



SOHIO CHEMICAL COMPANY

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September 4, 1985

U. S. Nuclear Regulatory Commission  
Region III Material Licensing Section  
799 Roosevelt Road  
Glen Ellyn, IL 60137

Attention: Mr. Bill Adam - Material Licensing Section

Subject: Sohio Chemical Lima Decommissioning Proposal

Dear Mr. Adam:

Attached please find the Sohio Chemical "Outline of Proposed Plan to Decommission the Vistron Corporation, Lima, Ohio Facility Operated Under USNRC Byproduct Materials License No. SUB-908." It is Sohio Chemical's intent to clean up the Lima facility in accord with NRC guidelines. This proposal outlines the steps that Sohio Chemical intends to follow in order to decommission the Lima facility.

We seek a timely review of our plan and would like the opportunity to meet with the NRC as soon as possible to discuss the referenced proposal. Mr. B. C. Riddel will be contacting your office within a week to schedule a meeting at your location. As a first step toward plant decommissioning, we are planning to dismantle the No. 1 Acrylonitrile plant during the fourth quarter of 1985. As part of this job involves asbestos insulation removal, completion of this phase of work must take place prior to the onset of winter weather. A delay of the job until next year may pose a hazard to plant personnel as further deterioration of the insulation may occur over the winter.

Thank you for your consideration of our proposal. If you have any questions, please contact Mr. Ray Sudheimer at 419/226-1393, or Mr. Bruce Riddel at 419/226-1376.

Sincerely

J. W. Hougland  
Plant Manager, Lima Chemicals

CLG:JWH/11

Attach.

bcc: C. L. Gasperetti      B. C. Riddel  
     K. D. Latham        R. A. Sudheimer  
     R. W. Rich           F. Trejo (NES)

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OUTLINE OF PROPOSED PLAN TO DECOMMISSION THE  
VISTRON CORPORATION, LIMA, OHIO FACILITY  
OPERATED UNDER USNRC BYPRODUCT MATERIALS LICENSE  
NO. SUB-908

SUBMITTED TO

U.S. Nuclear Regulatory Commission  
Region III Material Licensing Section  
799 Roosevelt Road  
Glen Ellyn, IL 60137

PREPARED BY

Sohio Chemical Co.  
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P.O. Box 628  
Lima, OH 54802

September , 1985

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### REFERENCES:

1. U.S. Nuclear Regulatory Commission Materials License No. SUB-908, Amendment 01, Docket No. 040-07604, July 12, 1979.
2. "Radiological Survey of Vistron Corporation, Lima, OH - Draft Report," B.D. Rocco, ORAU, January 1983.
3. "Guidelines For Decontamination of Facilities and Equipment Prior To Release For Unrestricted Use or Termination of Licenses For By-Product, Source, or Special Nuclear Material," USNRC, July 1982.
4. "Guidelines For Concentration of Thorium and Uranium Wastes In Soil," USNRC, October 23, 1981.

## 1. INTRODUCTION

The Vistron Corporation, a subsidiary of the Sohio Chemical Company, produced, used, and marketed for an acrylonitrile manufacturing process a catalyst that contained small amounts of depleted uranium.

Production and use of this catalyst were conducted in accordance with USNRC by-products materials license number SUB-908 (see reference 1) during the period 1963 to 1971.

It is Sohio's intent to remove and dispose of all residual radioactive contaminants currently present on the licensed facility and to request termination of the referenced license as a prerequisite to release of the facility for unrestricted access and use.

This document presents the objectives and outline of a decommissioning plan that Sohio intends to implement in order to decontaminate the facility in accordance with all applicable requirements of Title 10 of the Code of Federal Regulations.

## 2. PLANT HISTORY

The licensed activities were conducted within the boundaries of the Sohio Chemical Company's plant located on Fort Amanda Road, approximately 1.5 km southwest of Lima, Ohio (see Figure 1). A general layout of the plant site is shown in Figure 2.

Following the cessation of catalyst production activities in 1971, contaminated materials were disposed of and clean recoverable catalyst was placed in temporary storage. A radiological survey of those plant areas associated with the catalyst production operations was conducted, in 1977, by Radiation Management Corporation (RMC). The survey determined that several areas of the plant were contaminated. This contamination was limited primarily to the surface soil; however, contamination was also found to be present in sediments from the holding ponds and on the exterior surfaces of a reactor tank in Acrylonitrile Plant No. 1 area.

