

PROPOSED  
REMEDATION WORK PLAN  
ADDENDUM

BURT AVENUE SITE  
NEWBURGH HEIGHTS, OHIO

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PROPOSED  
REMEDATION WORK PLAN  
ADDENDUM

BURT AVENUE SITE  
NEWBURGH HEIGHTS, OHIO

PREPARED FOR

CHEMETRON CORPORATION  
PITTSBURGH, PENNSYLVANIA

JUNE 1989

PROJECT NO. 89034

REMCOR, INC.  
PITTSBURGH, PENNSYLVANIA



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## 1.0 INTRODUCTION

In July 1988, Chemetron Corporation (Chemetron) submitted a Remediation Work Plan--Nuclear Regulatory Commission (NRC) Response--Harvard and Burt Avenue Sites--Newburgh Heights, Ohio (Plan) to the NRC to remediate the Harvard and Burt Avenue sites in Newburgh Heights, Ohio. This Plan was submitted under NRC License No. SUB-1357 (Docket No. 48-8724) and consisted of two principal elements as follows:

- A detailed work plan for the removal of trace contamination of uranium (U-238) from the Harvard Avenue Site to meet NRC requirements for unrestricted release of the former Chemetron property at this site
- A plan for further investigation development of a detailed remediation work plan for the Burt Avenue Site.

The NRC approved the Plan on November 2, 1988. Chemetron has begun implementation of the approved Plan. As part of Plan implementation, Chemetron directed its contractor, Remcor, Inc. (Remcor), to prepare this Proposed Remediation Work Plan Addendum (Addendum).

### 1.1 GOALS

The remediation work plan for the Burt Avenue Site concentrates on the following goals:

- Identification of the extent and location of U-238 contamination at the site
- Removal of the U-238 contamination within the site to acceptable levels
- Implementation of the remediation with proper and constant protection of the health and safety of all workers and of the public and protection of the site environment
- Careful control of excavation and other site work to remove the U-238 contamination with minimum disturbance or removal of materials placed in the site by other parties
- Verification of removal of U-238 contamination from the current work areas to the standards established by NRC.

## 1.2 GENERAL APPROACH

Unless specifically changed by this Addendum, all of the plans and procedures described in the Plan are in full effect and will be applied to work at the Burt Avenue Site if this Addendum is approved by the NRC. This Addendum is presented in five sections as follows:

- 1.0 - Introduction: outlines Addendum scope, organization, and approach
- 2.0 - References: lists the existing documents incorporated into the Addendum by reference
- 3.0 - Work Plan: description of the Burt Avenue Site work plan in general terms
- 4.0 - Procedures Modifications: details the procedural changes to be applied at the Burt Avenue Site compared to those used at the Harvard Avenue Site
- 5.0 - Schedule: presents a preliminary schedule for implementation of the Burt Avenue Site remediation.

## 1.3 SUMMARY

The proposed plan for remediation of U-238 contamination at the Burt Avenue Site consists of three major tasks as follows:

- Performance of a complete radiological survey of the site using the original NRC survey grid and emphasizing those areas not previously or completely surveyed
- Excavation of the identified materials with U-238 contamination working from east to west
- Completion, with NRC participation, of a second radiological survey to verify removal of U-238 contaminated materials from the excavated areas.

Using the available radiological data from NRC, a preliminary excavation plan has been prepared as Figure 1 of this work plan. Based on this excavation plan, a preliminary estimate of excavation volume has been prepared for each excavation area identified from the NRC data. These volume estimates are presented in Table 1. The estimated total excavation volume is 6,700 cubic feet (ft<sup>3</sup>).

## 2.0 LIST OF REFERENCES

This Addendum is based on several reference documents, and it is assumed that these documents will be applied, as appropriate, to all remediation work performed by Chemetron and its contractors at the Burt Avenue Site. These reference documents include the following:

