed in "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source or Special Nuclear Material" for surfaces of buildings and equipment, and the Branch Technical Position, "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations," for soils. Specific values are given below --

Soils:	Depleted uranium on the surface:	1.3 Bq/gm (35 pCi/gm) (total uranium)
	Thorium on the surface:	0.37 Bq/gm (10 pCi/gm) (total thorium)
	Radium-226 on the surface:	0.18 Bq/gm (5 pCi/gm)
	Radium-226 subsurface:	0.56 Bq/gm (15 pCi/gm)

Equipment and building surfaces:

5,000 dpm alpha/100 cm^2; average over 1 m^2
5,000 dpm beta-gamma/100 cm^2; average over 1 m^2
15,000 dpm alpha/100 cm^2; maximum over 100 cm^2
15,000 dpm beta-gamma/100 cm^2; maximum over 100 cm^2
1,000 dpm alpha/100 cm^2; removable
1,000 dpm beta-gamma/100 cm^2; removable

Exposure rate:

Soils	2.6 pC/kg (10 μR/hr) average above background at 1 m
	5.2 pC/kg (20 μR/hr) maximum above background at 1 m
Equipment and buildings	1.3 pC/kg (5 μR/hr) above background at 1 m

Chemetron shall use 5.9 Bq/gm (161 pCi/gm) as the Option 2 disposal limit for depleted uranium to be placed in the Bert Avenue disposal cell.

d. Wastes and the clean fill and soil cover placed into the Bert Avenue disposal cell shall be placed in no greater than 0.3-m (1-ft) loose lifts and compacted to 95 percent of the maximum dry density, as determined in accordance with ASTM-D698, "Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))," or 90 percent of the maximum dry density, as determined in accordance with ASTM-D1557, "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))." Density testing should be performed over the entire lift thickness. Deviations in compaction results shall be evaluated in accordance with Administrative Procedure AP-06, "Field Changes." The wastes shall be covered with a clean fill and soil cover having a final cover depth of at least 4.9 m (16 ft). A vegetative cover shall be placed over the clean fill and soil cover. The bottom of the waste layer shall be greater than 3.3 m (10 ft). above the highest groundwater elevation. The east slope of the disposal cell shall be covered with riprap. The soft, alluvial soils located in the vicinity of the open sewer line shall be removed prior to construction of the disposal cell.

e. The licensee shall conduct an air sampling program at the Bert Avenue site work areas and perimeters. If airborne concentrations exceed 1.1E-21 Bq/ml (3.0E-14 uCi/ml) at site perimeter, an investigation shall be conducted to determine if dust suppression measures should be used during the excavation of the contaminated soil to minimize airborne releases. The minimum detectable activity of the air sampler and assay method shall be less than 1.1E-21 Bq/ml (3.0E-14 uCi/ml).

f. During the remediation operations, liquid and airborne effluents will be sampled and analyzed to ensure that releases meet the requirements of 10 CFR Part 20, Appendix B. If liquid waste radioactivity concentrations exceed the requirements in 10 CFR Part 20 and require processing, the licensee shall request NRC approval of the proposed processing system.

g. The licensee shall conduct a final survey and sampling program in areas surrounding the disposal cell in accordance with NUREG/CR-5849, "Manual for

Conducting Radiological Surveys in Support of License Termination." Radioactivity levels shall not exceed the averaging criteria in NUREG/CR-5849.

The licensee shall conduct a final survey and sampling program to ensure that wastes placed in the disposal cell are less than 5.98 Bq/gm (161 pCi/gm) when averaged over a 100 m^2 (1070 ft^2) area and meet the averaging criteria in NUREG/CR-5849. The final survey and sampling program shall consist of performing radiation scans over 100 percent of each 0.3 m (1 ft) lift and taking one sample for gamma spectroscopic analysis in every 10 m (33 ft) x 10 m (33 ft) area at every 0.3 m (1 ft) lift. If scans or samples indicate activity that exceeds 5.98 Bq/gm (161 pCi/gm), Chemetron will take further samples and determine compliance with the averaging criteria in NUREG/CR-5849. These criteria address averaging concentrations over any 100 m^2 (1070 ft^2) area and using the $(100/A)^{1/2}$ elevated area criteria. Material that exceeds the averaging criteria in NUREG/CR-5849 shall be removed and shipped off-site to a licensed low-level waste disposal site.

The licensee shall provide hold points in the remediation schedule and provide an opportunity for NRC staff to take samples and perform surveys 1) following removal of contaminated materials in Areas A and B as shown in Figure 3-13 of the site remediation plan; 2) following excavation of contaminated materials and before beginning construction of the disposal cell; and 3) before emplacing non-radioactive solid wastes or cover materials.

Material that exceeds the averaging criteria in NUREG/CR-5849 shall be removed and shipped off-site to a licensed low-level waste disposal site.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

DATE: _____

BY: _____

John W. N. Hickey, Chief
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards