

memorandum

DATE: **SEP 25 1992**

REPLY TO
ATTN OF: EM-421 (W. A. Williams, 903-8149)

SUBJECT: Designation for Remedial Action at the Granite City Steel Site in Madison, Illinois

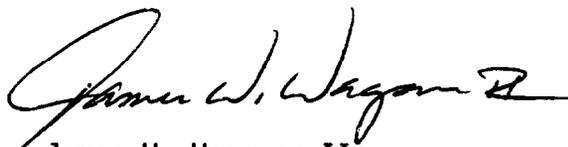
TO: L. Price, OR

The site of the Granite City Steel Division, National Steel Corporation in Granite City, Illinois, is designated for inclusion in the Formerly Utilized Sites Remedial Action Program (FUSRAP). This designation is based upon the results of a radiological survey and review of other information described in the attached Designation Summary. The authority determination and preliminary survey report also are attached for information.

The site has been assigned a low priority under the FUSRAP protocol as the contamination is confined to a few areas in an unused building. Under present use, it is highly unlikely that an individual working near or frequenting the area would receive a significant exposure.

Because the contamination is limited in extent and contained entirely inside the building, we recommend that cleanup follow the proposed expedited protocol that is currently under development. We will work closely with your staff, the designation contractor, and the property owner to ensure that remedial action is conducted efficiently.

The effect of this designation on the FUSRAP baseline should be evaluated, documented and submitted for approval under the baseline change control procedures.



James W. Wagoner II
Director
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachments

bcc:
Weston

Distribution:

EM-40 (2)
EM-42 (3)
EM-FOR
EM-GTN
Pat Suspense
Williams Reader



EM-421:wagoner:djn:903-8145:9/18/92:granite.dsg

P. Hevner Review: pk 10/1
M. White Review: mhw 10/11

Williams *ll*
EM-421
9/18/92
Wagoner
EM-421
9/25/92

Fulmer
EM-42
9/25/92

Rhone
EM-42
10/9/92

Baoblitz
EM-40
10/5/92

Wittfield
EM-40
10/7/92

**FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM**

**DESIGNATION SUMMARY
FOR THE
GRANITE CITY STEEL DIVISION
IN GRANITE CITY, ILLINOIS**

September 1991

**U.S. Department of Energy
Office of Environmental Restoration**

Designation Summary
Granite City Steel Division

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INTRODUCTION

The Department of Energy (DOE), Office of Environmental Restoration, has reviewed the past activities of the Atomic Energy Commission (AEC) at the Granite City Steel Division site in Granite City, Illinois, and has completed a radiological survey of the site (Cottrell and Carrier, 1990). DOE has determined that residual radioactive materials at several localized areas inside an unused building exceed current DOE radiological guidelines (DOE, 1987, 1990) for use without radiological restrictions. The survey results indicated that there is no immediate risk to workers or the general public from the residual contamination at the facility.

Based on a review of the available historical information and the results of the survey, the DOE has concluded that this site shall be designated for remedial action under the Formerly Utilized Sites Remedial Action Program (FUSRAP) and assigned a low priority. The remainder of this report summarizes the site information and the designation decision.

BACKGROUND

Site Function (Williams, 1991)

The General Steel Castings Corporation, the site occupant prior to the Granite City Steel Division, x-rayed uranium ingots for the AEC under purchase orders issued by Mallinckrodt Chemical Company, a prime AEC contractor. General Steel Castings was the custodian of two government-owned betatrons believed to have been used in support of contracts with the Department of the Army. The Uranium Division of the Mallinckrodt Chemical Works issued purchase orders from 1958 through 1966 to use the betatron/x-ray apparatus on Mallinckrodt supplied uranium dingots. The facility was used on an "as required" basis, with film and film developing services provided by General Steel and uranium handling conducted by Mallinckrodt. The dingots, which weighed almost 3000 pounds, probably were brought into the building by rail. The residual radioactive material present at the site is likely the result of handling operations such as rubbing off of oxidized uranium during handling.

