

D00290720

MAD

Site Management Records:  
Recommendation for Site  
Visits and Screening  
Surveys

**ADMINISTRATIVE RECORD  
FOR THE MADISON SITE**  
MADISON, ILLINOIS

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**Site Management Records-**

Recommendation for Site Visits and Screening  
Surveys: Former Dow Chemical Co. Site, Madison,  
IL & Former General Steel Castings Corp., granite  
City, IL

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**US Army Corps  
of Engineers**  
St. Louis District®

MAD 0010.0245



OFFICE OF TECHNICAL SERVICES  
GERMANTOWN, MARYLAND 20874

May 24, 1988

Mr. Andrew Wallo, III  
Division of Facility & Site  
Decommissioning Projects, NE-23  
U.S. Department of Energy  
Germantown, Maryland 20545

SUBJECT: RECOMMENDATION FOR SITE VISITS AND SCREENING SURVEYS:  
THE FORMER DOW CHEMICAL PLANT, MADISON, IL; AND  
THE FORMER GENERAL STEEL CASTINGS CORP., GRANITE CITY, IL

Dear Mr. Wallo:

Preliminary investigations into operations sponsored by the AEC at the subject facilities during the 1950's and early 1960's have been completed. The results of these investigations indicate that there is limited potential for residual radioactive contamination at the former DOW Chemical Plant; and that sufficient information is not available to assess the potential for residual contamination at the former General Steel Castings facility. Records assembled indicate that there is authority for the Department of Energy to conduct remedial action at both facilities, if such is required. Therefore, site visits and screening surveys to determine the current radiological condition at both sites are recommended.

Briefly, our investigations of AEC sponsored operations at the subject sites included a review of the FUSRAP historical files pertaining to all sites in the vicinity of St. Louis, Missouri; a review of records left in place following termination of operations at the AEC Weldon Spring feed materials production plant near Weldon Spring, Missouri; and telephone interviews with representatives of the current owners of the facilities in question. The attached site summaries contain information obtained from records and from employees of the Spectrulite Consortium Inc., current owner of the former DOW Chemical plant in Madison, Illinois, and the Granite City Steel Company, current owner of the former General Steel Castings facility.

The principal documents collected during the investigation that will be included in the FUSRAP historical file are as follows:


- o Extract from Mallinckrodt Chemical Works Subcontract No. 25034-M with DOW Chemical Company, dated 15 March 1957, for research and development work in gamma phase extrusion of uranium metal.
- o Mallinckrodt Chemical Works' DOW Chemical Co. purchase order file for the period October 1957 through November 1965 that includes Purchase Order No. U-6862-M, dated March 9, 1960, for straightening uranium rod.
- o Mallinckrodt Chemical Works' General Steel Castings Corporation purchase order file for the period February 1958 through July 1965 for x-ray of material (uranium) at their facility at 1417 State Street, Granite City, Illinois.

Contact reports summarizing information received during telephone interviews with representatives of Spectrulite Consortium Inc. and the Granite City Steel Company were also prepared and included in the FUSRAP files.

Although the type of work and the period of involvement in AEC sponsored activities that included the handling or processing of radioactive material have been established, no records have been found that would indicate the radiological condition of the facilities at the termination of these activities. The period of involvement and the type of operations conducted at the former DOW Chemical Company plant suggest a limited potential for residual contamination even though provisions were made for cleanup of the site after completion of each operation. Except for the type of services performed at the General Steel Castings Corporation facility, little is known about the operations conducted. More specifically, no records were found that would indicate the manner in which the uranium metal was handled, the quantities of metal involved, or efforts on the part of Mallinckrodt or General Steel Casting to conduct radiological monitoring during and after each operation. Therefore, site visits to conduct scanning surveys are considered necessary to confirm that cleanup activities at the DOW plant were adequate and that the apparent lack of concern for residual radioactive contamination at the General Steel Castings facility was valid.

Please contact Charles Young of the OTS staff if you have question regarding the recommendations presented above or the information presented in the attached site summaries.

