

MALLINCKRODT CHEMICAL WORKS, Building No. 51
(~~Mallinckrodt Inc.~~)
Bounded by Lane F, Buildings 51A and 52, Lane G
and Building 50
St. Louis, Missouri

HABS No. MO-1929-B

HABS
MO
96-SALU,
134B-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Buildings Survey
National Park Service
Great Plains Support Office
1709 Jackson Street
Omaha, Nebraska 68102-2571

HISTORIC AMERICAN BUILDINGS SURVEY
MALLINCKRODT CHEMICAL WORKS, BUILDING 51
(Mallinckrodt Inc.)

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96-SALU,
134B-

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Location: Bounded by Lane F, Buildings 51A and 52, Lane G and Building 50, Mallinckrodt and Second streets, St. Louis, Missouri
USGS Granite City, Illinois-Missouri Quadrangle (7.5'), Universal Transverse Mercator Coordinates: 744288 E; 4282765 N

Present Owner: Mallinckrodt Inc.

Original Use: Foundry, Buck's Stove and Range Company

Present Use: Demolished September 1996

Significance: One of 16 buildings at Mallinckrodt Chemical Works associated with the Manhattan Engineer District/ Atomic Energy Commission (MED/ AEC)—sponsored program to process uranium for use in the development of atomic weapons, Building 51 was used to digest and treat U_3O_8 (black oxide) feeds as part of the process to purify uranium.

PART I. HISTORICAL INFORMATION

A. Physical History

1. **Date of erection:** Building 51 was built between 1935 and 1941.
2. **Architect:** The architect for this building is unknown.
3. **Original and subsequent owners:** The original owner of the site where Building 51 is located was the Buck's Stove and Range Company, founded before 1883 in the North Broadway industrial section along the Mississippi River. The site of Building 51 was a foundry for the stove company. The foundry was demolished and the property was bought by Mallinckrodt Chemical Works (MCW) in 1935.
4. **Builder-contractor:** The contractor is unknown.
5. **Original plans and construction:** Built between 1935 and 1941 this building, measuring 38'-6" x 122'-6", served as a factory for the Mallinckrodt Chemical Works' uranium processing facilities. It is unknown whether there are original plans extant.
6. **Alterations and additions:** There have been a number of alterations to Building 51, including openings at the northwest and northeast corners, formerly infilled with wood-frame transit, have been bricked in on the northwest corner and infilled with corrugated fiberglass on the northeast corner. The overhead door opening on the south side was infilled; the overhead door from the opening on the east side was removed; and windows on the east, south, and north sides were infilled with corrugated fiberglass.

B. Historical Context

The "Building 50 series" (50, 51, 51A, 52, 52A), constructed between 1883 and 1941, consist of five interconnected industrial warehouse buildings. The area where Buildings 51 and 52 were located originally was the foundry for the Buck's Stove and Range Company. The Buck's Stove and Range Company, located in the block between Mallinckrodt, Destrehan, Second, and Main streets, was founded in 1846 by Charles H. Buck in partnership with Wiley S. Wright. The company manufactured gas stoves, heating stoves, coal and wood ranges, gray iron castings, and porcelain and enamel ware. It was

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incorporated in 1875, and maintained warehouses in Chicago, Los Angeles, and San Francisco.

The company facilities consisted of several foundries, a casting house, enameling house, mounting, plating and polishing building, warehouses, offices, sample showrooms, a carpenter and pattern shop, pattern vault, tin shop, and boiler building. The majority of the buildings were brick with several wood or corrugated metal buildings as well.¹

In 1935, Mallinckrodt Chemical Works purchased the western half of the Buck's Stove Company (Block 1207). At some time between 1935 and 1941, Building 51, of which 51A is a part, was constructed. In April 1942, when MCW became involved in purifying large batches of uranium oxide for the U.S. government as part of the wartime effort to develop the atomic bomb, Buildings 50, 51, 51A, 52, and 52A were taken over as the production site for the purification of the uranium oxide. The purification process took place in five stages: conversion of the uranium oxide to uranyl nitrate (which Mallinckrodt had sold for years as an analytical reagent), purification of the uranyl nitrate by ether extraction, recovery of the uranyl nitrate from the ether, conversion of the uranyl nitrate to uranium trioxide, and, finally, the reduction of uranium trioxide to uranium dioxide.²

According to Henry Schroer, a welder working to excavate a new floor during the conversion of Buildings 51 and 52 to uranium processing, hundreds of Civil War cannonballs were found, that had been stockpiled at the Buck's Company foundry.³ These apparently had remained after the foundry was demolished.

Building 51 was used to digest and treat U_3O_8 (black oxide) feeds. The crude oxide was added to hot concentrated nitric acid in large covered stainless steel tanks. Each tank had a coil for heating with steam or cooling with water, a propeller-type agitator, a manhole through which the feed could be added, a temperature indicator, and a duct for exhaust fumes. The resulting crude uranyl nitrate was then filtered through a stainless steel filter press and concentrated in tanks equipped with steam coils to the boiling point of pure

¹ North St. Louis Businessmen's Association, *Who's Who in North St. Louis* (St. Louis: A.S. Werrenmyer, 1925), 303; Whipple's *Fire Insurance Map of St. Louis, Missouri* (St. Louis: A. Whipple, 1897), 136.

² The History Factory, *Mallinckrodt 125th Year Anniversary* (Washington, D.C., 1992), 57.