- Confirmatory Radiological Survey of an Industrial Dump Site--Chemtron Corporation--Newburgh Heights, Ohio, by J.D. Berger, Oak Ridge Associated Universities, Final Report, August 1988 (prepared for NRC)
- Remediation Work Plan--NRC Response--Harvard and Burt Avenue Sites--Newburgh Heights, Ohio, by E.H. Rothfuss, Remcor, Inc., July 1988 (prepared for Chemetron)
- Code of Federal Regulations (CFR), Title 10, Parts 19, 20, and 30, and Title 29, Parts 1910 and 1926
- Health and Safety Plan--Remediation Activities--NRC Response--Harvard and Burt Avenue Sites--Newburgh Heights, Ohio, Remcor, Inc., April 1989 (prepared for Chemetron)
- Radiological Control Plan for Remcor, Inc., at the Harvard Avenue Site, Newburgh Heights, Ohio, Nuclear Energy Services, Inc., April 1989 (prepared for Chemetron)
- Radiological Control Standard Procedures, Nuclear Energy Services, Inc., May 1989, including:
  - Radiological Quality Assurance and Control (83A4806)
  - Radiation Worker Handbook (83A4807)
  - General Radiological Survey Procedure (83A4808)
  - Surface Contamination Program (83A4809)
  - Calibration and Maintenance of Survey Instruments (83A4810)
  - Airborne Radioactivity Program (83A4811)
  - Radioactive Check Source Accountability (83A4812)
  - Emergency Actions Procedure (83A4813)
  - Radioactive Waste Packaging (83A4814)
  - Housekeeping Procedure (83A4815)
  - Handling, Storage and Disposal of Radioactive Materials (83A4819).



These procedures will be modified and reissued as required to meet actual physical and radiological conditions at the Burt Avenue Site. If necessary, additional procedures and health and safety plan provisions will be prepared to address physical, chemical, and radiological hazards at the Burt Avenue Site.

### 3.0 GENERAL WORK PLAN

As described in Section 1.0, the work plan for remediation of the Burt Avenue Site consists of three major tasks. These tasks are described below.

#### 3.1 RADIOLOGICAL SURVEY

A complete radiological survey will be conducted of the Burt Avenue Site before remediation excavation is initiated. This survey will include the following activities:

- Reestablishment of the NRC survey grid by placing flagged stakes at the 10-meter grid nodes and tying the grid to the same physical features used in the original survey
- Conduct a complete walk-over survey with appropriate, calibrated instruments to identify and verify areas of elevated radioactivity
- Surface readings at grid points not previously reported, with emphasis on the eastern edge of the site
- Surface readings in areas of elevated surface activity
- Surface samples to be analyzed for uranium, thorium, and other isotopes, collected from areas of elevated surface activity
- Placement of shallow borings (depth of five to six feet), using a portable power auger, in selected locations within the areas of elevated surface activity
- Collection of samples from the shallow borings and analysis for uranium, thorium, and other isotopes
- Exchange of soil samples for confirmatory analysis and instrument calibration with NRC and Oak Ridge Associated Universities (ORAU)
- Preparation of appropriate results, tabulations, and site maps showing areas and depths of elevated concentrations attributable to U-238 contamination
- Preparation of a revised estimate of excavation quantities and a revised excavation plan.

### 3.2 REMEDIAL EXCAVATION

Using the data from this survey, combined with the earlier NRC data, remedial excavation of the U-238 contamination will be undertaken.

Excavation will be performed as follows:

- Every effort will be made to separate U-238 contaminated materials from other materials so that only U-238 contaminated materials will be removed
- Excavation, containerization, transportation, and disposal will be performed in strict compliance with the procedures applied at the Harvard Avenue Site, as modified by Section 4.0 of this Addendum
- Each portion of the excavation will be guided by a radiation technician with appropriate calibrated instruments
- Soil samples will be taken periodically to verify instrument calibration; samples will be split with ORAV for further verification
- Excavation will proceed from east to west and from north to south
- Excavation will proceed from the bottom of the slope areas toward the top to simplify drainage control
- Appropriate actions, including dikes, silt fences, and catchments, will be used to control drainage and prevent contaminated runoff
- Preliminary verification surveys will be conducted as each excavation area is completed
- Excavated materials will be packaged and inventoried for transportation and disposal
- Appropriate measures will be taken to control site access, monitor radiation, prevent contamination spreading, and provide adequate worker and public protection
- Appropriate documentation and recordkeeping will be performed to report and verify the work
- Remediation will include cleaning and/or removal of U-238 contaminated rubble



### 3.3 VERIFICATION

After remediation and preliminary verification are complete, arrangements will be made with NRC and ORAV to conduct prerelease verification. Every effort will be made to provide NRC and ORAV with adequate advance notice of site availability for verification. The object of verification will be certification of the site as free of U-238 contamination.

Verification procedures will include surface surveys, soil sampling analysis, and shallow borings. Chemetron's contractors will assist with verification and provide access to all available site and remediation records. Chemetron's contractors will also be available to promptly remove residual U-238 contamination found during verification.

The general verification procedures to be applied at the Burt Avenue Site will be those applied and proved at the Harvard Avenue Site. Verification will include free exchange of data and samples between NRC/ORAV and Chemetron.