Decontamination of the contaminated areas was performed and, in 1980, the last containers of radioactive materials were transported to and disposed of at the low-level radioactive waste disposal facility in Barnwell, South Carolina.

Following the clean-up campaign, a request was made of the USNRC to terminate the referenced license. Thereafter, the USNRC requested the Radiological Site Assessment Program of the Oak Ridge Associated Universities (ORAU) to conduct a radiological survey of the plant site. This survey was conducted in July 1982.

The results of the ORAU survey (see reference 2) determined that residual contamination in several areas of the plant site exceeded USNRC guidelines for unrestricted access.

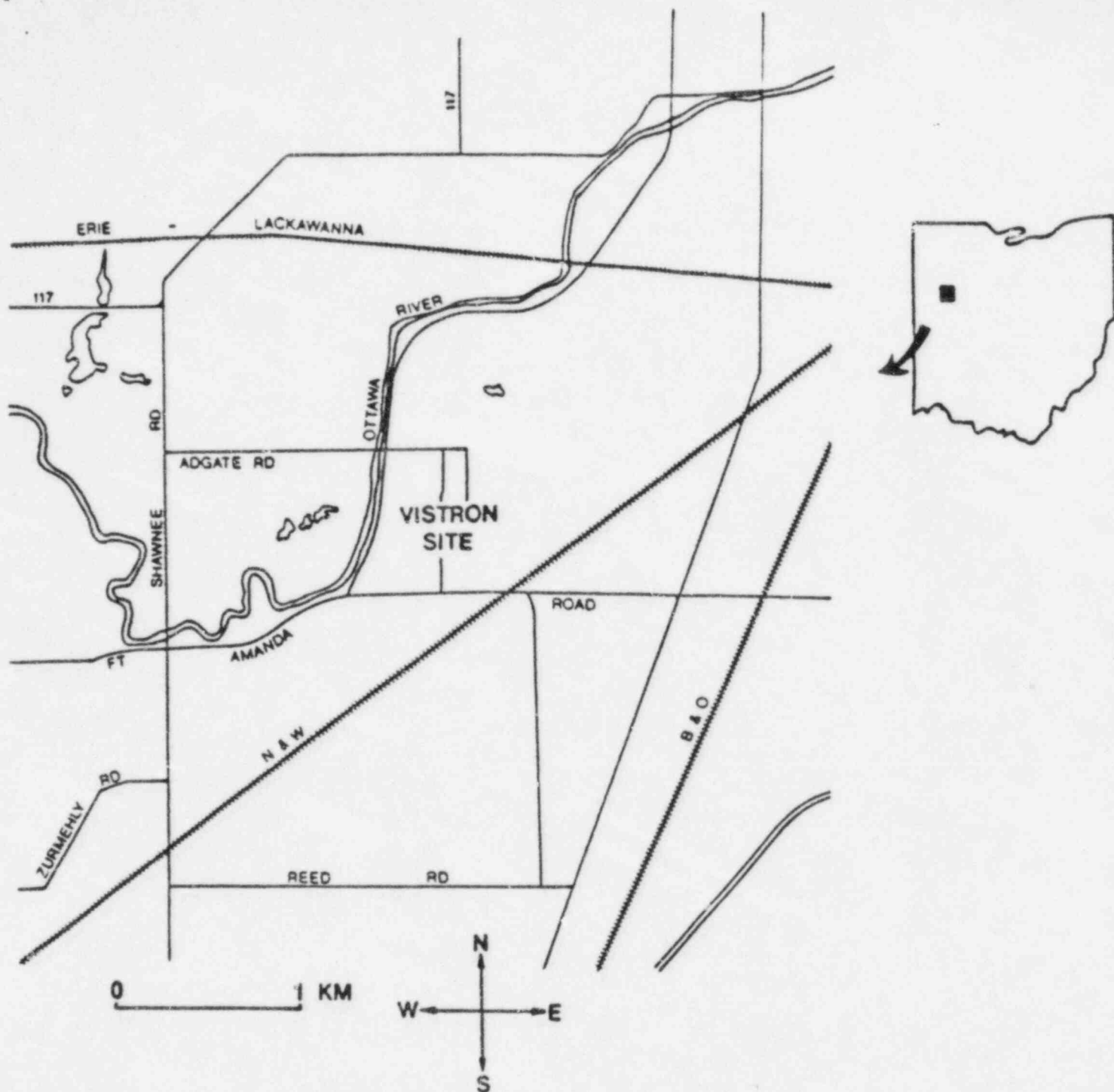


fig. 1. Area Map of Vistron Site, Lima, OH.

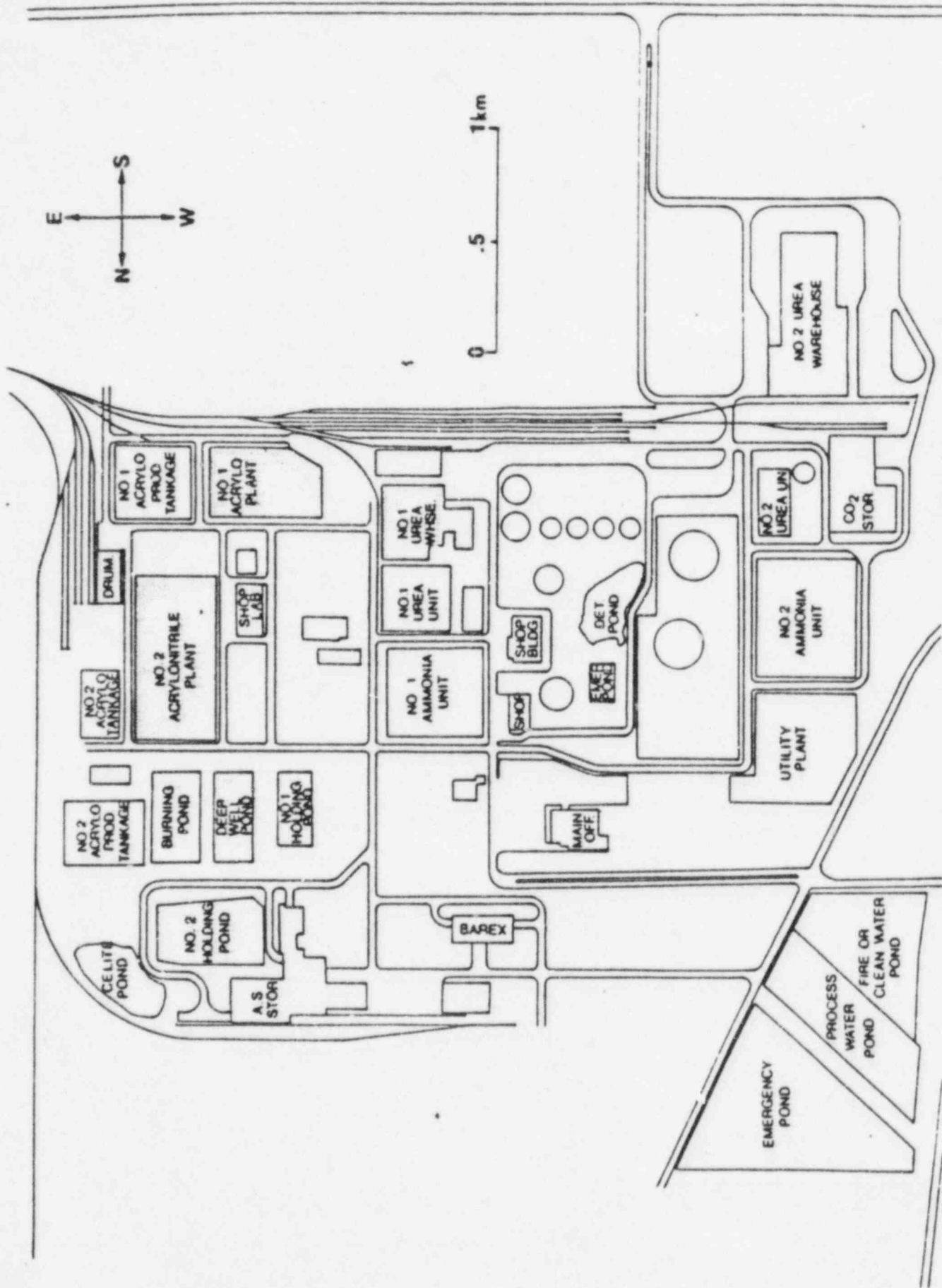


Fig. 2. General Layout of the Vistron Plant Site

### 3. DESCRIPTION OF THE CURRENT STATUS OF THE PLANT

The January 1983 ORAU survey report results showed that residual contamination existed in the following plant areas:

1. Catalyst plant
2. Buildings adjacent to the catalyst plant
3. Outside area adjacent to the catalyst plant
4. Acrylonitrile Plant No. 1
5. Storage area near the settling tank and incinerator
6. Acrylonitrile Plant No. 2
7. Urea Warehouse No. 1
8. Burning pond
9. Celite pond
10. Deep well pond
11. Holding pond 1 and 2

No activities have been undertaken by the licensee, since the time of the ORAU report, to remove or alter the location of the residual contamination.

On July 15, 1985, Sohio contracted with Nuclear Energy Services (NES), Danbury, Connecticut, to conduct a site radiological survey. The purpose of this survey is to determine the current location of all residual contamination (using the ORAU report as a guide) and to develop sufficient survey and sample analysis data to develop a detailed decommissioning plan.



#### 4. OBJECTIVES OF THE DECOMMISSIONING PLAN

An outline of the proposed decommissioning plan is presented in Section 5 herein.

The objectives of this decommissioning plan are as follows:

1. Perform a radiological survey to characterize the locations and levels of residual contamination presently on the licensee's plant site.
2. Establish measures to control the migration of transferable contamination.
3. Establish measures to minimize radiation exposure to personnel during the decommissioning of the plant site.
4. Establish measures to prevent off-site releases of contamination and thereby prevent exposure to the general public.
5. Develop and implement procedures for the removal and packaging of all contaminated materials.
6. Transport all contaminated materials to a licensed low-level radioactive waste disposal facility.
7. Develop and implement a quality assurance program to insure that all decommissioning activities are carried out in accordance with prescribed procedures and that adequate records are maintained in order to document the work performed.
8. Obtain termination of the referenced license and release of the plant site, by the USNRC, for unrestricted access and use.

## 5. DECOMMISSIONING PLAN OUTLINE

A detailed plan will be developed for the decommissioning of the licensee's plant site. This decommissioning plan will be developed to include the following information:

1. A clear description of the state of the plant before the decommissioning operations.
2. A description of the major activities of the decommissioning operations.
3. A description of the techniques to be used in the decommissioning operations.
4. Radiological surveillance.

Radiological surveillance is an essential element of a decommissioning operation. This surveillance should identify the magnitude and location of contamination. The identity and quantity of radionuclides will be identified by a sufficient number of measurements to provide a reasonable estimate of both the average and maximum levels of contamination on plant facilities and equipment. The radiation exposure rates in different areas of the plant will be identified.

5. Radiation evaluation.

The information obtained by the licensee in conduct of his radiological surveillance program will be utilized in the preparation of the decommissioning plan for evaluating radiation doses. This plan will be performed so that collective dose equivalents resultant from the decommissioning operation are within prescribed limits and ALARA.

A personnel monitoring program shall be prepared which will assure that the dose commitments are within the limits set by the USNRC.

Plant and equipment surveillance requirements will take into account the broad aspects of the preparation of appropriate work procedures, training of personnel (with particular regard to newly employed/contractor personnel), detailed planning of work undertaken in controlled areas and the continuous control of the equipment and materials which are within the responsibility of the licensee.

## 5. DECOMMISSIONING PLAN OUTLINE - continued

### 6. Effluents to environment.

Discharges of radioactive airborne and liquid effluents will be controlled in order to ensure the protection of the general public. These discharges, if any, will be measured and recorded, and the significance of these discharges determined.

Accurate, up-to-date records of gaseous and liquid waste releases and solid waste movement will be kept and maintained. Summary reports of radioactive waste movement will be prepared routinely by the licensee.

### 7. An estimate of the type and quantity of radioactive wastes to be generated during the decommissioning operations and the plans for their disposal.

### 8. Release criteria.

Release for unconditional use or reuse of sites, premises, equipment or material has as its objective the continued use or reuse without any regulatory control or monitoring procedure. Hence, the methods used to determine acceptable residual activity levels to enable premises, equipment, material, or sites to be used unconditionally will ensure that this objective can be achieved and continuously maintained without further assessment. The limits to be achieved will be those defined in reference 3 and 4.

### 9. Quality assurance.

A. The Decommissioning Quality Assurance Program will enable the various aspects of decommissioning to be controlled and provide the necessary documentary evidence that the objectives have been achieved as authorized.

B. The achievement of the objectives will be reached through a thorough analysis of the tasks to be performed, the identification of the skills required, the selection and training of personnel, the use of appropriate techniques and equipment, the determination of the standards or codes to be adopted and the provision of the necessary verification and control activities.

## 5. DECOMMISSIONING PLAN OUTLINE - continued

C. The Decommissioning Quality Assurance Program will require that the decommissioning activities are accomplished in accordance with written procedures and instructions. The preparation, review, approval and issue of documents which are essential to the performance and the verification of the work, such as specifications, procedures and instructions, will be subject to control.

D. Control measures will be established and documented to assure that:

- applicable regulatory requirements, criteria and limits are properly taken into account;
- plant items and materials are correctly identified and controlled;
- plant materials and equipment are properly handled and transported;
- modifications to decommissioning plans and amendments to technical documents are reviewed and duly approved;
- residual systems, structures and components are regularly inspected;
- the measurements and tests carried out are appropriate to the condition of the plant site to be decommissioned.

E. The duties and responsibilities of personnel involved and their lines of communication and authority will be clearly defined in an organizational plan.

Where multiple organizational arrangements exist, the responsibility of each organization should be clearly defined and the interfaces controlled.

F. An important aspect of the Decommissioning Quality Assurance Program will be the requirement for a record system to be maintained so that, at all times, adequate information is available to determine the condition of the various structures, systems and components.

## Scope of Work

### Radiation Detection and Control Plan for ANI Dismantlement

#### Outline

- I. Limits to Reach
- II. Policy on what to check
- III. Methodology
  - A. Finding and controlling Radioactive Contamination
  - B. Personnel/equipment protection
- IV. Future Decontamination Plans

This document specifies the radiation limits and methodology that will be used to control the radiation contamination during ANI dismantlement.

#### Plan

- I. Limits to Reach for Unrestricted Use
  - A. Surface Contamination Limit - above background:
    - 1. 5000 dpm alpha, beta, gamma/100 cm<sup>2</sup> averaged over 1m<sup>2</sup> or the total object if the object is less than 1m<sup>2</sup>.
    - 2. 15000 dpm alpha, beta, gamma/100 cm<sup>2</sup> maximum, for an area  $\leq$  100 cm<sup>2</sup>, on any one object or within any 1 m<sup>2</sup>.
    - 3. 1,000 dpm alpha, beta, gamma/100 cm<sup>2</sup> removable - determined by wiping the area with dry filter paper and testing the filter paper with an appropriate survey meter.
    - 4. The limits are applied and tested for independently for alpha and for beta, gamma.
  - B. Radiation Limits associated with beta, gamma surface contamination:
    - 1. 0.2 mrad/hour average at 1 cm - over  $\leq$  1m<sup>2</sup>
    - 2. 1.0 mrad/hour maximum at 1 cm - over  $\leq$  100 cm<sup>2</sup>
    - 3. These limits are above background

- C. U-238 nuclide concentration limit - above background.
  - 1. 35 pCi/gm of soil or insulation or other material in which U238 could be homogeneously mixed.
  - 2. This limit will be applied as an average value of all samples taken from a well-mixed material.
- D. Background will be as determined by the contractor on undisturbed soil and surfaces in or near the plant.
- E. U-238 concentration in water limit will be 40,000 pCi/liter for any free-standing water to be released to an unrestricted area.
- F. U-238 concentration in air limit will be 5 pCi/m<sup>3</sup> air in any area proposed as unrestricted.

## II. Policy

- A. Equipment and material will not be released from the Plant unless it meets the Unrestricted Use limits.
- B. Contaminated Material
  - 1. Material identified on previous surveys as having a definite contamination or radiation level above background will be put into radiological waste containers separate from other material.
  - 2. This contaminated material will be tested for all appropriate limits to determine if it is releasable.
- C. Equipment
  - 1. All equipment and bulky scrap (eg. pipes) will be checked for surface contamination where it might reasonably be expected to be found. (For example, catalyst piping and process piping from the reactors to the waste water column will be checked inside the piping, with special attention to testing low points and valve packings. Piping in the Purification area will not be checked inside the pipe, since there was no process condition that should have caused its contamination.)
  - 2. Where feasible, contaminated surfaces will be decontaminated in place by washing with water and degreaser if appropriate, then rechecked.
- D. Other Material
  - 1. All other material, such as insulation or soil not previously found to be contaminated, will be spot checked against the Unrestricted Use limits before release. The target will be to check 20% of this material for alpha, beta, gamma surface radiation and 1% for U-238 concentration.
  - 2. The percentage of checking for any area will be adjusted based on initial results.



