

February 19, 1975

A-120

MEMO TO FILE

W. R. GRACE & CO., POMPTON PLAINS, N.J.
License No. STA-422

Next inspector - call W. R. Grace Co. to assure that new
owner is licensed.

R. O. McClintock

A-121

Seventh Site for
Radiological Survey by ORAU

7. W. R. Grace Company (formerly Rare Earths, Inc.)
Pompton Plains, New Jersey

Contact: W. T. Crow, NRC
NMSS/FC

Site Identification:

This site was used for a monazite sand processing facility as authorized by License No. STA-422. The license was terminated and the site was released for unrestricted use in January 1975. The site is still owned by W. R. Grace Company. Buildings on the site are being leased by Electro Nucleonics, Inc. for use as office, warehouse and possibly laboratory space.

General Survey Requirements:

A preliminary survey of this site was conducted by NRC, Region I, in January 1981. Preliminary evaluations indicate that this site may not meet current NRC criteria for release for unrestricted use. The site is to be surveyed to determine surface radiation levels and concentrations of naturally occurring radionuclides, thorium-232 and uranium-238 series, in soil and water.

An estimated date for the preliminary site visit shall be provided by ORAU in the next monthly report. A schedule for completion of the survey shall be provided subsequent to the site visit.

Arrangements for site visits should be made through W. T. Crow.

STATEMENT OF WORK (SOW) FOR
RADIOLOGICAL EVALUATION ASSISTANCE
FIN A 9093-0
B&R 50-19-01-01

1.0 Background

In a letter dated September 19, 1976, from Mr. Monte Canfield, Jr., Director, GAO, to Marcus F. Rowden, Chairman, NRC, Mr. Canfield mentioned GAO's survey of federal programs for disposing of obsolete and unused nuclear facilities and a related program by ERDA to evaluate former Government-owned and AEC contract sites that previously handled radioactive materials. Also discussed was a GAO concern about sites formerly licensed by AEC's regulatory body. Because of this concern, the GAO reviewed some records of licenses that have been terminated. This review indicated that licenses which were recently terminated contained adequate assurance of proper decontamination; however, the files on licenses terminated in the late 1950's and early 1960's did not contain evidence of decontamination in many cases. The GAO asked if NRC could provide assurance that no radiation safety problems exist at sites previously operated under an AEC license.

The NRC reply to Mr. Canfield's letter (L. V. Gossick to Mr. Canfield, dated October 15, 1976) indicated that we would reexamine our files - of licenses terminated prior to 1965. The Oak Ridge National Laboratory was retained to evaluate docket files to determine which sites, if any, would need additional on-site evaluation to determine if proper decontamination had been effected. To date, a number of sites formerly used for processing source material have been identified for further evaluation.

In addition to the sites identified through the docket search, radiological evaluation assistance may be required to confirm that currently licensed sites are properly decontaminated prior to license termination.

The NRC's Office of Nuclear Material Safety and Safeguards (NMSS) requires technical assistance for the evaluation of sites to determine if they have been properly decontaminated. The objective of the assistance for each site would be to:

1. Determine if radionuclides are present, or believed to be present, above allowable limits.
2. If radionuclides are present, or are believed to be present, above allowable limits to:
 - a. Determine the radionuclides present.
 - b. Determine the spatial distribution of the radionuclides above background.
 - c. Provide an estimate of the hazards involved.

2.0 Work Required

Technical support will be provided in the areas described below. When specific work requirements are identified, the NRC will issue task orders in the form of Standard Orders for DOE Work (NRC Forms 173). The task orders will describe the work to be performed, the type of report(s) that are to be prepared, and the desired completion date. The performing organization shall provide a cost estimate and milestone schedule for these tasks in the monthly letter status report (see paragraph 3.1 below). Approximately four task orders per year are anticipated, each of which will require an estimated one to two man-years of effort to complete. The work required in the task orders will fall within the following areas of work:

2.1 Preliminary Site Visit

The performing organization shall make a preliminary visit to the sites specified by the NMSS Project Manager (PM). The purpose of the visit is two-fold: first, to review the known history of the site with the licensee or local officials and to inspect the property and make exploratory radiation measurements in areas identified as housing licensed or previously licensed materials; and second, to evaluate the results of these discussions and measurements.

2.2 Development of Radiological Survey Plans

A radiological survey plan shall be developed for sites specified by the NMSS PM, and submitted to NRC for approval. Because of the wide variety of past operational activities as well as radioactive materials present at each site, it may not be possible to conduct formal surveys in accordance with a uniform survey plan. Just as any assessment activity is highly site specific, such is the case for radiation measurements and the collection of environmental samples.

The following list of activities is typical of those which will usually be included in a formal radiological survey and should be considered in the development of a radiological survey plan. This list is not intended to be either all inclusive or restrictive.

A. Gamma-ray exposure rates at 1 m above the ground outside buildings

A grid pattern is posted on plan views of the entire site. Measurements of gamma-ray exposure rate are made 1 m above the ground at the intersection of each grid line. These grid lines are normally spaced 10 to 50 feet apart and include points within property boundaries and points on surrounding property.

B. Beta-gamma dose rates at the ground surface

Detailed measurements are made of the beta-gamma levels at 1 cm above outside ground (natural, paved, or otherwise covered) surfaces in accordance with the above grid pattern. Open window and closed window G-M readings are made at each grid point.

C. Measurements of radionuclide concentrations in water

Water samples are taken from surface collections both on and off the site. In addition, samples shall be taken from any flowing streams which border each site both upstream and downstream as dictated by radiation measurements. Groundwater which may be found in core holes will be sampled and included with the above samples and analyzed for appropriate radionuclides.

D. Investigation of underground drains and surface drainageways

Because radioactive wastes and residues may have been stored on the surface or in on-site holding ponds, all known and suspected drainageways on each site and those leading away from each site should receive careful attention. Samples of scale are taken from all accessible drain lines. In surface drainageways leading away from the property, samples are collected in order to determine both downward and lateral movement of radioactivity. The location of these drains and drainageways are recorded on drawings. Since surface drainageways represent points of public access, sediment samples collected in these areas are analyzed for appropriate radionuclides.

E. Investigation of surface deposits of radioactivity

Samples of soil are collected on the ground surface both on and off the site in order to determine the location and quantities of surface deposits of radioactivity. The location of these samples normally corresponds to grid points where surface beta-gamma measurements were made.

F. Investigation of subsurface deposits of radioactivity

Extensive monitoring and sampling may be required in order to determine the magnitude of subsurface contamination. Areas of principal concern include sites where solid and liquid radionuclides were stored or buried. It is sometimes necessary to investigate the site of demolished buildings and also sites where residues and wastes have been moved for either temporary or permanent storage. Drilling and coring operations in these areas may be needed to define quantities and boundaries of underground deposits of radionuclides. Core samples shall be collected for analysis and each core hole shall be "logged" using collimated gamma-ray detector to verify the spatial distribution of radioactivity below the surface.

G. Radionuclide concentrations in air

Residues may exist which contain ^{226}Ra , ^{224}Ra , and ^{223}Ra resulting in the emanation from the residues of ^{222}Rn , ^{220}Rn , and ^{219}Rn . Measurements shall be made in order to establish instantaneous concentrations of these radon isotopes and their progeny.

H. Vegetation samples

A limited selection of vegetation samples of several species may need to be collected from areas representing the observed range of surface radioactivity. Analyses of the radionuclide concentrations in vegetation samples are determined after a determination has been made of the radionuclide concentrations in host soil.

I. Determination of background gamma radiation levels, concentration or radionuclides in soil and water, and concentrations of radon in air

A series of soil and water samples shall be collected in the area around each site in order to establish the background concentrations of radionuclides of interest. Gamma radiation levels at 3 ft. above the ground are also measured at each sampling point. In areas where radium bearing residues exist, a limited number of measurements are made to determine typical radon concentrations in areas far enough removed from the site so as not be influenced by radon emanating from the site.

J. Documentation of radiological survey

It will be necessary throughout the survey to maintain accurate records pertaining to such activities as: (1) instrument calibration, (2) location of individual survey measurements, (3) analytical procedures, (4) recording of data and results of sample analyses, (5) computer calculations, (6) assumptions made with regard to boundary conditions in evaluating radiological data, and (7) preparation of the final report of each formal survey. These records are needed in order to provide an element of quality assurance to the survey and to serve as the foundation for any future audit which may be necessary.

2.3 Conducting Formal Radiological Surveys

Once a radiological survey plan for a site is reviewed and approved by the NMSS PM, an appropriately staffed radiological survey team shall be mobilized and moved to the site. The objective of conducting formal radiological surveys at the sites is to characterize the current radiological status of the property. In order to accomplish this, the performing organization shall have available a modern, well-equipped mobile laboratory to serve as the established (on-site) survey headquarters station (see Section 5 below).

2.4 Preparation of Radiological Survey Reports

A radiological survey report should be prepared which summarizes the results of all survey activities performed under the radiological survey plan. In addition, the radiological survey report will include a description of the site and an evaluation of radiological conditions at the site.

The site description should include the location of the site and a description of its topography in sufficient detail to support an engineering evaluation, scaled maps of the site and the surrounding area, a discussion of the present physical condition of the site and, for background purposes, a brief description and history of the licensee operations conducted at the site.

The section of the report which evaluates the radiological conditions should describe the radiological conditions existing at the site and, based on those conditions, the potential routes or exposure pathways to mankind.

3.0 Reporting Requirements

Recognizing the complexities in the scheduling of site visits, radiological surveys and report preparation for a project of this type which may have to be responsive to everchanging priorities, it is intended and should be understood that all schedules and due dates will be discussed and mutually agreed upon by the performing organization's representative and the NMSS PM.

3.1 Monthly Letter Report

Each month, the performing organization shall submit three copies of a brief letter report which summarizes: (1) the work performed during the previous month, (2) personnel time expenditures during the previous month; and (3) costs: (a) current period, (b) cumulative to date, and (c) cost projection by month to completion of the work effort covered by this statement of work. The first monthly report shall provide the initial cost projection and subsequent reports shall either provide revised projections or indicate "no change in the cost projection." The monthly reports shall also include cost estimates and milestone schedules for tasks as specified by the NMSS PM. The reports shall be due by the 15th of each month with distribution as follows: Project Manager, NMSS (2 copies); Office of the Director, NMSS (Attn.: Program Support) (1 copy).

3.2 Technical Reports

A. Preliminary Site Visit Reports

Upon written notification by the NMSS PM that a preliminary site visit is to be made according to the schedule specified by the NMSS PM, the performing organization shall: (1) visit the site, and (2) submit a letter report describing the known history of the site, summarizing exploratory measurements, and evaluating these aspects of the site visit.

Six copies of each preliminary site visit report will be required with the following distribution: Project Manager, NMSS (5 copies); Office of the Director, NMSS (Attn.: Program Support) (1 copy).

B. Radiological Survey Plans

Upon written notification by the NMSS PM that a radiological survey plan is to be developed, the performing organization shall submit a radiological survey plan for the identified site according to the schedule specified by the NMSS PM. The survey plan shall be first submitted in draft form with the following distribution: Project Manager (5 copies); Office of the Director, NMSS (Attn.: Program Support) (1 copy).

The NMSS PM shall, within two weeks of receipt of the draft survey plan, submit his comments on the plan to the performing organization. Such comments are not intended to prejudice the performing organization's technical judgments, but are made to assure that the plan adequately addresses the work needed.

Within two weeks after receipt of the NMSS PM's comments, the performing organization shall submit a corrected and revised survey plan which reflects the NMSS PM's comments, with distribution as follows: Project Manager (8 copies); Office of the Director, NMSS (Attn.: Program Support) (1 copy).

C. Radiological Survey Report

As soon as is reasonable after completion of the on-site radiological survey, which will be authorized in writing by the NMSS PM, the performing organization shall submit a radiological survey report which summarizes the results of all survey activities performed under the radiological survey plan. The report shall be first submitted in draft form with the following distribution: Project Manager (5 copies); Office of the Director, NMSS (Attn.: Program Support) (1 copy).

The NMSS PM shall, within one month of receipt of the draft report, submit his comments on the report to the performing organization. Such comments are not intended to prejudice the performing organization's technical judgment, but are made to assure that the report adequately and clearly reports the work done and results obtained.

Within three weeks after receipt of the NMSS PM's comments, the performing organization shall submit a final survey report which reflects the NMSS PM's comments, with the following distribution: Project Manager (8 copies, 1 camera ready copy); Office of the Director, NMSS (Attn.: Program Support) (1 copy). The format of the final report shall be as specified for formal contractor reports in paragraph 12 of the Terms and Conditions for the Standard Order for DOE Work (SOEW).

4.0 Meetings and Travel

The performing organization will be required to visit each site for: (1) preliminary site evaluation and the preparation of radiological survey plans, and (2) radiological survey activities. Visits by the performing organization to NRC offices in Silver Spring, Maryland, may be required to discuss draft radiological survey plans and draft radiological survey reports.

5.0 NRC Furnished Material

NRC will provide the performing organization with copies of existing records including the docket file, if available, for each specified site. NRC will secure appropriate permission for all required site visits and also will notify the owners or operators of planned visits.

The mobile laboratory provided by NRC and outfitted under FIN A9090 will be used to the maximum extent possible in performing radiological surveys. If an additional mobile laboratory is required to perform the work required, the performing organization shall provide an estimate of the cost of acquiring and outfitting the mobile laboratory when such a determination is made.