³ Jeanelle Hoffert, "These Things I Remember . . .," *Uranium Division News*, June 1962: 34.

uranyl nitrate hexahydrate.⁴ This uranyl nitrate solution was then taken to Building 52 for ether extraction.

PART II. ARCHITECTURAL INFORMATION

A. General Statement

1. **Architectural character:** Building 51 is an industrial brick building constructed as an infill between buildings 50, 52, and 52A. The building has been so altered that none of its architectural integrity remains.
2. **Condition of fabric:** The fabric is in poor condition: the brick is spalling; and the concrete floor is cracking.

B. Description of Exterior

1. **Overall Dimensions:** Building 51, a two-story building, is rectangular in shape, and measures 48'-6" in width x 122'-6" in length x 24' in height. Two 6' concrete walls extend from the high overhead door, opening on the north side.
2. **Foundation:** The foundation is concrete on the north, east, and south sides, and native limestone rubble on the west side where it shares a wall with Building 50.
3. **Walls:** The load-bearing brick walls are painted red.
4. **Structural system, framing:** Building 51 has load-bearing brick walls, brick piers, and wood king-post trusses with pipes and turnbuckles. The piers are two bricks deep and three bricks wide on the east side, and one brick deep and three-and-one-half bricks wide on the west side.
5. **Porches:** There are no porches or steps.
6. **Chimneys:** There are no chimneys.

⁴ Charles D. Harrington and Archie E. Ruehle, *Uranium Production Technology* (New York: Van Nostrand, Inc., 1959), 126.

7. **Openings:**

- a. **Doorways and doors:** Building 51 has three exterior doors. On the north side is one single metal door with an 8" wire-glass window, and an overhead door of horizontal corrugated metal. On the south side, set within an overhead-door opening that has been infilled with corrugated fiberglass, is a single metal personnel door with an 8" wire-glass pane. On the east side is a wide metal framed opening with no doors.
- b. **Windows:** On the north side are three upper windows: one large industrial opening extending to the roof-line at the second floor level with corrugated fiberglass infill; one large opening, the width of the overhead door, also extending to the roof-line; and one narrow window opening, above an overhead door. On the south side at the second floor level are three small windows infilled with corrugated metal/fiberglass and one large corrugated fiberglass window, centered above the overhead door. On the east side, at the second floor level, are two small windows infilled with corrugated fiberglass. On the west side, on the interior walls, are multi-paned industrial wire glass windows in metal frames.

8. **Roof:**

- a. **Shape, covering:** The flat roof, covered with rolled asphalt, has two sawtooth skylights at the center of the building.
- b. **Cornice, eaves:** A square metal gutter extends the length of Buildings 51A, 51, 50 on the north side. A wood cornice runs the length of the east side. There is a metal gutter along the south side.
- c. **Dormers, cupolas, towers:** There are no dormers, cupolas or towers.

C. **Description of Interior**

1. **Floor plans:** There is one large room in Building 51.
2. **Stairways:** There are no stairways.

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3. **Flooring:** The building has brick floors that have been covered with concrete.
4. **Wall and ceiling finish:** The walls are covered with brick, one wythes thick.
5. **Openings:** On the east side three bricked openings with brick piers have been infilled with corrugated fiberglass. On the west side, one large brick opening to Building 52 has been infilled with hollow clay tile and a small wood door. This door to Building 50, now nailed shut, has multi-paned industrial windows centered above it. These windows have been painted.
6. **Decorative features and trim:** A number of concrete pads, both round and rectangular, were built on the floor for iron salts processing. The concrete pads are now cracked and broken.
7. **Hardware:** There are two fire system water pipes and wheels at the south wall.
8. **Mechanical equipment:**
 - a. **Heating, air conditioning, ventilation:** The building was heated with steam heat from Building C in Plant 1.
 - b. **Lighting:** The lighting have round metal enamel covers with single bulbs.
 - c. **Plumbing:** There are no bathrooms. A system of water pipes, with wheel valves, is located on the south wall.
9. **Furnishings:** The building is vacant. A number of circular and rectangular concrete slabs remain that formerly held equipment.

D. Site

1. **General setting and orientation:** The 50 series buildings (50, 51, 51A, 52, 52A) are located in Plant 2, set within a number of new buildings on the north, south, and west sides. Oriented east-west, the five buildings are connected and appear as a single unit.
2. **Historic landscape design:** The setting is industrial and there was no landscaping.

PART III. SOURCES OF INFORMATION

A. **Architectural Drawings:** Original drawings for this building were not located.

B. **Bibliography**

Harrington, Charles D., And Archie E. Ruehle. *Uranium Production Technology*. New York: D. Van Nostrand Company, Inc., 1959.

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PART IV. PROJECT INFORMATION

This HABS documentation project was undertaken as mitigative recordation required by Section 106 of the National Historic Preservation Act of 1966. The United States Department of Energy Former Sites Restoration Division demolished the Building 50 series in September 1996 as part of site remediation and decontamination.

The documentation was prepared by Alexandra C. Cole, architectural historian at Science Applications International Corporation (SAIC), Santa Barbara, California, in October 1996. Large-format photography was done by Bruce Harms of Louis Berger and Associates, Inc., Marion, Iowa, in August/September 1996. Measured floor plans and elevations were prepared under the supervision of Ohannes Armani of Bechtel National Incorporated (BNI), Oak Ridge, Tennessee, in September 1996.

*FOR SITE PLANS SEE MO-1929 FIELD NOTES