Sincerely,

  
L. R. Levis  
Project Manager

Attachments

cc: W. Murphie  
G. Turi  
J. Wagoner  
FUSRAP File

## ATTACHMENT 1

Spectrulite Consortium Inc.  
(Former DOW Chemical Company, Metal Products Division)  
College and Weaver Streets  
Madison, Illinois

### Site Function

The DOW Chemical Company offices and facilities in the St. Louis area were suppliers of materials (Chemicals, induction heating equipment, and magnesium metal products) and services under purchase orders issued during the late 1950's and early 1960's by the Mallinckrodt Chemical Works, a prime AEC contractor. Only one Mallinckrodt subcontract with DOW Chemical Company has been found. Subcontract No. 25034-M dated 15 March 1957 was for "...certain research and development work in gamma phase extrusion of Uranium metal, ...to be done at DOW's Madison, Illinois plant; ..." According to the subcontract, the work was to be performed in monthly work cycles of 28 hours each for 12 consecutive months. The makeup of each work cycle was defined as 6 hours for set-up time, 16 hours for experimentation (extrusion), and 6 hours devoted to cleanup.

In addition to auxiliary equipment and tool design, DOW supplied the use of its press, labor, and plant facilities necessary to perform the work cycles. Mallinckrodt responsibilities defined in the subcontract include: procurement and installation of the auxiliary equipment designed by DOW, and modifications to the dust arresting and other protective equipment required by plant area surveys made from time to time during the course of the work; arrangement for complete survey of breathing zone air quality to be conducted periodically by the AEC Health and Safety Laboratory; establishment of a program for area clearance after each cycle; and supply to DOW the uranium billets allocated for a work cycle (tentatively determined as 20 billets) and pick up the billets or extruded metal at the conclusion of a work cycle.

The only purchase order in the file discovered at the former AEC Weldon Spring Feed Material Plant covering the period July 1957 through November 1965 that involved the processing or handling of radioactive material at the DOW plant in Madison, was issued by the Uranium Division of the Mallinckrodt Chemical Works in March 1960. The purchase order was for straightening of Mallinckrodt supplied Uranium rod. Delivery of the rod to the DOW plant and pickup after the straightening operation was performed by Mallinckrodt personnel. Two rod straightening campaigns were identified in the purchase order. One was completed in December 1959. The other was completed in January 1960. Cleanup of the area after each campaign was identified and costed as a separate and distinct item in the purchase order. The actual periods of performance and the quantities of uranium metal involved in these operations is unknown. However, the total value of the purchase order and the unit cost identified with lot size indicate that the quantity of metal involved was probably small.

No other operation or period of involvement with the processing or handling of radioactive materials at the former DOW Madison plant have been discovered.