#### 4.0 PROCEDURES MODIFICATIONS

Most of the work at the Burt Avenue Site will be performed using the procedures, methods, and equipment described in the approved Plan for the work at the Harvard Avenue Site. However, as a result of experience at the Harvard Avenue Site and observed conditions at the Burt Avenue Site, some procedural and equipment changes are planned. These changes are summarized below:

- Site preparation may include installation of a temporary fence or warning barrier along the eastern edge of the Burt Avenue Site.
- The boundaries of the site operations control zones may be moved as decontamination progresses to accommodate the sewer construction program.
- Survey methods will be modified as follows:
  - Methods and procedures for instrument operation, calibration, and maintenance developed between NRC/ORAU and Chemetron's contractors will be applied throughout the work
  - Chemetron has retained Remcor as its general contractor for this work; Remcor is using Nuclear Energy Services, Inc. (NES) as subcontractor for radiation analysis, health physics, documentation, and technical support.
- Instrumentation for site survey and excavation guidance will be as follows:
  - Ludlum-3 meters with 44-9 probes
  - Ludlum-2220 scalers with 120 probes.
- Excavation procedures will be modified to reflect the terrain and material types existing at the Burt Avenue Site.
- Excavation procedures will include the use of silt fence and other devices to control drainage and prevent contaminant migration.
- Efforts will be made to clean rubble and other materials to minimize ultimate disposal volumes.

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- Excavated materials will be placed in open-head 55-gallon drums meeting the U.S. Department of Transportation (DOT) Specification 17-H. Filled drums will be marked, weighed, cleaned, surveyed, and documented for shipment to disposal facility.
- Excavated material will be transported to Barnwell, South Carolina, for disposal in the Chem-Nuclear Systems, Inc. facility.
- Post-excavation verification will be performed in coordination with NRC/ORAV and in strict compliance with applicable procedures and standards.
- Site restoration will not be performed due to the current nature of the site and the possibility that work will be performed on site by other parties.
- A final report detailing work performed, testing results, verification results, and disposal certifications will be prepared at the end of the work.
- Additional changes in procedures and equipment, including health and safety programs and radiological testing, will be developed and applied as necessary to respond to actual conditions encountered at the Burt Avenue Site. The work will be conducted in a manner to provide adequate protection for the health and safety of the workers, the public, and the environment.



## 5.0 SCHEDULE

A schedule for excavation, verification, transportation, and disposal for the remediation program at the Burt Avenue Site will be prepared after the following:

- Remediation and verification are complete at the Harvard Avenue Site
- Initial radiological surveys are complete at the Burt Avenue Site.

The development basis of this schedule will include, but will not be limited to, the following site and project factors:

- Revised estimate of U-238 contaminated material volume at the Burt Avenue Site
- Projections of quantity and cleaning methods for U-238 contaminated rubble at the Burt Avenue Site
- Planned excavation methods and equipment
- Consideration of use of multiple excavation teams
- Schedule coordination with planned sewer construction programs
- Limitations imposed by weather and other site conditions beyond Chemetron's control
- Limitations imposed by Chemetron's bankruptcy proceedings
- Schedule coordination with NRC and NRC contractors for site verification surveys
- Actual transportation and disposal schedules offered by the selected providers of those services.

A preliminary schedule for remediation of the Burt Avenue Site is estimated as follows:

- Initial radiological survey - 2 weeks
- Excavation, rubble cleaning, packaging, and shipping preparations - 8 weeks

- Shipment and disposal - 4 weeks
- Verification surveys - 4 weeks
- Final report - 2 weeks.

This schedule is based on prior approval from NRC of this Addendum. It is also based on weather and other site-specific factors.

TABLE



TABLE 1  
ESTIMATED LOCATIONS AND VOLUMES OF ZONES  
OF ELEVATED U-238 CONCENTRATIONS  
OF THE BURT AVENUE DUMP SITE

ZONE	NRC <sup>(1)</sup> GRID LOCATION	ESTIMATED AREA (square feet)	ESTIMATED AVERAGE DEPTH (feet)	ESTIMATED VOLUME (cubic feet)
A	20N, 110E	270	0.5	135
B	30N, 80E	4,850	0.15	728
C	10N, 50E	2,500	0.5	1,250
D	80N, 40E	480	0.1	48
E	70N, 30E	970	0.1	97
F	70N, 10E	4,880	0.1	488
G	40N, 20E	2,140	0.1	214
H	45N, 0E	580	0.5	290
I	30N, 0E	700	0.1	70
J	20N, 0E	210	0.1	21
K	10N, 30E	5,410	0.2	1,082
L	0N, 10E	2,250	0.3	675
M	15S, 20E	1,180	0.3	354
N	20S, 0E	1,890	0.5	945
C	10S, 20W	590	0.5	295
Total				6,692

(1) NRC indicates Nuclear Regulatory Commission.

FIGURE

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