3. Any container of material found to have surface radiation 0.05 mrad/hour or more above background will be sampled for U-238 concentration.
4. Dilution for Decontamination
  - a. Where safe and cost effective, containers of contaminated material will be mixed with uncontaminated material to bring the radiation levels below Unrestricted Use Limits, and then released.
  - b. Bags of asbestos will not be diluted with other bags of asbestos, to limit the hazard of asbestos handling.

E. Control of Contaminated Material

Any material found to have radiation levels above The Unrestricted Use limits, and not subsequently decontaminated, will be relocated to a controlled area on the Plant site and contained to prevent contamination of the environment or exposure of personnel.

F. Documentation

Records will be kept showing

- what equipment or material was tested
- its original location
- the results of the test(s)
- whether decontamination was attempted
- the results of any retest(s)
- where it was sent (i.e., to Waste Management, released to Tilton, radioactive containment area, etc.)

- G. Since the purpose of the testing is solely to assure that all released material is below Unrestricted Use limits, material will not be removed to a "clean" area for testing unless a high radiation level in its immediate vicinity is the primary factor in causing a test result to be over the limit.

III. Radiation Detection/Control Plan Methodology

A. Finding and controlling radioactive contamination

1. Receive NES radiation survey results
2. Pinpoint problem areas with appropriate alpha and beta, gamma survey meters. Mark problem areas (area showing a surface radiation level  $\geq$  0.05 mrad/hour above background).

3. Take steps to isolate or remove high contamination areas on ground, by covering or by placement in radioactive waste containers.
4. Asbestos removal
  - Check for radiation prior to removal
  - Bag asbestos per OSHA guidelines
  - Separate suspect asbestos from clean asbestos (in separate bags)
  - Check all asbestos for radiation prior to removal from site
    - Degree of check per Section II "Policy" as agreed upon with the NRC.
      - Anticipate varying degree of check based on test conducted in place
    - Contractor to perform checking to our criteria
    - Sohio Chemical to specify disposal method.
  - Material above the Unrestricted Use Limits to be removed to a "radioactive material containment area"
5. Pipe removal, vessel removal, miscellaneous equipment removal
  - Safety check of piping, vessels prior to cutting (see exposure limiting plan)
  - Pipe removed, tested and decontaminated, if necessary, in place.
  - Pipe tested (by radiation contractor) per agreed upon criteria with NRC
  - Sohio Chemical to specify disposal method
  - Degree of check may vary with location of pipe and equipment removed from unit
6. Soil and Underground Material Removal
  - Remove the soil by successively stripping thin layers of an area and testing for surface contamination with a survey meter.
  - When the soil surface radiation is no longer above Unrestricted Use limits, then sample the soil for U238 concentration.



- Place contaminated soil in containers, and remove them to the "radioactive material containment area."
- Decontaminate contaminated underground piping, if any, by washing it in place, being sure to contain the wash water to avoid any contamination of uncontaminated areas.

B. Demolition personnel, equipment protection

1. Prior to work starting, clean up of contaminated areas which pose a likely risk of personnel or equipment contamination.
2. All personnel in area during asbestos removal will be in full protective clothing until testing proves not required.
3. Following asbestos removal begin pipe and equipment removal.
  - A. Check pipe at several flanged connections (to be predetermined) for contamination.
  - B. Use respiratory protection during cuts at "hot" spots
  - C. During early phase of demolition use respiratory protection everywhere until testing proves it unwarranted.
  - D. For vessel cuts, enter vessels and test prior to cutting. Follow "B" if necessary.
  - E. Control ingress and egress to area through one gate. Check for radiation at the gate.
  - F. Check all equipment for radiation prior to leaving area. Decontaminate as necessary.
  - G. Use area monitoring to assure that demolition procedure is not compounding contamination problem.
  - H. Piping and vessel sampling should be highest in areas of likely contamination.

IV. Future Decontamination Plans

A plan for total plant decontamination leading to termination of our NRC license will be submitted after review of a survey and decontamination plan now being developed by NES.

*BC Riddell*  
BCRiddell/CLGasperetti:11  
August 19, 1985