### Site Description

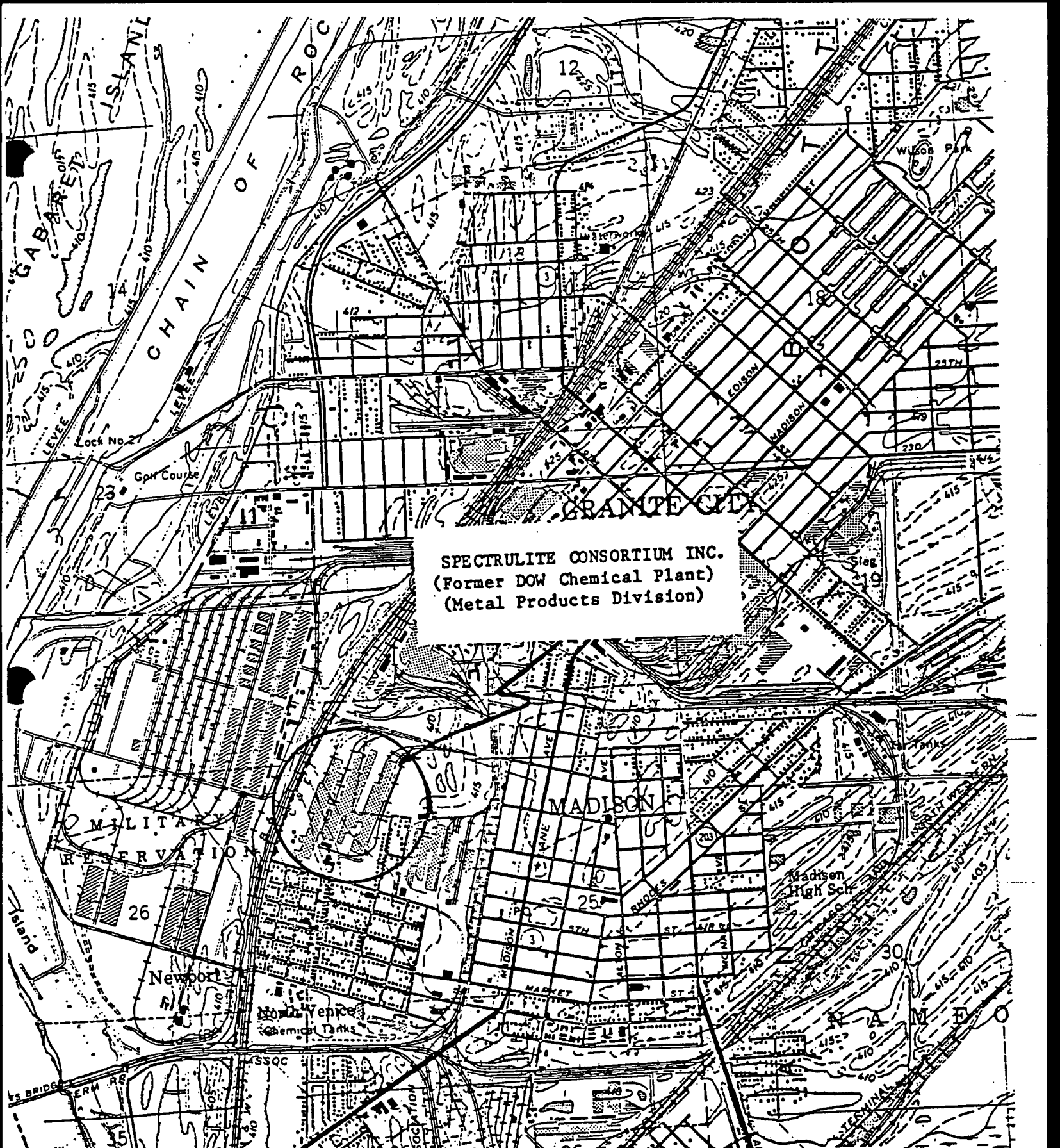
Madison, Illinois, is located northeast of St. Louis, Missouri, across the Mississippi River. The former DOW Chemical Company plant is located in west Madison at the intersection of College and Weaver Streets (see the attached map). According to a representative of Spectrulite Consortium Inc., the extrusion department of the plant where the work described above was performed is still in use, extruding aluminum and magnesium metal. Documents describing the plant layout during the 1950's and 1960's have not been obtained.

### Owner History

The Madison plant was apparently owned and operated by the DOW Metal Products Division of DOW Chemical Company during the 1950's and 1960's. The plant was sold by DOW Chemical in 1969. The current owner and operator of the plant is Spectrulite Consortium Inc.

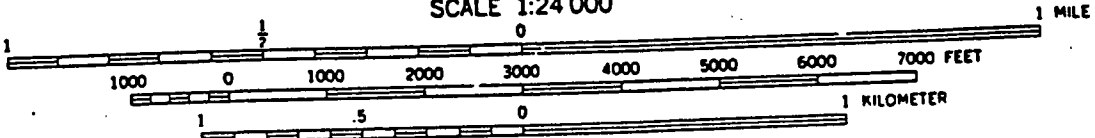
### Radiological History

Both the subcontract and purchase order described above indicate that the Mallinckrodt Chemical Works was responsible for cleanup of the plant facilities after completion of operations involving the processing of uranium metal and health and safety during the operations. However, no records have been found that would indicate the particulars of Mallinckrodt's health and safety program at the plant or the degree of success of the cleanup operation. The subcontract and purchase order indicate that Mallinckrodt retained accountability for the uranium metal through out the operations. They delivered the metal to the plant. And, after completion of the operations, unused and finished product and residues were removed from the plant. Records indicating the configuration and quantities of uranium metal involved in these operation have not been found.



SPECTRULITE CONSORTIUM INC.  
(Former DOW Chemical Plant)  
(Metal Products Division)

SCALE 1:24 000



CONTOUR INTERVAL 10 FEET  
DOTTED LINES REPRESENT 5-FOOT CONTOURS  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MC KINLEY  
776

Handwritten notes and scribbles at the bottom of the map, including the number '201' and various illegible markings.

Granite City Steel Company  
(Former General Steel Castings Inc.)  
20th and State Streets  
Granite City, Illinois

#### Site Function

General Steel Castings Corporation, located at 1417 State Street in Granite City, Illinois, was the custodian of a government owned betatron believed to have been used in support of contracts with the Department of the Army. Purchase orders issued by the Uranium Division, Mallinckrodt Chemical Works from February 1958 through June 1966 indicate that Mallinckrodt, under the direction of the AEC, used this facility to x-ray uranium metal. The purchase orders issued by Mallinckrodt indicate that General Steel Casting furnished the film and film developing services. Although not specifically stated, the scope of work described in the purchase orders suggests that Mallinckrodt personnel may have handled the uranium metal and operated the betatron equipment used to x-ray the metal. The purchase orders do not specify actual periods of operation or the quantity and configuration of the metal x-rayed. There are indications that the metal was in the form of dingots 18 to 20 inches in diameter and approximately 18 inches long, weighing up to 3,000 pounds, and that use of the facility was on an as required basis.

No other operation or period of involvement with the processing or handling of radioactive materials at the General Steel Castings Corporation facilities have been discovered.

#### Site Description

Granite City, Illinois, is located northeast of St. Louis, Missouri, across the Mississippi River. The former General Steel Castings plant is located in southwest Granite City at 20th and State Streets, east of the B&O railroad. The betatron and support equipment is located in a building on the southern section of the plant property (see the attached map).

#### Owner History

Initial purchase orders were issued to the General Steel Castings Corporation at 1417 State Street in Granite City. The purchase order dated 14 July 1961 and subsequent purchase orders were issued to General Steel Industries, Inc., at the same address. Current owner of the plant site is the Granite City Steel Company. The site is called the South Plant facility of the Granite City Steel Division. A more precise succession of ownership has not been developed.



## Radiological History

No records have been found that would indicate any anticipation of residual radioactive contamination as a result of the operations conducted at the facility or if cleanup activities were conducted following periods of use of the betatron equipment by Mallinckrodt. Telephone conversations with Granite City Steel Company representatives revealed that the "Betatron Building" is not currently being used. However, the equipment is still in place. From their descriptions, it is apparent that the building has not been used since it was vacated by General Steel Industries, Inc. No records have been found that would indicate the radiological condition of the environment in and around the building at the completion of work under the Mallinckrodt purchase orders.

GRANITE CITY STEEL COMPANY  
South Plant Facility  
(Former General Steel Industries, Inc.)

GRANITE CITY

BETATRON BUILDING

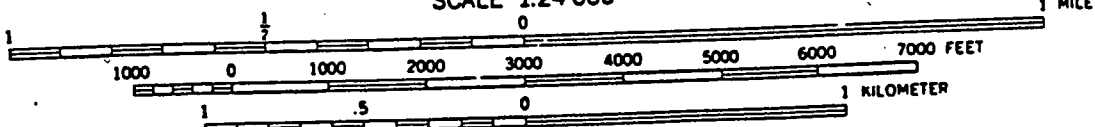
MILITARY RESERVATION

Newport

North Venice  
Chemical Tanks

Madison High Sch

SCALE 1:24 000



CONTOUR INTERVAL 10 FEET  
DOTTED LINES REPRESENT 5-FOOT CONTOURS