6.0 Period of Performance

The work specified herein shall commence Sept. 25, 1980, and continue through fiscal year 1983.

7.0 Technical Direction

Mr. Ralph M. Wilde (FTS 427-4155) is designated the NMSS Project Manager (PM) for the purpose of assuring that the services required under this SOW are delivered in accordance herewith. All technical instructions to the DOE performing organization shall be issued through the NMSS PM. As used herein, technical instructions are those which provide details, suggest possible lines of inquiry, or otherwise complete the general scope of work set forth herein. Technical instructions shall not constitute new assignments of work or changes of such nature as to justify an adjustment in cost or period of performance. Directions for changes in cost or period of performance will be provided by the DOE Operations Office after receipt of an appropriate Standard Order for DOE Work (SOEW) (NRC Form 173) from the Director of the Office of Nuclear Material Safety and Safeguards (NMSS).

If the DOE performing organization receives guidance from the NMSS PM which is believed to be invalid under the criteria cited above, the performing organization shall immediately notify the NMSS PM. If the NMSS PM and the performing organization are not able to resolve the questions within five (5) days, the performing organization shall notify the DOE Operations Office.

8.0 Disposal of Property ,

Upon completion or termination of the program, a reconciled report will be developed jointly by DOE and NRC to record available material purchased with NRC funds. This report should be developed as soon as possible after program completion or termination decision has been made, but not later than sixty days after work termination date. The report should be submitted to the Property and Supply Branch, NRC.

FIN 9093
Priority List of Facilities for
Radiological Surveys

1. Vesical Chemical Corporation (formerly Michigan Chemical Corporation)
341 East Ohio Street
Chicago, Illinois 60611
License No. SMB-833 Terminated April 23, 1971

Contact: David B. Graham, Esq.
Deputy General Council
(Note: Initial contact should be through
NRC, W. T. Crow)

Site Identification:

The formerly licensed disposal site at the intersection of Madison Road and Bush Creek, approximately five miles east northeast of St. Louis, Michigan. The site is also known as the Breckenridge site. The legal description is, Sec. 23, T.12 N, R.2 W, Bethany Township, Gratiot County, Michigan.

General Survey Requirements:

The site is to be surveyed to determine the location of radioactive material, the quantities of material buried and the composition of the buried material. In addition, information should be obtained on the adequacy of coverage of buried material and on waste material migration. The radionuclides on site may include natural uranium, natural thorium, and their daughter products. Site survey to be completed by September 30, 1981.

2. Babcock & Wilcox Company
Nuclear Materials Division
609 North Warren Avenue
Appollo, Pennsylvania 15613
License-No. SNM-414 Docket No. 70-364

Contact: Mr. Michael A. Austin
Manager, Technical Control
(Note: Initial contact should be through
NRC, L. C. Rouse)

Site Identification:

Licensee's Parks Township site near Leechburg, Pennsylvania; Site is occupied by licensee's plutonium fuel fabrication facility, now undergoing decommissioning, and a decommissioned high enriched uranium fuel processing facility.

General Survey Requirements:

Physical surveys of the "Parks Township Site Burial Ground" are required with appropriate analyses and evaluations. The referenced burial ground consists of a number of trenches on the site that were used for burial of radioactive material from 1960 to 1970 by the predecessors of the firm that presently holds the NRC license for site activities. Basically, the physical surveys should confirm the exact location of the trenches, perhaps by subsurface radar imaging, following by soil and aquifer sampling to determine what, if any, migration may be occurring. Site survey to be completed by September 30, 1981.

3. United Nuclear Corporation
Uranium Recovery Plant
One Narragansett Trail
Wood River Junction, Rhode Island 02894
License No. SNM-777 Docket No. 70-820

Contact: Mr. C. E. Bowers, President
UNC Recovery Systems
(Note: Initial contact should be through
NRC, W. T. Crow)

Site Identification:

The 1100 acre site is located in Southwestern Rhode Island in Washington County. The site is 31 miles south southwest of Providence, R.I. The recovery facility occupies 5.6 acres in the approximate center of the western half of the site property, and is located about 1.3 miles (by road) southeast of the village of Wood River Junction.

General Survey Requirements:

The licensee is decontaminating the facility and the site prior to requesting termination of the license. These activities are currently scheduled to be completed in April 1981. A complete survey to confirm the adequacy of decontamination is required prior to decommissioning. The confirmatory survey should be completed by December 31, 1981.