Site Description

The Granite City Steel Division is located at 1417 State Street in southwest Granite City, Illinois, which is northeast of St. Louis, Missouri, across the Mississippi River. The two Allis-Chalmers betatrons (Magnetic Induction Electron Accelerators) still remain in a building on the southern section of the plant property. The site, referred to as the South Plant Facility, is no longer in use.

Owner History

The site was owned by the General Steel Castings Corporation. In 1961, follow-on purchase orders were issued to General Steel Industries, Incorporated. Apparently the corporation changed names and possibly ownership. The site is currently owned by the National Steel Corporation, a subsidiary of National Intergroup. By the time the plant was purchased by National Steel, the site had been vacated by General Steel.

Radiological History and Status (Cottrell and Carrier, 1990)

No records have been found indicating any anticipation of residual radioactive contamination or actual conduct of clean up activities. In 1989, DOE conducted a radiological survey to establish the current radiological condition in and around the building in which the x-ray equipment is housed. Survey results showed that small amounts of residual radioactivity from former operations remain in several discrete areas in the x-ray building at the Granite City Steel facility. Uranium-238 was found in elevated concentrations in debris from an industrial vacuum cleaner, and in dust and debris in several small locations throughout the building. These levels are in excess of the applicable DOE guidelines (USDOE 1990, 1987).

The survey also located elevated soil concentrations of Radium-226 in excess of DOE guidelines for surface and subsurface soils. The radium was found to be in equilibrium with uranium. Such equilibrium is indicative of naturally occurring material, perhaps cinders or coal ashes, and the elevated concentrations outdoors are not the result of the uranium metal work performed for Mallinckrodt.

Authority Review (Williams, 1991)

In 1991, the DOE determined that it has the authority to conduct remedial action on the interior residual radioactivity (USDOE, 1986; Williams, 1991). This determination of authority was based upon the following significant factors:

- o The uranium was owned by the AEC and delivered to the Granite City Steel site by Mallinckrodt personnel.
- o The AEC approved the use of the site for the x-ray services by the approval of purchase orders.
- o The betatron machine used for the x-ray studies was owned by the government.
- o The Mallinckrodt contract indemnified Mallinckrodt against any loss caused by atomic energy hazards from its activities.

DESIGNATION DETERMINATION

Survey results indicate that there is residual radioactive contamination at the site. The DOE has authority to conduct remedial action on the interior contamination at the site under FUSRAP. This authority is based upon the documented use of the site by Mallinckrodt and the AEC.

Because the contamination is highly localized, confined to a few areas, and contained inside an unused building, the site is classified as a low priority site. The low priority classification is derived from the ranking procedure of the FUSRAP protocol (USDOE, 1986). The present use of the site does not constitute a significant risk to the workers on-site or the general public.

REFERENCES

Cottrell, W.D., and R.F. Carrier, 1990: Results of the Radiological Survey at the Granite City Steel Facility, Granite City, Illinois. ORNL/RASA-89/10, July.

United States Department of Energy (USDOE), 1986: Formerly Utilized Sites Remedial Action Program, Summary Protocol, Identification - Characterization - Designation - Remedial Action - Certification. Office of Nuclear Energy, January.

USDOE, 1987: U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites. Revision 2, Office of Nuclear Energy, March.

USDOE, 1990: Radiation Protection of the Public and the Environment. DOE Order 5400.5. Office of Environment, Safety, and Health, February 8.

Williams, W.A., 1991: "Authority Determination -- Granite City Steel Site, Granite City, Illinois." DOE correspondence from Office of Environmental Restoration to file, March 11.

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fw

ORNL/RASA-89/10

**OAK RIDGE
NATIONAL
LABORATORY**

MARTIN MARIETTA

**RESULTS OF THE
RADIOLOGICAL SURVEY
AT THE
GRANITE CITY STEEL FACILITY,
GRANITE CITY, ILLINOIS**

W. D. Cottrell
R. F. Carrier

OPERATED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

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ORNL/RASA-91/8

**OAK RIDGE
NATIONAL
LABORATORY**

MARTIN MARIETTA

**Results of the Radiological Survey
at the New Betatron Building,
Granite City Steel Facility,
Granite City, Illinois
(GSG002)**

**M. E. Murray
M. S. Uziel**

**MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY**