

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: AC Spark Plug
Flint, Michigan

TIME PERIOD: 1946-1947

FACILITY DESCRIPTION:

DOE ES&H Website:

AC Spark Plug performed beryllium work for the AEC. Records indicate that approximately 10 men worked with beryllium at this location in 1947. Information about AC Spark Plug is found in health hazard surveys, shipping reports and in a MED history. The company continued to receive hundreds of pounds of beryllium for use under government contract into the 1960's. It is possible that some or all of this beryllium was being used for other, non-AEC projects. There was also a small amount of thorium procurement related to AC Spark Plug in the 1946-1947 timeframe.

DISCUSSION:

While the quantity of material (2.19 lbs) is identified, the form of the material is not. It is not clear if the material was 5-7% ThO₂ ore, powder, or metal. Additionally, specific activities conducted with this material, final accountability or disposition and/or decontamination efforts are not contained within the reviewed documentation. Based on a lack of documentation it can only be assumed that residual contamination exists outside the listed period.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, and an internal DOE FUSRAP evaluation document. The facility has been removed from the FUSRAP Considered Sites Database Reports website.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1948 - present.

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Aeroprojects, Inc.
West Chester, Pennsylvania

ALSO KNOWN AS: Sonobond Ultrasonics

TIME PERIOD: 1951-1973; Residual Radiation 1974-1976

FACILITY DESCRIPTION:

DOE ES&H Website:

Beginning in 1951, Aeroprojects Inc. performed research and development for the AEC. The company's work included investigation of the use of ultrasonic energy in the areas of instrumentation, welding, filling of tubes with powders, extrusion, solidification and cleaning. Materials used by the company include alloys and compounds of aluminum, beryllium, mercury, thorium and uranium.

DISCUSSION:

There is reason to believe that during the period of operation from 1951 through 1973, Aeroproject, Inc. did, on occasion, utilize site property for burial of uranium/thorium waste. However, radiological surveys of the property performed in 1988 do not indicate exposure levels/rates above natural background. However, there is documentation that during facility cleaning in 1975 and 1976 (outside the period in which weapons-related production occurred), some uranium shavings and slugs were discovered and buried on the site as well. These items, as described, are deemed significant enough to expand the listed dates through 1976.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications discussing radiological surveys performed for the DOE, written information provided by the present site owner (as of 1990), along with internal DOE FUSRAP and Office of Environmental Restoration documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1974-1976

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Ajax Magnathermic Corp.
Youngstown, Ohio

TIME PERIOD: 1958-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

The Ajax-Magnathermic Corp. was involved in induction heat treatment of various forms of uranium for National Lead Company of Ohio (Fernald) and also for General Electric (Hanford). The company fabricated an induction heating unit for NLO in 1961.

DISCUSSION:

Multiple documents and radiological surveys were available demonstrating implementation of radiological contamination controls and representative monitoring during operations, along with descriptions of post-operational decontamination and area monitoring. These actions and documentation demonstrate elimination of the potential for residual radiological contamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website, documentation provided by the DOE ES&H Group consisting of an internal DOE FUSRAP evaluation document, and multiple NLO (Fernald) documents describing visits, inspections and/or radiological surveys of the Ajax Magnathermic facility.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Alba Craft Shop
Oxford, Ohio

TIME PERIOD: 1952-1957; Residual Radiation 1958-1993;
DOE 1994-1995 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1952 to 1957, Alba Craft provided a variety of machine shop services on natural uranium metal for National Lead Company of Ohio (Fernald). Early work at Alba Craft included general and developmental machining of threaded reactor fuel slugs for use at the Savannah River Site. Subsequent production-scale operations consisted of hollow drilling and turning of slugs for the Savannah River and Hanford plutonium-production reactors. Remediation activities under the Formerly Utilized Site Remediation Action Program (FUSRAP) occurred in 1994-1995 under the Bechtel National Inc. (BNI) umbrella site remediation contract. Remediation was certified complete in 1997.

DISCUSSION:

Survey results from 1992 confirm the presence of residual contamination, thirty-five years after operations ceased. While the conditions discovered in 1992 are well defined, there is no method to determine the actual conditions left at the end of operations in 1957.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the Department of Energy (DOE) ES&H Website, documentation provided by the DOE ES&H group consisting of an internal DOE FUSRAP evaluation document, DOE-EM publication "Linking Legacies", and Army Corp of Engineers Formerly Utilized Sites Remedial Action Program (FUSRAP).

Reviewed ORNL Report (ORNL/RASA-92/14); Results of the Radiological Survey at the Former Alba Craft Laboratory Site Properties, Oxford Ohio; issued March 1993.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958 - 1993

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Albany Research Center
Albany, Oregon

ALSO KNOWN AS: ARC
U.S. Bureau of Mines
Albany Metallurgical Research Center
Oregon Metallurgical Corp.

TIME PERIOD: 1948-1978; Residual Radiation 1979-1986;
DOE 1987-1993 (Remediation) & 1995 to Present

FACILITY DESCRIPTION:

DOE ES&H Website:

The Albany Research Center performed metallurgical research for the AEC and ERDA between 1948 and 1978. Beginning in 1955, the site performed research on alloys of uranium and thorium under an AEC contract. Metallurgical operations also included melting, machining and welding.

The Albany Research Center became part of the Department of Energy in 1995. In 2004 residual beryllium contamination associated with historic beryllium use at Albany Research Center was identified. The precise origins and dates of beryllium operations has not been determined, though it certainly was already present in 1987.

DISCUSSION:

Documentation indicates that the Oregon Metallurgical Corp. possessed production quantities of radioactive materials for work requested by NLO (Fernald) in November 1958. Contracted services involving radioactive materials at this facility appear to have ended in 1978. However, a radiological survey of the site and facilities, performed in 1982 by a DOE subcontractor, identified significant levels of contamination, both fixed and removable. Documentation available for this review did not contain activity levels of the identified radioactive contamination but, based on the description of conditions in the documentation, the potential for significant residual contamination existed between 1978 and the beginning of cleanup activities (1987).

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group, consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and internal/external communications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1979 – 1986; 1994

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Aliquippa Forge
Aliquippa, Pennsylvania

ALSO KNOWN AS: Vulcan Crucible Steel Co.
Universal Cyclops, Inc.

TIME PERIOD: 1947-1950; Residual Radiation 1951-1994; DOE 1988; 1993-1994 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

In the late 1940s, Aliquippa Forge (previously Vulcan Crucible) was a supplier of rolled uranium rods used in Hanford's reactors. The AEC operated a rolling mill, two furnaces and cutting and extrusion equipment at Vulcan. Work at the site ended in 1950.

This site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1983 and remediation work took place in 1988 and again in 1993-1994. This work was performed under the Bechtel National Inc. umbrella contract for DOE site environmental remediation.

DISCUSSION:

Operations ceased in 1950. However, a subsequent radiological survey of the facility performed in May 1978 identified uranium contamination throughout several areas of the facility. From 1986 through 1988, phase one of a FUSRAP cleanup was begun and the area was isolated from access until 1993 when phase two was begun and completed in 1994.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, as well as information contained on the Army Corps of Engineers Formerly Utilized Site Remedial Action Program (FUSRAP) website.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1951-1987; 1989-1992

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Allegheny-Ludlum Steel
Watervliet, New York

TIME PERIOD: 1950-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

Allegheny-Ludlum Steel rolled uranium billets into rods for the AEC as part of the multi-site process overseen by the New York Operations Office for the production of uranium metal for fabrication into slugs for fueling the Hanford production reactors.

DISCUSSION:

While full records were not immediately available to review, processes, material forms, objectives, oversight by AEC during operations, and contractual requirements to recover and return all uranium-bearing materials, are documented well enough to determine it is unlikely that significant residual radioactive contamination existed after operations. This determination is further supported by radiological survey results from 1976 and 1980, finding no radiation above background levels.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and historical documentation from written publications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Allied Chemical and Dye Corp.
North Claymont, Delaware

ALSO KNOWN AS: General Chemical Div., Allied Chemical and Dye Corp.
Allied Chemical Corp.
Union Texas Petroleum Div.

TIME PERIOD: Early 1950s - Late 1960s

FACILITY DESCRIPTION:

DOE ES&H Website:

Allied Chemical and Dye Corp. was involved in research and development and small pilot-scale operations on uranium recovery from a phosphoric acid plant. Former AEC employees estimated that, at most, only a few pounds of uranium concentrate were produced.

DISCUSSION:

Documentation does not specifically identify the periods of operation or quantify the media or uranium concentrations introduced to the processes. There is no known radiological survey data from the operational period, nor is there any known radiological survey data from prior to, or after, the facility having been demolished.

Documentation originating in 1977 does indicate that subsequent facility and operational reviews including interviews with involved parties determined that there was a low potential for residual contamination based on an understanding that only a few pounds of uranium concentrate were reportedly separated and recovered through filtration methods. It is also stated in available documentation that the exact location of the operational facility is unknown and that it was reportedly demolished 1970s.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, and historical documentation. Reference: 1) DOE Memorandum; Keller to Mott; Subject: Report of Findings: Allied Chemical Corporation Sites at North Claymont, Delaware, Marcus Hook, Pennsylvania, and Baltimore, Maryland; December 12, 1977; 2) DOE Report; FUSRAP Elimination Report for Former Allied Chemical Corporation, Chemicals Company (Now General Chemical Corporation), North Claymont, Delaware; Circa 1987; 3) DOE Letter; Fiore to Muller; Subject: Elimination of Allied Chemical Corporation from FUSRAP Consideration; October 13, 1987.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

Late 1960s - 1977

Appendix A-3 Residual Radioactivity Evaluations for Individual Facilities

FACILITY NAME: Allied Chemical Corp. Plant
Metropolis, Illinois

ALSO KNOWN AS: General Chemical Division

TIME PERIOD: 1959-1976

FACILITY DESCRIPTION:

DOE ES&H Website:

After World War II, many companies working for the United States Government produced UF₆ feed for uranium enrichment and diffusion plants. The Allied Plant in Metropolis, Illinois was completed and initial deliveries began sometime in 1959. In 1962, several feed plants were shut down and the privately-owned Allied Chemical Corp. Plant in Metropolis, IL, took over the conversion of U₃O₈ to UF₆. This plant produced approximately five thousand tons of uranium hexafluoride feed for the Paducah Gaseous Diffusion Plant per year. It was shut down in 1964. Though it later reopened, it is not clear that any material after this date was used in the Atomic Weapons Production Process.

DISCUSSION:

Documentation reviewed indicates that AWE related residual contamination exists outside the listed period. Residual contamination from prior AWE related activities is indistinguishable from contamination produced during subsequent operations conducted under the present NRC license. This facility is still operational.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, and historical documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1977 - present

FACILITY NAME: Allis-Chalmers Company
West Allis, Milwaukee, Wisconsin

TIME PERIOD: 1943-1944

FACILITY DESCRIPTION:

DOE ES&H Website:

Allis-Chalmers made vacuum pumps for the Y-12 plant effort. The company also wound magnetic coils for the "calutrons" used in the Y-12 plant to produce highly enriched uranium. In late 1943 General Groves ordered some partially-used coils be sent back to Allis-Chalmers for cleaning. This cleaning effort is how some uranium would have found its way back to Wisconsin.

Allis-Chalmers was also involved in the construction of the K-25 Plant. It provided compressors designed to handle uranium hexafluoride.

DISCUSSION:

It should be noted that the documentation reviewed does not firmly establish that the coils returned to Allis-Chalmers were contaminated internally or externally with uranium. Failure of these components was discovered in late October 1943 during the first testing of the magnet coils during system shakedowns, and prior to startup of the process and/or plant.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, and historical publication text.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Aluminum Company of America (ALCOA) (New Jersey)
Garwood, New Jersey

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

Under subcontract to the Metallurgical Laboratory (University of Chicago), the Garwood facility manufactured casting dies and used them to cast uranium slugs. This work was conducted intermittently between July and October of 1944.

DISCUSSION:

The potential for residual contamination, post-operations, is low.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and/or internal/external communications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Aluminum Co. of America (ALCOA)
New Kensington, Pennsylvania

ALSO KNOWN AS: Aluminum Research Companies
New Kensington Workers of ALCOA on Pine and 9th Streets

TIME PERIOD: 1943-1945

FACILITY DESCRIPTION:

DOE ES&H Website:

The Aluminum Co. of America (ALCOA) site in New Kensington, Pennsylvania was one of 14 facilities in the early 1940s that produced nuclear fuel for the X-10 pilot plant reactor in Oak Ridge, Tennessee and the production reactors at Hanford, Washington. ALCOA used a unique welding process to "can" and seal uranium slugs produced by these other facilities.

DISCUSSION:

Documentation specifying the exact location of the canning operations conducted within the ALCOA facilities is not available but does indicate that operations began in the spring of 1943 at the Pine and Ninth Street location within Buildings #29 and #44. Radiological survey data from during, or immediately after operations is not available. Radiological surveys were performed in 1991 and did not identify residual contamination. There is a significant potential for residual contamination post operations, therefore the existence of residual contamination cannot be ruled out until the 1991 surveys.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, and historical documentation. Pertinent documentation reviewed included:

1. Aerospace Corporation Letter from Charles Young to Andrew Wallo, dated 18 November 1987, "Recommendation For Site Visit Aluminum Company of America Site New Kensington, Pennsylvania."
2. ORNL Survey Report (ORNL/RASA-92/4); Results of the Radiological Survey at the Alcoa Research Laboratory, 600 Freeport Road, New Kensington Pennsylvania (ANK001); October 1992.
3. ORNL Survey Report (ORNL/RASA-92/5) Results of the Radiological Survey at the Former ALCOA New Kensington Works, Pine and Ninth Streets, New Kensington Pennsylvania; October 1992

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1946 -1991

FACILITY NAME: AMCOT
Fort Worth, Texas

TIME PERIOD: 1961-1962; Residual Radiation 1963

FACILITY DESCRIPTION:

DOE ES&H Website:

The American Manufacturing Company of Texas (AMCOT) conducted specialized tube elongation and billet piercing tests on uranium metal for National Lead Company of Ohio (Fernald). The tube elongation tests were conducted from July to September 1961 and involved approximately 7 tons of uranium. The billet piercing tests were conducted from June to September 1962 and involved approximately 23 tons of uranium. Both NLO and AMCOT employees participated in the tests.

DISCUSSION:

There is detailed documentation describing the processes, material handled, radiological controls and monitoring, multiple equipment and area decontamination activities, as well as removal of materials and wastes generated during the processes which ended in 1962. However, additional documentation verifies that a final facility decontamination was not conducted until 1963. The presence of residual contamination cannot be ruled out prior to completion of this final task.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1963

FACILITY NAME: American Bearing Corp
Indianapolis, Indiana

TIME PERIOD: 1954–1959; Residual Radiation 1960-1983

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1954, American Bearing Corp. was selected to participate in the machining of a sample lot of four hollow extrusion uranium billets from ingots for National Lead of Ohio (Fernald). Subsequently, National Lead used the Special Products Area of American Bearing to process uranium materials in the late 1950s. In May 1959, National Lead Industries (NLI), Nuclear Division was formed in Albany (Colonie), NY, and this work was moved to this NLI facility.

DISCUSSION:

It is not evident in the available documentation how the facility was used after 1959. An Oak Ridge Associated Universities (ORAU) report dated Nov. 1983, titled “Radiological Survey of the American Bearings Corporation Indianapolis, Indiana”, confirms that a facility survey was performed by Radiation Management Corporation (RMC) in 1981/1982 identifying residual contamination in excess of unrestricted release criteria. This survey prompted decontamination and partial dismantlement of the facility, approximately twenty-two years after cessation of AWE operational activities. Subsequent to that effort, ORAU was requested to and performed a survey as detailed in the referenced report.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, and historical documentation. Pertinent document: Oak Ridge Associated University (ORAU) report dated Nov. 1983 titled, “Radiological Survey of the American Bearings Corporation Indianapolis, Indiana.”

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1960 - 1983

FACILITY NAME: American Chain and Cable Co.
Bridgeport, Connecticut

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

American Chain and Cable worked under contract to the Du Pont Company to support the manufacture of uranium slugs during the Manhattan Project. In 1944, the company swaged (reduced the diameter) of uranium rods at its Bridgeport facility.

DISCUSSION:

It is not likely that significant levels of residual radioactive material were present after this operation. Documentation exists supporting that a limited quantity of material was processed (eight uranium rods 1.39 to 1.46 inches in diameter), and that the operation was of a short duration (which contractually included delivery and removal of all material). Additionally, the nature of the activity, swaging (cold-working), would most likely not lead to a high probability of dispersion of radioactive material.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, MED historical documentation and internal DOE FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: American Machine & Foundry
Brooklyn, New York

ALSO KNOWN AS: AMF
Lutheran Medical Center
Bus Terminal

TIME PERIOD: 1951-1954

FACILITY DESCRIPTION:

DOE ES&H Website:

During the early 1950s, this location designed and produced industrial equipment for the AEC. American Machine & Foundry also performed a large volume of uranium, thorium and possibly zirconium metal machining work from 1951-1954.

DISCUSSION:

This facility was acquired and renovated for occupancy by the Lutheran Medical Center subsequent to AWE related activities. Considering the absence of post operational data, the fact that 200 tons U and Th metal were machined at this facility, coupled with air monitoring data from the time of operations indicating significant dispersal of radioactive material concentrations, there is a high probability that residual contamination existed after the period in which weapons-related production occurred up until the time of the facility renovation. The exact date of the renovation could not be identified.

The present facility was surveyed for/by the DOE in January 1992. No detectable contamination was identified at that time.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP file documents. References: (1) ORAU Letter report; Berger to Williams (DOE); Subject: Former AMF Site: Brooklyn, New York; January 29, 1992; (2) AEC (NYOO-Health and Safety Div.) Report; American Machine & Foundry Company, Occupational Exposure to Radioactive Dust; Issued: February 18, 1952

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1955 - 1992

FACILITY NAME: American Machine and Metals, Inc.
E. Moline, Illinois

ALSO KNOWN AS: Vapofier Corp.

TIME PERIOD: 1960

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1960, American Machine and Metals demonstrated a process for National Lead of Ohio (Fernald) that involved dehydration of green salt using a centrifuge process.

DISCUSSION:

Documentation demonstrates that a limited quantity of material was processed during a three day period, May 24-May 26, 1960. Radiation protection controls and monitoring were in place during the tests, and the materials and wastes were returned to NLO (Fernald).

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and internal/external communications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: American Peddinghaus Corp.
Moonachie, New Jersey

TIME PERIOD: 1978

FACILITY DESCRIPTION:

DOE ES&H Website:

The facility conducted a one-day shear (cutting) test on uranium metal for National Lead of Ohio (Fernald) in 1978.

DISCUSSION:

This one day test took place on April 3rd 1978. An April 7 1978 memo from R. W. Mode and G. C. Coon describes the activities that took place including that the equipment used was decontaminated and the materials used for decontamination were returned to the FMPC.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and internal/external communications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: American Potash & Chemical
West Hanover, Massachusetts

ALSO KNOWN AS: National Fireworks Ordnance Corp.
National Northern Div.

TIME PERIOD: 1959 - 1961

FACILITY DESCRIPTION:

DOE ES&H Website:

American Potash & Chemical conducted uranium metal shaping and uranium-magnesium explosive forming studies for Union Carbide Nuclear Corporation, Oak Ridge, Tennessee. The tests done up to May, 1961 were performed with 430 stainless steel and uranium metal pieces. Work was also done with green and sintered uranium-based powders. The powders were formed in a die into discs approximately 4½ inches in diameter and 1 inch thick.

DISCUSSION:

Documentation reviewed does not specify the exact period activities began.

Although there is no radiological survey data available for review, documentation that only test quantities of radioactive materials were handled, with safety oversight involved, establishes that the potential for residual contamination outside the listed period is remote.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and internal/external communications. Reference: AEC Memorandum; Davis to Polson; Subject: Explosive Forming; May 1, 1961.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Anaconda Co.
Waterbury, Connecticut

ALSO KNOWN AS: American Brass Co.
Fabric Metal Goods and West Tube Mill
Anamet, Inc.

TIME PERIOD: 1942; 1956-1959

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1942, the American Brass Company produced the barriers used in the gaseous diffusion process. In the late 1950s, under contract to Nuclear Metals Inc., the company extruded copper-clad uranium billets into tubes at least two separate times for the Savannah River Site. While the original plans called for work on 500 billets, only around 50 were actually processed. The operations involved plating, heating, extruding, sawing, drilling, deburring, cleaning, testing, crating, and shipping. Work was conducted at the West Tube Mill. AEC Health and Safety Laboratory personnel visited the site in 1956 and 1959, and obtained air quality and surface radiation measurements during the later visit.

DISCUSSION:

Although the period in which weapons-related production occurred is determined to be appropriate, it is questionable as to whether radioactive materials were ever handled during the 1942 operations. Documented activities from the 1956-1959 period includes descriptions of the limited quantity of material handled, the physical form of the material as being copper-clad uranium metals, and radiological surveys of general area ambient dose rates and airborne radioactive material concentrations during operations. Based on an evaluation of this documentation, it is concluded that there was little, if any, potential for residual contamination after completion of the activities.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Armco-Rustless Iron and Steel
Baltimore, Maryland

ALSO KNOWN AS: Armco Steel

TIME PERIOD: 1948

FACILITY DESCRIPTION:

DOE ES&H Website:

Armco-Rustless Iron and Steel Co. rolled eight billets of uranium for the AEC. It was a one-time test of rolling.

DISCUSSION:

Documents reviewed describe that radiological monitoring was in place during the activity. Because of the limited amount of material processed, it is unlikely that residual radioactivity was present outside of the period of operation.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and internal/external communications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Armour Fertilizer Works
Bartow, Florida

ALSO KNOWN AS: U.S. Agri-Chemicals Pilot Facility
U.S. Steel Corp.

TIME PERIOD: 1951-1955

FACILITY DESCRIPTION:

DOE ES&H Website:

Under contract with the AEC, Armour operated a pilot plant which produced uranium from phosphoric acid.

DISCUSSION:

Documentation describes the processes employed and a 1977 radiological survey of the facility which identified conditions consistent with background, or no greater than expected from normal industrial processing of similar materials.

Given the limited production of material and the results of the 1977 survey, the period for this site appears to be appropriate.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Armour Research Foundation
Chicago, Illinois

ALSO KNOWN AS: ARF
Illinois Institute of Technology
IIT

TIME PERIOD: 1957

FACILITY DESCRIPTION:

DOE ES&H Website:

Records indicate that Armour Research Foundation may have tested radioactive materials for National Lead Company of Ohio (Fernald), specifically test quantities of materials other than metal (UF₄ or ThO₂).

DISCUSSION:

Documentation does not fully support that radioactive materials related to weapons development were ever handled at this facility. This lack of operations confirmation, coupled with the fact that only test quantities of material were reported to have been possibly handled, indicates there would be a low probability for significant residual contamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the period in which weapons-related production occurred, DOE FUSRAP documentation, and/or internal/external communications.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Arthur D. Little Co.
San Francisco, California

ALSO KNOWN AS: Merrill Co.
A.D. Little Co.

TIME PERIOD: 1948-1956

FACILITY DESCRIPTION:

DOE ES&H Website:

Under contract to the Atomic Energy Commission (AEC) from 1948-1956, initially as the Merrill Company, Arthur D. Little Co. researched the separation and recovery of uranium from various ores. Specific work included the recovery of uranium and vanadium from alkaline carbonate leach solutions from domestic ores.

DISCUSSION:

Documentation confirms that this facility, owned by Arthur D. Little Co, performed the specified work from 1948 through 1956. There is no known radiological survey data available from during or immediately after the operational period.

A radiological survey was performed for/by the DOE in 1977 with no residual contamination identified. Additionally, documentation describes the facility as having been demolished and removed as part of the San Francisco redevelopment program, at some time prior to 1977. The exact date of the facility demolition was not established.

Based on the nature of the work performed from 1948 through 1956, there is a potential for significant residual contamination after operations ceased.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Reference: DOE letter; Mott to Hurley; Subject: Summary of MED/AEC Activities at A.D. Little Facility; May 2, 1979; Attachment: Summary of MED/AEC Activities at A.D. Little Facility; Circa 1979

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1957 - 1977

FACILITY NAME: Ashland Oil
Tonawanda, New York

ALSO KNOWN AS: Ashland #1, Ashland #2
Ashland Oil Company
Haist Property

TIME PERIOD: 1944-1960; 1974-1982; Residual Radiation 1961-1973 and
1983-1998

FACILITY DESCRIPTION:

DOE ES&H Website:

In August 1944, the MED purchased the Ashland #1 property, formerly known as the Haist Property, for use as a disposal site for approximately 7,250 metric tons (8,000 tons) of uranium ore tailings and concentrate refining residues generated at the nearby Linde site. When the uranium residues were transported to the Ashland #1 site, they were spread over two-thirds of the property to estimated depths of 0.3 to 1.5 meters (one to five feet). In 1960, the AEC determined that the levels of residual radioactivity at Ashland #1 site were below then-current criteria and released the land as surplus. The Ashland Oil Company eventually acquired the property. From 1957 to 1982, Ashland Oil used a portion of the Ashland #2 site as a landfill for disposal of general plant refuse and industrial and chemical wastes and materials. Between 1974 and 1982, Ashland Oil transported from the Ashland #1 site an unknown quantity of soil mixed with radioactive residues to the Ashland #2 landfill.

Although the Ashland Oil facility was designated for the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1984, no actual remediation under this program occurred prior to its transfer to the Army Corp.

DISCUSSION:

Based on the conditions described in the documentation reviewed, it appears that significant quantities of uranium-contaminated residues and wastes were deposited on the property referred to as the Ashland #1 site, which at the time was owned by the AEC. The property was subsequently sold to a private enterprise in 1960. Radiological surveys performed for the government in 1958, 1976 and later, all confirmed the presence of uranium contamination and corresponding ambient dose rates well in excess of natural background. Documentation reviewed indicates that the potential for significant residual contamination existed outside of the period in which weapons-related production occurred, specifically in the gaps from 1960-1974 and after 1982.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1961-1973; 1983 - 1998

FACILITY NAME: Associated Aircraft Tool and Manufacturing Co.
Fairfield, Ohio

ALSO KNOWN AS: Force Control Industries
Fairfield
Former Dixie Machinery Ownership

TIME PERIOD: 1956
Residual Radiation 1957-1993
DOE 1994-1995 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From February to September 1956, Associate Aircraft Tool and Manufacturing Company machined hollow uranium slugs for the Hanford and Savannah River plutonium-production reactors under a subcontract from National Lead Company of Ohio (Fernald). Associate Aircraft machined approximately 96,000 slugs during the eight-month contract period. Cleanup activities were performed in 1994-1995 by Thermo Nutech under the Bechtel National Inc. umbrella site remediation contract as part of the Formerly Utilized Site Remediation Action Program (FUSRAP).

DISCUSSION:

Documentation reviewed indicates residual contamination outside of the period until completion of FUSRAP cleanup in 1995

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the covered period, DOE FUSRAP documentation, and/or internal/external communications. Sources outside of the DOE ES&H Website included: 1) ORNL Report (ORNL/RASA-93/2); Results of the Radiological Survey at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio (FOH001); Issued March 1993 OH.23-3, 2) ORNL Report (ORNL/RASA-95/15); Results of the Independent Radiological Survey at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio (FOH001); Issued January, 1996 OH.23-6 and, 3) DOE (OR-FSRD) Report; Certification Docket for the Remedial Action Performed at the Associate Aircraft Site, Fairfield, Ohio, 1994-1995; January 1996 OH.23-7

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1957-1993

FACILITY NAME: B & T Metals
Columbus, Ohio

TIME PERIOD: 1943
Residual Radiation 1944–1995
DOE 1996 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

During the early stages of nuclear weapons production, uranium reactor fuel was produced by a variety of metallurgical techniques including extrusion, casting, and machining. In February, 1943, DuPont, acting as an agent of the MED, contracted B&T Metals to extrude rods from uranium metal billets for the Hanford reactor in Washington State. B&T Metals extruded an estimated 50 tons of uranium between March, 1943 and August, 1943.

DISCUSSION:

Environmental cleanup under the Formerly Utilized Site Remediation Program (FUSRAP) was conducted in 1996. This work was performed by employees of SunPro as subcontractors to Bechtel National Inc., the company that held the umbrella contract for DOE site environmental remediation. This site's remedial action was certified complete in 2001. Documentation reviewed indicates residual contamination outside of the period until completion of FUSRAP cleanup in 1996.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of contracting information from the covered period, DOE FUSRAP documentation, and/or internal/external communications. Sources outside of the DOE ES&H Website included: (1) ORNL Report (ORNL/RASA-89/1), Results of the Preliminary Radiological Survey at B&T Metals, 425 West Town Street, Columbus, Ohio (CO001); October 1990 OH.26-5, (2) ORNL Report (ORNL/RASA-96/8), Results of the Independent Radiological Verification Survey at B&T Metals, 425 West Town Street, Columbus, Ohio (CO001V); June 1997 OH.26-6 and, (3) DOE Report; Certification Docket for the Remedial Action Performed at the B&T Metals Site in Columbus, Ohio; June 2001 OH.26-8.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1944-1995

FACILITY NAME: Baker and Company
Newark, New Jersey

ALSO KNOWN AS: Englehard Industries
Platinum (or Baker) Div. of Englehard Industries
Baker and Williams Co., Inc.

TIME PERIOD: 1943-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

Baker and Company processed radioactive platinum as part of the process of making polonium, which was needed for initiators in nuclear weapons. Baker and Co. also processed unirradiated uranium scrap for the AEC to recover enriched uranium for use in the weapons complex.

DISCUSSION:

Available documentation does not fully describe the processes or amount and/or forms of radioactive materials handled. Considering this absence of detail, in conjunction with no available radiological survey data subsequent to the operations, the presence of residual contamination after completion of the activities cannot be ruled out.

This facility was used from as early as 1943 through the early 1950s for the recovery of platinum from contaminated spent catalyst (platinized granular carbon). Neither the exact nature nor the extent of the contamination is known, but there are indications that it may have involved polonium and/or plutonium.

Documentation reviewed indicates that there is a potential for significant residual contamination outside the covered period. There are indications that two facilities may have been involved with this work, the first being a 20' x 20' lab located at 113 Astor Street and the second being a refining facility at 439 Delancy Street. The Astor Street location was reportedly demolished prior to 1990 and the facility at the Delancy Street location no longer exists.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Reference: 1) Memorandum/Checklist; Mackenzie to File; Elimination of Englehard, Ind. From the FUSRAP Program; June 28, 1990, 2) ORAU Letter; Berger to Wagoner (DOE); Subject: Visit to Potential Sites in Newark and Linden, New Jersey; February 12, 1990

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1963 - 1990

FACILITY NAME: Baker and Williams Warehouses
New York, New York

ALSO KNOWN AS: Pier 39
Ralph Ferrara Co. Warehouse
Ralph Ferrara Inc.

TIME PERIOD: 1942-1949; Residual Radiation 1950-1990;
DOE 1991-1993 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

The Manhattan Engineer District and the Atomic Energy Commission used the Baker & Williams site warehouses for short-term storage of uranium concentrates. This material was generated in Port Hope, Canada by milling African ores.

Environmental cleanup under the Formerly Utilized Site Remediation Action Program was conducted in 1991-1993 by Bechtel National Inc. This site's remedial action was certified complete in November 1995.

DISCUSSION:

The presence of radiological contamination was confirmed during a preliminary survey performed in 1990-91, approximately 50 years after use by the MED for storage of material. There is no reliable method to determine the actual radiological contamination levels immediately after cessation of operations.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and the Army Corp of Engineers FUSRAP website.

Pertinent documents:

1. ORAU Report (ORAU 91/L-36); Radiological Survey of the Baker and Williams Warehouses buildings 513-519 New York, New York; December 1991
2. ORAU Report (ORAU 89/L-33); Radiological Survey of the Baker and Williams Warehouses New York, New York; June 1990
3. DOE (OR-FSRD) Report; Certification Docket for the Remedial Action at the Baker and Williams Site in New York, New York, 1991-1993; November 1995.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950 – 1990

FACILITY NAME: Baker Brothers
Toledo, Ohio

ALSO KNOWN AS: Rems, Inc.

TIME PERIOD: 1943-1944
Residual Radiation 1945-1994;
DOE 1995 (Remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

Between June 1943 and July 1944, DuPont and the University of Chicago subcontracted the Baker Brothers company to machine roll metal rods into uranium slugs that were used for fuel in the world's first production reactors located in Oak Ridge, TN and Hanford, WA. Environmental cleanup under the Formerly Utilized Site Remediation Action Program was conducted in 1995. This work was performed under the Bechtel National Inc. umbrella contract for DOE site environmental remediation. This site's remedial action was certified complete in 2001.

DISCUSSION:

There is no evidence of a radiological survey having been performed after completion of operations in 1944. However, radiological surveys performed for the DOE in 1989 and 1990 identified several indoor and outdoor areas with radiation in excess of DOE guidelines, which led to a subsequent FUSRAP cleanup.

The documentation reviewed indicates that the potential for significant residual contamination existed outside of the period in which weapons-related production occurred, specifically between 1944 and 1994.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and the Army Corp of Engineers FUSRAP website.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1945 - 1994

FACILITY NAME: Baker-Perkins Co.
Saginaw, Michigan

ALSO KNOWN AS: APV Chemical Company

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

In May 1956, Baker-Perkins performed a test of their mixing equipment for NLO (Fernald). The tests involved mixing uranium trioxide (orange oxide) with water and kneading the mixture with the Baker-Perkins "P" and "K" Ko-Kneader machines.

DISCUSSION:

Documentation demonstrates that a limited quantity of radioactive material was used in the process, controls were in place during the process and post-operational decontamination was implemented with radiological surveys having been performed.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Surveys were available illustrating that radiological surveys were performed during operations and during the process of decontaminating the equipment used.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Battelle Laboratories-King Avenue
Columbus, Ohio

ALSO KNOWN AS: Battelle Columbus Laboratories (BCL)
Battelle Memorial Institute (BMI)

TIME PERIOD: 1943-1986;
DOE 1986-2000

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1943 to 1986, Battelle Memorial Institute performed atomic energy research and development as well as beryllium work for the DOE and its predecessor agencies. The Battelle Laboratories have two separate locations in Columbus: King Avenue and West Jefferson. Battelle's research supported the government's fuel and target fabrication program, including fabrication of uranium and fuel elements, reactor development, submarine propulsion, fuel reprocessing, and the safe use of reactor vessels and piping.

The following activities were performed at the King Avenue location: processing and machining enriched, natural, and depleted uranium and thorium; fabricating fuel elements; analyzing radiochemicals; and studying power metallurgy. Beryllium work was conducted from 1947 until at least, 1961.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Battelle Laboratories-West Jefferson
Columbus, Ohio

ALSO KNOWN AS: Battelle Memorial Institute (BMI)
Battelle Columbus Laboratories (BCL)
West Jefferson Plutonium Facilities

TIME PERIOD: 1956-1975
Residual Radiation 1976-1985
DOE 1986-present (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1943 to 1986, Battelle Memorial Institute performed atomic energy research and development for the DOE and its predecessor agencies. The Battelle Laboratories have two separate locations in Columbus, King Avenue and West Jefferson. Battelle participated in research on fabrication of uranium and fuel elements, reactor development, submarine propulsion, fuel reprocessing, and the safe use of reactor vessels and piping.

At the West Jefferson location, Battelle operated a large hot cell facility and a research reactor. Reactor operations began in October, 1956, and ended in December, 1974. The reactor was defueled and partially dismantled in 1975 and Battelle's license was changed to possession-only status.

DISCUSSION:

Documentation describes initiation of activities for the AEC on or around about 1956. However, the documentation also demonstrates that residual radioactive material was present up until decommissioning activities were started in 1986.

Documentation reviewed indicates that there was residual contamination outside of the period in which weapons-related production occurred. Battelle is undergoing remediation with an expected completion date in 2006.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1976 - 1985

FACILITY NAME: Bell Telephone Laboratories
Murray Hill, New Jersey

ALSO KNOWN AS: Western Electric

TIME PERIOD: 1943-1944

FACILITY DESCRIPTION:

DOE ES&H Website:

This facility handled a quantity of uranium during World War II, probably in support of its work to develop effective barrier material for the K-25 facility in Oak Ridge, Tennessee. The barrier materials were not radioactive.

DISCUSSION:

Documentation identifies the facility as having and/or using X-metals (uranium) during work being performed in 1943, without identifying the quantities or forms of the uranium.

There has been no specific information found related to the amounts or means by which uranium was handled, there is an accountability record requesting instruction on the transfer of custody back to the AEC of government materials. This document may not be related to the AWE work, but the listing of radioactive isotopes and forms demonstrates that personnel at the facility were knowledgeable about controls and accountability, indicating a limited potential for significant residual contamination post AWE related work.

However, considering the absence of any radiological survey data or information regarding the type and amount of radioactive material used, the presence of weapons-related residual contamination cannot be ruled out.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents. Reference: Bell Telephone Laboratories Letter from M.M. Weiss (Radiation Protection) to USAEC NYOO, J.A. Raffuci - Chief, Property Management Branch { Washington Nat'l Records Center - Collection 434-98-0171 - box 17 }

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1945 - present.

FACILITY NAME: Bendix Aviation (Pioneer Division)
Davenport, Iowa

TIME PERIOD: 1960

FACILITY DESCRIPTION:

DOE ES&H Website:

On three separate occasions, National Lead of Ohio (Fernald) personnel conducted tests to see how well a Bendix sonic energy cleaning system could clean uranium-contaminated 55 gallon drums. At least 18 contaminated drums were test-cleaned.

DISCUSSION:

Documentation of the processes employed during the surface-contaminated drum cleaning tests, contamination controls, reclamation of contaminated materials and wastes, as well as post-operational decontamination efforts and radiological release surveys, is sufficient to demonstrate no residual contamination existed after the operation.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as radiological surveys and FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Besley-Wells
South Beloit, Wisconsin

ALSO KNOWN AS: Besley Products Co.

TIME PERIOD: 1953

FACILITY DESCRIPTION:

DOE ES&H Website:

Besley was a cutting tool manufacturer. A National Lead Company of Ohio (Fernald) proposal indicates Besley was to machine a trial lot of 500 uranium slugs at its Beloit, WI, plant to evaluate whether the use of the Besley facing and radiusing machine could increase production. An NLO document lists Besley-Wells as the recipient of test quantities of radioactive materials.

DISCUSSION:

An NLO (Fernald) document lists Besley-Wells as the recipient of test quantities of radioactive materials. Available documentation also confirms work was performed during a four day period from May 4 through May 7 1953, involving the machining of 500 uranium slugs through use of a Besley Grinder. The amount of metal removed from each piece was approximately .015 inch.

The report states that “Health, Safety, and Security measures had been anticipated and complied with even beyond our demands.” Given the short duration of this activity, the minimal amount of material involved and the statement that Health, Safety, and Security measures were implemented, it has been determined that the potential for residual radioactivity is low.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents. Reference: 1) National Lead of Ohio document titled, Visit To Besley Welles Corp., Beloit Wisconsin, May 4 – May 7, 1953.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Bethlehem Steel
Lackawanna, New York

TIME PERIOD: 1949-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1949, Bethlehem Steel of Lackawanna, New York developed improved rolling mill pass schedules for uranium billets into 1.5-inch rods to be used for reactor fuel rods to later be used at the Fernald plant. Bethlehem also performed uranium rolling experiments to help design the Fernald rolling mill.

DISCUSSION:

Documentation reviewed describes the activities as being limited in scope, principally being performed on weekends, which involved uranium metals being rolled into rods. Based on the nature of the activity, accompanied with documented discussion of cropping and residue collection and removal for material accountability purposes, it is reasonable to assume that there was a low potential for widespread or significant contamination. While there was no radiological survey data available for review from the operational period, radiological surveys of the original facility and equipment, which still existed, were performed in 1976 and 1980, both of which identified no residual contamination above natural background levels.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Birdsboro Steel and Foundry
Birdsboro, Pennsylvania

TIME PERIOD: 1951-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1951, eight assorted uranium billets weighing a total of 346 pounds, originating at Birdsboro, were received by the AEC's Lake Ontario Ordnance Works.

In 1952, Birdsboro received 11.5 pounds of uranium wafers for processing.

A 1962 document indicates that Birdsboro also supplied rotary piercing equipment for the fabrication of uranium tubes at the FMPC and that an acceptance test took place at Birdsboro, but it is unclear whether any uranium was actually handled at the site.

DISCUSSION:

Documentation is fairly descriptive with respect to material types handled. There is no expectation that significant residual contamination existed after cessation of any handling and/or activities. This is also supported by the limited quantities suspected and/or referenced as having been handled.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Bliss and Laughlin Steel
Buffalo, New York

ALSO KNOWN AS: B & L Steel
Niagara Cold Drawn

TIME PERIOD: 1948-1952; Residual Radiation 1953-1998

FACILITY DESCRIPTION:

DOE ES&H Website:

Under contract to the National Lead Company of Ohio (Fernald), Bliss and Laughlin Steel rolled uranium rods for the AEC and also provided uranium slug machining services. Bliss and Laughlin was part of a complex called the Buffalo Works that fashioned components for the early weapons program. The functions were transferred to the Albuquerque South Valley Site in 1952.

Although this site was designated for the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1992, no work occurred under this program prior to its transfer to the Army Corps of Engineers.

DISCUSSION:

While activities with radioactive material ended in 1952, a radiological survey performed in 1992 for FUSRAP purposes, identified residual radioactive materials affixed to overhead and floor surfaces. While conditions described in the 1992 survey present a low potential for worker exposure, it is reasonable to assume that the described conditions are not representative of the actual physical conditions of residual radioactive materials for the prior 40-year uncovered period. Without historical radiological survey data to demonstrate otherwise, residual contamination must be considered to have been of higher activity levels and transferable for the period between 1952 and 1992.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1953 - 1998

FACILITY NAME: Blockson Chemical Co.
Joliet, Illinois

ALSO KNOWN AS: Blockson Chemical Group
Olin Mathieson
Olin

TIME PERIOD: 1951-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

Blockson Chemical Company operated a plant which produced uranium from phosphoric acid. The AEC contracted with Blockson for the recovery of the uranium, which was ultimately used in weapons production. The AEC Uranium production work performed by Blockson was conducted in a one-story brick structure known as Building 55. This listing is also intended to cover the AEC-funded laboratory, pilot plant and oxidation process, which also occurred at Blockson, and was related to the work in Building 55.

DISCUSSION:

Documentation available for review indicates that large quantities, up to 50,000 pounds per year, of uranium intended for AEC purposes were handled and/or processed at this facility between 1952 and 1962. However, there is no documentation of radiological surveys having been performed during or immediately after cessation of AEC activities. Documentation describes a subsequent radiological survey performed for the DOE in 1978, identifying uranium contamination in excess of natural background levels within the facility used for AEC purposes. Documentation reviewed indicates that significant residual contamination from AEC/DOE activities exists outside the covered period. The facility, affected areas and conditions appear to still remain.

Documentation states that USEPA and the state of Illinois EPA were notified of the conditions. Actions taken are unknown.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Other sources of information utilized included: 1) DOE Report (DOE/EV-0005/35 & ANL-OHS/HP-83-103); Radiological Survey of Chemicals Group, Olin Corporation (Formerly Blockson Chemical Company) Joliet, Illinois, March 27-November 28, 1978; May 1983 IL.07-02, 2) DOE Letter; Baublitz to Snyder; Subject: Elimination of the Olin Corporation from FUSRAP consideration; February 27, 1985 IL.07-1.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1962 - present

FACILITY NAME: Bloomfield Tool Co.
Bloomfield, New Jersey

TIME PERIOD: 1947; 1951

FACILITY DESCRIPTION:

DOE ES&H Website:

The facility had a small research contract with the AEC in 1947. In 1951, it did some experimental machining of uranium slugs for the AEC. The results were not satisfactory and the work was not expanded.

DISCUSSION:

Documentation reviewed during this evaluation does not fully substantiate that radioactive materials were handled or processed in 1947. However, the 1951 date is supported. Documentation for the 1951 period is fairly descriptive with respect to material types and quantities handled. Based on the process and material descriptions and documented oversight, there is a low probability of residual contamination after cessation of activities in 1951.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Bowen Engineering, Inc.
North Branch, New Jersey

TIME PERIOD: 1951

FACILITY DESCRIPTION:

DOE ES&H Website:

Bowen Engineering conducted some experimental work at their laboratory in New Jersey on uranium compounds during a two-day period in 1951. The tests were to develop a process for calcining pitchblende raffinates (transforming liquid or sludge-like wastes into a more solid form).

DISCUSSION:

Documentation contains descriptions of the process and objectives, equipment decontamination and radiological release survey results, with no residual contamination existing post-operation.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Bridgeport Brass Co.
Adrian, Michigan

ALSO KNOWN AS: Uranium Metals Extrusion Plant
General Motors, Chevrolet Mfg. Div.
National Distillers and Chemical Corp.
Martin
A.C. Spark Plug

TIME PERIOD: 1954-1961; Residual Radiation 1962-1994
DOE 1995 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1954-1961, the Bridgeport Brass Company performed contract work for the AEC. Operations included production of uranium fuel elements for the Hanford and Savannah River Plant reactors and developmental extrusion work on thorium and depleted natural and slightly enriched uranium.

After termination of AEC activities in 1961, most of this plant's functions were transferred to Reactive Metals, Inc. (RMI) in Ashtabula, Ohio. Bridgeport shipped one large extrusion press to RMI and all other equipment was dismantled and scrapped.

Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1985, the only year in which remediation work took place was in 1995. This work was performed under the Bechtel National Inc. umbrella contract for DOE site environmental remediation.

DISCUSSION:

Available documentation demonstrates that AEC operations ceased in 1961-1962, including facility decontamination along with equipment dismantlement and removal from the site. However, a radiological survey of the facility, performed for the DOE in 1976 identified uranium-contaminated dust and dirt throughout the facility requiring an additional cleanup. A subsequent radiological survey of the facility in 1979 identified residual contamination in sub-floor and sump areas, with limited potential for personnel exposure.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1962 - 1994

FACILITY NAME: Bridgeport Brass Co., Havens Laboratory
Bridgeport, Connecticut

ALSO KNOWN AS: Reactive Metals, Inc.
Piedmont Manufacturing

TIME PERIOD: 1950; 1952-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

Bridgeport Brass, at the Havens Laboratory in Connecticut and in Adrian, Michigan, worked to improve the process for extruding uranium. Eventually this work was taken over by Reactive Metals, which operated the AEC/DOE extrusion facility in Ashtabula, Ohio. Bridgeport cut and stored uranium, and may have been involved in the rolling of uranium. Some work of the Havens Laboratory was moved to Seymour, CT, in 1962, to a facility that is now owned by Seymour Specialty Wire.

This listing is intended to cover that portion of the Havens Laboratory known as the Housatonic Pilot Plant, which has also been called the Housatonic Avenue Plant.

DISCUSSION:

The work performed at the Havens laboratory was mostly metallurgy work done on a laboratory scale.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Brush Beryllium Co. (Cleveland)
Cleveland, Ohio

ALSO KNOWN AS: Brush Wellman Co.
Motor Wheel Corp.
Magnesium Reduction

TIME PERIOD: 1942-1943; 1949-1953; Residual Radiation 1944-1948

FACILITY DESCRIPTION:

DOE ES&H Website:

The Brush Beryllium Co., Cleveland facility, conducted research on a process for producing uranium metal (1942-1943) through magnesium reduction of molten green salt (uranium tetra fluoride). The facility later conducted research and development with uranium (1949-1953) and extruded thorium billets into slugs which were placed in Hanford production reactors (1952-1953).

DISCUSSION:

This facility involved two buildings, one at Chester Street and the other at Perkins Avenue. Based on the nature of the work, there is a reasonable possibility that significant residual contamination existed after operations ceased. However, both buildings no longer exist. The Chester Street building was demolished in 1946, and since that time has been either a vacant field or a parking lot. It is not clear when the Perkins Avenue building was demolished and replaced. There is no indication that either facility was decontaminated between 1943 and 1949. The Perkins Avenue Facility was also demolished but the date is unknown. The FUSRAP Elimination Report for the Former Brush Beryllium Company, states that a new building was present on the Perkins Avenue facility in May of 1977.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

Pertinent document: DOE Report; FUSRAP Elimination Report for the Former Brush Beryllium Company, Cleveland, Ohio; November 14, 1985.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1944 – 1948; 1954-1977

FACILITY NAME: Brush Beryllium Co. (Detroit)
Detroit, Michigan

TIME PERIOD: 1942-1950s

FACILITY DESCRIPTION:

DOE ES&H Website:

The Brush Beryllium Company in Detroit, MI, was one of several companies that rolled or extruded uranium rods for Hanford reactor fuel in the late 1940s and early 1950s. In 1950, Hanford began making rolled uranium rods onsite, but the Atomic Energy Commission shifted the rolling work to the Fernald, OH, Feed Materials Production Center and its supporting contractors in 1952. A number of private companies, including Brush Beryllium Company, contracted with Fernald to provide Hanford with these rolled rods.

DISCUSSION:

Although there were other Brush Beryllium facilities that had documented use of radioactive materials, no documentation was available to confirm that the Detroit site ever possessed or worked with AWE related radioactive material. This facility may have been a corporate office location with no handling of radioactive materials.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: BWX Technologies (Virginia)
Lynchburg, Virginia

TIME PERIOD: 1959; 1968-1972; 1985-2001

FACILITY DESCRIPTION:

DOE ES&H Website:

Babcock and Wilcox Company's Nuclear Facilities Plant in Lynchburg, VA, performed work for a variety of AEC and DOE projects. Babcock and Wilcox Company's Nuclear Facilities Plant in Lynchburg, VA, participated in the AEC's Oxide Pellet Fabrication Program, which was managed by the New York Operations Office. Records indicate that shipments of enriched uranium were made to and from the Fernald facility during the years 1968-1972. The company also recovered highly enriched uranium from weapons scrap received from the DOE's Oak Ridge facility between 1985 and 1996. In 1997 the Babcock & Wilcox Company facility in Lynchburg, VA became the BWX Technologies facility. From 1998 to 2000, the company fulfilled a contract for the recovery of enriched uranium from scrap materials containing beryllium. The Lynchburg plant also participated in a DOE-sponsored program called Project Sapphire, under which the plant had responsibility from 1995 to 2001 for downblending enriched uranium obtained from the government of Kazakhstan.

DISCUSSION:

The documentation available for this evaluation is insufficient to rule out the period between 1960-1967, or the period after 1972. There was no available documentation describing the materials, processes and/or objectives of the enriched uranium shipments between Babcock & Wilcox and NLO (Fernald) during the 1968 through 1972 period.

A radiological survey was performed at this facility in 1959. Airborne radioactive material concentrations and surface contamination measurements demonstrate that contamination was dispersed via air into surrounding areas. There is no documentation that anything other than routine cleaning was ever performed at this facility, as it appears to have remained and is currently operational. Contamination spread from AWE related activities is not distinguishable from non-related contamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Reference: USAEC (NYOO) Health and Safety Laboratory - Occupational Exposure to Radioactive Dust, Babcock and Wilcox Company, Lynchburg VA., Oct. 26, 1959

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1960-1967, 1973-1984, 2002 to present

FACILITY NAME: C. G. Sargent & Sons
Graniteville, Massachusetts

TIME PERIOD: 1968

FACILITY DESCRIPTION:

DOE ES&H Website:

C.G. Sargents and Sons Company performed extruder and drying oven tests with thorium for National Lead of Ohio (Fernald). It also conducted a uranium sump cake drying test for NLO. These were apparently one-time tests.

DISCUSSION:

Documentation indicates that limited quantities of materials were processed and radiological monitoring was implemented during the activities. These operations were conducted in 1968 under an NRC source material license. In 1970, at license expiration, the NRC concluded there was little likelihood of residual contamination above current guidelines.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE as well as FUSRAP facility evaluation documents.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: C.H. Schnorr
Springdale, Pennsylvania

ALSO KNOWN AS: Conviber
Premier Manufacturing

TIME PERIOD: 1943-1951
DOE 1994 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1943, C.H. Schnorr & Company began providing metal fabrication services in support of MED operations. C.H. Schnorr machine extruded uranium for the Hanford Pile Project. Operations may have continued until 1951 when the building was sold.

Although this site was designated for the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1992, the only year in which remediation work was performed was 1994.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, information from the FUSRAP website and the DOE/EM website. Specific documents used in the review included: 1) DOE Memorandum; Wagoner to Price; Subject: Authorization for Remedial Action at Schnorr Site in Springdale, Pennsylvania, September 25, 1992; 2) DOE Report (OR-FSRD); Certification Docket for the Remedial Action Performed at the C.H. Schnorr Site, Springdale, Pennsylvania, in 1994. November 1996.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1952 - 1993

FACILITY NAME: C. I. Hayes, Inc.
Cranston, Rhode Island

TIME PERIOD: 1964

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1964, C.I. Hayes Inc., handled uranium metal under subcontract to the National Lead Company. The work involved heat-treating uranium in a vacuum furnace in order to test the decontamination and health and safety aspects of this work.

DISCUSSION:

Documentation was available describing the three-day process, which occurred from January 7 to January 9, 1954. It describes the process, material handled, radiological controls and monitoring, equipment and area decontamination, as well as removal of materials and wastes generated during the process, and demonstrates that no residual contamination was likely to have existed post-operation.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: California Research Corp.
Richmond, California

TIME PERIOD: 1948-1949

FACILITY DESCRIPTION:

DOE ES&H Website:

Using small amounts of plutonium and uranium, the California Research Corp. performed experiments to investigate the use of continuous chelation as a means of separating plutonium and zirconium from uranium. The California Research Corp. performed the work as a subcontractor to the Kellex Corporation which was under contract to the AEC to investigate waste recovery methods.

DISCUSSION:

Documentation demonstrates that limited quantities of material were handled under laboratory conditions and controls, implementing personnel and area monitoring, material accountability and equipment decontamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Callite Tungsten Co.
Union City, New Jersey

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

According to a 1944 document, the Callite Tungsten Co., used its machines to cold roll uranium metal rods for the Manhattan Engineer District.

DISCUSSION:

Available documentation continues to be limited. A single document originating in 1944 describes activities at the Callite Tungsten Co. in New Jersey involving the “cold rolling of uranium”.

Without documentation describing the activities, amount of materials involved, and/or post operations radiological conditions in more detail, it is determined that there exists a potential for significant residual contamination beyond the specified period.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1945 - present

FACILITY NAME: Carboloy Co.
Detroit, Michigan

ALSO KNOWN AS: General Electric Metallurgical Products

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1956, the Carboloy Co. conducted operations to turn down the outer diameter of uranium slugs.

DISCUSSION:

Activities conducted related to weapons development, specifically the downsizing of uranium slugs, were performed on June 26-29, 1956. Documents state that the facility was decontaminated on the last of the four days. Later in the same year, General Electric applied for a Special Nuclear Material License from the AEC, to receive and process uranium dioxide for conversion into solid fuel pellets associated with commercial boiling water reactor development. General Electric subsequently notified the AEC that commercial applications associated with the license had ceased and requested termination of the license in 1958. Detailed documentation was available for review demonstrating existence of a comprehensive site radiological control program which would have ensured that the weapons development work did not lead to residual contamination dispersed amongst commercial-purpose contamination. This is further evidenced by a radiological survey performed in 1982 by the NRC, verifying the decontamination and removal of equipment, whereupon all radiological conditions were at background levels and no residual contamination was identified.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation available indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Carborundum Company
Niagara Falls, New York

ALSO KNOWN AS: N/A

TIME PERIOD: 1944; 1960-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

The Carborundum Company engaged in various phases of a Manhattan Engineer District program in 1944 designed to determine suitable methods for shaping and engineering uranium rods. This work involved the forming, coating, and canning of uranium rods for the pile process. Between 1960 and 1962, the company fabricated plutonium carbide pellets for the AEC from materials supplied by Hanford. Carborundum also performed work during the 1950s that is not covered under EEOICPA, including: fabricating nuclear fuel elements for commercial purposes and producing zirconium, hafnium, and titanium for the AEC's special reactor materials program.

DISCUSSION:

Nuclear Regulatory Commission (NRC) documentation states that a July 28, 1992 survey of the facility indicated that current decommissioning criteria had been met.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Reference: NRC Terminated License Tracking System - license # SNM00214.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1945 - 1959, 1963 - 1992

FACILITY NAME: Carnegie Institute of Technology
Pittsburgh, Pennsylvania

ALSO KNOWN AS: Carnegie-Mellon Cyclotron Facility

TIME PERIOD: 1942-1946

FACILITY DESCRIPTION:

DOE ES&H Website:

During the Manhattan Project, Carnegie Institute of Technology was key participant in research on the phases of special metals and their alloys. It also worked on the development of methods for testing materials of construction and the construction of “necessary equipment.”

DISCUSSION:

This facility may have performed limited research activities during the time frame of 1941 through 1944, under laboratory controlled conditions. There is no documentation indicating that radioactive materials handled for the MED/AEC would have led to residual contamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Carpenter Steel Co.
Reading, Pennsylvania

TIME PERIOD: 1943-1944

FACILITY DESCRIPTION:

DOE ES&H Website:

Beginning in 1943, Carpenter Steel Co. was one of the 14 private contractors and vendors that produced fuel for the Oak Ridge X-10 pilot plant reactor and the full-scale Hanford production reactors. As an alternative to extrusion, the Carpenter Steel Co. of Reading, Pennsylvania experimented with rolled uranium rods in July 1944, but these proved to be inferior to the extruded product. The metal tended to form laps and seams on the surfaces of the rolled bars. Carpenter Steel has since changed its name to Carpenter Technology Corporation.

DISCUSSION:

The processes are believed to have had a low potential for resultant, wide-spread contamination. In 1981, a radiological survey conducted by Argonne National Lab identified several discrete areas of elevated contamination which upon review of additional documentation were in inaccessible areas. This initial survey prompted a comprehensive radiological survey in 1988 performed by ORNL. A review of this survey demonstrates that no residual contamination above background was identified.

The site was eliminated from the FUSRAP system in 1991, based on the survey results.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Pertinent documentation included, Report (ORNL/RASA-89/3); Results of the Radiological Survey of the Carpenter Steel Facility, Reading Pennsylvania; Date of issue - July 1990.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: C-B Tool Products Co.
Chicago, Illinois

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

For a six month period in 1944, C-B Tool Products Co. had a subcontract with the University of Chicago to provide personnel, facilities, and equipment to produce special machining of parts for special equipment, tools, jigs, and fixtures to the Met Lab from materials provided by the University of Chicago. It is unclear whether the company handled radioactive materials.

DISCUSSION:

There is no available documentation to support or substantiate that radioactive materials were handled or involved at any time. Additionally, the building that may have served as the location for machining or tool development was demolished in the 1940s.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Pertinent documentation included a FUSRAP Elimination report dated January 31, 1990.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Chambersburg Engineering Co.
Chambersburg, Pennsylvania

TIME PERIOD: 1957

FACILITY DESCRIPTION:

DOE ES&H Website:

In March 1957, a series of hot uranium forging tests were conducted at the Chambersburg Engineering Co. by the Metallurgical Department of National Lead of Ohio (Fernald). Approximately 150 hot uranium slugs were forged into washers on two Chambersburg air compressor impactors.

DISCUSSION:

This activity took place for only two days, March 20 and 21, 1957, including clean-up. Documentation reviewed describes the processes, materials handled, equipment and area decontamination, recovery of materials as well as safety and health air sampling, all of which indicate that the presence of residual radioactive contamination after the operation is unlikely.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation available indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Chapman Valve
Indian Orchard, Massachusetts

ALSO KNOWN AS: Chapman Valve Manufacturing Co.
Crane Co.

TIME PERIOD: 1948-1949;
Residual Radiation 1950-1994;
DOE -1995 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

Chapman Valve supplied valves to the MED and the AEC. In 1948, Chapman Valve machined uranium rods into slugs for the Brookhaven National Laboratory. Uranium slugs were used as reactor fuel. Chapman may also have conducted rolling operations on uranium metal in 1949.

Bechtel National, Inc., with Interstate Nuclear Services and Thermo Nutech as subcontractors, performed remediation in 1995 as part of the Formerly Utilized Site Remediation Action Program (FUSRAP)

DISCUSSION:

Documentation indicates that a radiological survey was performed at this site in 1991 with uranium contamination identified on floors, walls and overhead beams. Specific radiological survey data was not available but the written description of the 1991 survey verifies that residual contamination was present after cessation of the activities in 1949.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and information obtained from the FUSRAP website.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950 - 1994

FACILITY NAME: Chemical Construction Co.
Linden, New Jersey

ALSO KNOWN AS: Chemico

TIME PERIOD: 1953-1955

FACILITY DESCRIPTION:

DOE ES&H Website:

The Chemical Construction Co. conducted research and development activities to recover uranium and other metals from low-grade waste materials. The wastes were generated by uranium processing operations at the Mallinckrodt facility in St. Louis, Missouri.

DISCUSSION:

Documentation briefly describes the process being researched and developed and it would appear that considerable quantities of residues were evaluated for processing but there is no documented evidence that these processes were ever employed. In a DOE Memorandum/Checklist; Young to File dated 12/4/87; the following quote is extracted “Absence of any record of radiological characterization of the property and the volume of material processed suggest that their may be potential for residual contamination. However insufficient info has been found to justify further consideration under FUSRAP.” Subsequently, in 1995, it appears that this site was removed from FUSRAP as DOE found they had no authority to perform remediation.

Based on the uncertainties associated with this site, coupled with determinations documented by DOE through internal reviews it is determined that this site has a potential for significant residual contamination outside the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Pertinent documentation included, DOE Letter; Wagoner to Gregorio; No Authority to Perform Remedial Action at the Former Linden Pilot Plant of the Chemical Construction Company; February 17, 1995.

Based on the uncertainties associated with this site, coupled with determinations documented by DOE through internal reviews it is determined that this site has a potential for significant residual contamination outside the period in which weapons-related production occurred.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1956 - present

FACILITY NAME: Cincinnati Milling Machine Co.
Cincinnati, Ohio

ALSO KNOWN AS: Cincinnati Milacron, Inc.

TIME PERIOD: 1963

FACILITY DESCRIPTION:

DOE ES&H Website:

The Cincinnati Milling Machine Co. built electro-chemical machining units. In September 1963, the company tested the feasibility of electro-chemical machining of uranium. Eight normal uranium solid cylinders 1-inch in diameter and 1-inch long (approximately 14 pounds) were used in the test.

DISCUSSION:

This was a one day activity that took place on September 17, 1963. Documentation reviewed describes the processes, material handled, radiological controls, monitoring, equipment decontamination and removal of materials and waste. This activity was limited in scope and a post-operation survey identified no residual radioactivity above background levels.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation available indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Colonie Site (National Lead)
Colonie (Albany), New York

ALSO KNOWN AS: Colonie Interim Storage Site
National Lead Co., Albany, NY
National Lead Co.-Nuclear Division
NL Industries-Nuclear Division

TIME PERIOD: 1958- 1968; DOE 1984-1998

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1958-1968, National Lead Industries owned and operated the Colonie site and during this time it produced uranium products under contract to the AEC. This contract was terminated in 1968. Thereafter, National Lead fabricated various products from depleted uranium. The largest customer for these products was the U.S. Department of Defense with its contract for armor penetrator cores. While the AEC was still a customer during these years, the uranium work was for reactors and not weapons based. Therefore, because this work did not constitute “producing or processing material used in a nuclear weapon”, it is not eligible for coverage under the Energy Employees Occupational Illness Compensation Program Act. In 1984 ownership of the property transferred to the Department of Energy and from 1984 to late 1997 Bechtel National Inc. served as DOE’s contractor at the site. In 1998 the Corps of Engineers took the program over as part of the transfer from DOE to the Corps of the Formerly Utilized Site Remediation Action Program (FUSRAP).

DISCUSSION:

Activities involving radioactive materials began in 1958 and were conducted through 1984, at which time the property was transferred to the federal government and cleanup under FUSRAP was initiated.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and information obtained from the FUSRAP website.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1969 - 1983

FACILITY NAME: Combustion Engineering
Windsor, Connecticut

ALSO KNOWN AS: Asea Brown Boveri

TIME PERIOD: 1965-1972; Residual Radiation 1973-1998

FACILITY DESCRIPTION

Combustion Engineering (CE) sent shipments of uranium to Fernald between 1965 and 1972 for use in the nuclear weapons production process. It is because of these shipments that this site qualifies as an Atomic Weapons Employer for these years. Combustion Engineering performed substantial work for the Atomic Energy Commission in other years as well, but this work is not covered under EEOICPA because it was either non-nuclear or was not related to weapons production. Starting in the 1940s, this initial work at the site involved non-nuclear components. In 1955, CE began to use highly enriched uranium for its work in supporting the Naval Reactors Program. In the 1960s, CE obtained a license to fabricate fuel elements for power reactors.

Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1994, no work under this program was ever performed on site.

DISCUSSION:

Radiological surveys conducted for DOE confirmed the presence of residual contamination and led to subsequent FUSRAP cleanup activities in 1986. Radioactive material contamination was identified in three buildings, related drainpipes and sewer lines, a waste storage pad area, a waste drum burial site, and a brook on the property.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and information obtained from the FUSRAP website.

Pertinent documents;

1. DOE Report (ORAU 89/E-93); Follow-up Confirmatory Radiological Survey of the Drum Storage Area Combustion Engineering Property Windsor Connecticut; May 1989.
2. DOE Report (ORISE 94/D63); Designation Survey Combustion Engineering Site Windsor, Connecticut; April 1994.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1973 - 1998

FACILITY NAME: Copperweld Steel
Warren, Ohio

TIME PERIOD: 1943-1946

FACILITY DESCRIPTION:

DOE ES&H Website:

The Copperweld Steel Company of Warren, Ohio, straightened and outgassed a large number of uranium rods for the Hanford and Oak Ridge reactors between May and August of 1943.

DISCUSSION:

Documentation reviewed includes process and material descriptions which, when coupled with the radiological characterization survey results gathered by ORNL in 1990, indicates that the presence of residual radioactive contamination post-operations is unlikely.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Pertinent documentation included;

1. DOE Letter; A. Williams to F. Iannizzara; Subject: Summary of Radiological Survey Results and Site Elimination Information; April 5, 1991.
2. DOE/Oak Ridge National Laboratory Survey; R Foley and L. Floyd; Subject: Preliminary Site Survey at the Copperweld Steel Co. 4000 Mahoning Avenue, NW, Warren, Oh (CWO 001); ID# ORNL/RASA-90/2; December 1990.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Crane Co.
Chicago, Illinois

TIME PERIOD: 1947-1949

FACILITY DESCRIPTION:

DOE ES&H Website:

Crane Co. supplied the AEC with uranium and thorium in the 1940s (and perhaps in the 1950s) and likely used materials containing uranium in manufacturing valves for the AEC. At the completion of one project in 1949, 1,000 pounds of contaminated wastes, including 346 grams of uranium, were shipped from Crane to Oak Ridge. In 1949, Crane also shipped 265 kg of normal uranium to Hanford. In 1954, records indicate government interest in purchasing more uranium and thorium from Crane, but this work has not been verified.

DISCUSSION:

Documentation reviewed indicates that the facility was decontaminated at the end of operations to acceptable levels.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Other sources of information included: Final Health Physics Survey of the Corrosion Test Area of the Crane Company, dated Sept. 26, 1949, from A.L. Baietti to Dr. J.R. Martin.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Crucible Steel Co.
Syracuse, New York

TIME PERIOD: 1951

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1951, New York Operations office personnel performed a test forging and rolling of 10 thorium billets at Crucible Steel Co.

DISCUSSION:

Documentation reviewed during this evaluation is limited, but what has been available for review indicates that anticipated production of thorium slugs from billet stock may have extended past the 1951 date.

No new information or documentation has been found and what is available is void of any radiological characterization data.

With the absence of adequate information, the resulting determination is that this site does pose a potential for residual contamination outside the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1952 - present

FACILITY NAME: Dorr Corp.
Stamford, Connecticut

ALSO KNOWN AS: Dorr-Oliver Corp.

TIME PERIOD: 1954; 1963

FACILITY DESCRIPTION:

DOE ES&H Website:

The Dorr Corp. conducted waste-handling tests on low-level radioactive material (ammonium diuranate). This work was done as a subcontractor to National Lead of Ohio (Fernald). National Lead personnel monitored the tests and took air quality samples.

DISCUSSION:

The radiological status of the facility after operations conducted in 1954 and 1963 are not known, however available documentation indicates additional work was conducted in 1969. At the end of these 1969 activities a radiological survey identified uranium dust throughout the facility. It cannot be discerned whether this contamination was a result of the 1969 activities or existed from prior activities. A subsequent cleanup was performed in 1969. Follow-up surveys identified no further contamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE. Other sources used in this evaluation included: 1) US NRC Letter; R. Bellamy to J. Russo; Subject: NRC Safety Inspection and License File Review; May 15, 1996, and attached Inspection Report No. 040-07964/96-001 approved May 8, 1996.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1955 -1962, 1964 - 1969

FACILITY NAME: DOW Chemical Company (Madison Site)
Madison, Illinois

ALSO KNOWN AS: Madison Site (Spectrulite)
Spectrulite Consortium, Inc.
Consolidated Aluminum

TIME PERIOD: 1957-1960, Residual Radiation 1961-1998

FACILITY DESCRIPTION:

DOE ES&H Website:

The Dow facility in Madison, Illinois, supplied the AEC with materials (chemicals, induction heating equipment, and metal magnesium metal products) and services. Dow received a purchase order from Mallinckrodt in March 1960, for research and development on the extrusion of uranium metal and rod.

Dow sold this facility in 1969 to Consolidated Aluminum, which continued to operate the facility from 1969 through 1986. However, during the period of 1969-1986, the operations were of a purely commercial nature and did not involve AEC or Department of Energy contracts. Spectrulite subsequently purchased the plant from Consolidated Aluminum.

Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1992, no remediation work ever took place under the DOE FUSRAP program prior to that program being transferred to the Army Corps of Engineers in 1997.

DISCUSSION:

A radiological survey was performed in 1989 by ORNL for the DOE which identified residual contamination approximately thirty years after the period in which weapons-related production occurred, which subsequently led to FUSRAP activities.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Pertinent documents included, ORNL Report (ORNL/TM-11552); Preliminary Results of the Radiological Survey at the Former Dow Chemical Company Site, Madison, Ohio; Issued December 1990.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1961 - 1998

FACILITY NAME: Dow Chemical Co.
Walnut Creek, California

ALSO KNOWN AS: Pittsburg, California

TIME PERIOD: 1947-1957

FACILITY DESCRIPTION:

DOE ES&H Website:

The Dow operation involved process studies and experimental investigations on different uranium ores and thorium-bearing ores, including pilot-scale solvent extraction of uranium from phosphoric acid.

DISCUSSION:

Documentation identifies the activities as research and investigative studies conducted under laboratory conditions and controls. A radiological survey performed in 1977 identified overall contamination levels consistent with, and no higher than, natural background levels, with the exception of relatively low levels of fixed activity discovered in an inaccessible area of a fume hood, which was subsequently decontaminated and removed. The presence of this contamination posed little, if any, potential for personnel exposure and is not deemed to be significant.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: DuPont Deepwater Works
Deepwater, New Jersey

ALSO KNOWN AS: Chambers Chemical and Dye Works
E.I. Du Pont de Nemours and Co.
Dyeworks-Carneys Point
Deepwater Dyeworks

TIME PERIOD: 1942-1949; Residual Radiation 1950-1988; DOE 1996
(Remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

In the 1940s, E.I. DuPont de Nemours & Company (DuPont) produced uranium products and conducted research on uranium hexafluoride. These activities were conducted first for the U.S. Office of Scientific Research and Development (OSRD), and later under contract to the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC). DuPont also developed processes to convert uranium dioxide to uranium hexafluoride, and produced uranium oxide and uranium metal which was used to fuel the CP-1 reactor at the University of Chicago. After completion of these activities, the AEC conducted limited decontamination and released the site to DuPont for reuse. DuPont currently operates a chemical plant at this site.

Although DuPont Deepwater Works was designated as part of the Department of Energy's Formerly Utilized Site Remediation Action Program (FUSRAP) in 1980, the only year in which actual remediation was performed under contract to the DOE was 1996. There was decontamination performed in 1997, but this did not involve the Department of Energy.

DISCUSSION:

Documentation reviewed clearly establishes the period of MED/AEC operations as beginning in 1942 and ending in or around 1949, at which time decontamination activities were performed and the buildings were released back to DuPont. Radiological surveys of the properties, performed for the DOE in 1977 and 1983 identified elevated concentrations of uranium in surface and subsurface soils, building rubble areas and structures. These findings of residual contamination led to the subsequent FUSRAP clean-up actions. The potential for residual radioactive contamination exists between cessation of operations in 1949 and initiation of FUSRAP actions, as well as, during operations. Information found on the US Army Corps of Engineers' FUSRAP website indicates that remediation is presently on-going.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and the US Army Corps of Engineers' "Fact Sheet, Formerly Used Sites Remedial Action Program (FUSRAP) DuPont Chambers Works, Deepwater, New Jersey."

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950 – 1995; 1997 to present

FACILITY NAME: Dupont-Grasselli Research Laboratory
Cleveland, Ohio

ALSO KNOWN AS: Standard Oil of Ohio

TIME PERIOD: 1943-1945

FACILITY DESCRIPTION:

DOE ES&H Website:

The Grasselli Laboratory participated in the development of the slug canning and coating processes for the Hanford site.

DISCUSSION:

Documentation reviewed contains detailed descriptions of materials handled and processes being tested, both of which indicate a low potential for dispersion of contamination. No documentation of a radiological survey from the end of operations is known to exist. However, a radiological survey was performed in 1976 for the DOE which identified no radioactivity above background levels. This survey data and available process descriptions are adequate to determine that no significant residual contamination existed at the end of operations.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Edgerton Germeshausen & Grier, Inc.
Boston, Massachusetts

TIME PERIOD: 1950-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

EG&G was under contract to the AEC during the period from 1950-1953 for "research and development and manufacturing incident to the installation of scientific test instrumentation at AEC test sites; design, manufacture, test, maintenance of operations systems, weapons systems; and participation in weapons test evaluation." It is unclear from the documentation whether any radioactive materials were handled at the Boston location.

DISCUSSION:

Documentation does not confirm or substantiate that radioactive materials were handled or involved at any time including, during 1950-1953.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Electro Circuits, Inc.
Pasadena, California

TIME PERIOD: 1952-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

Electro Circuits used uranium metal (approximately 300 lbs.) to conduct tests aimed at determining the usefulness of ultrasonics in the detection of pipe in ingots.

DISCUSSION:

Based on the material form (metal) and the process of non-destructive inspection, there is little potential for residual radioactivity after the operations were completed and the material was returned to the custody of the AEC.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation available indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: ERA Tool and Engineering Co.
Chicago, Illinois

ALSO KNOWN AS: Audio-Tex, Inc.

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

From February 1944 through June 1944, ERA Tool and Engineering Company contracted with the University of Chicago to supply services and supplies to the Met Lab, specifically to provide necessary personnel, facilities, and equipment required to produce special machining of parts for special equipment, tools, jigs, fixtures, etc. from materials furnished by the University. It is unclear from the records whether ERA handled radioactive materials as part of its work.

DISCUSSION:

It is reasonable to assume that, if in fact radioactive materials were handled, they would have been of a limited quantity presenting little potential for residual contamination. This assumption is further supported through a radiological survey performed in 1989, which identified no radioactivity above background levels.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation available indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Extruded Metals Co.
Grand Rapids, Michigan

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

A November 7, 1944 document indicates that Extruded Metals participated in work related to metal fabrication for the Manhattan Project.

DISCUSSION:

No new documentation was found during this review, and available information is limited. The available documentation does not definitively confirm that radioactive materials were handled, or processed, at the facility. It is also unclear specifically when or in what time frame these activities may have been performed.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1945 - present

FACILITY NAME: Fenn Machinery Co.
Hartford, Connecticut

TIME PERIOD: 1950

FACILITY DESCRIPTION:

DOE ES&H Website:

Fenn conducted swaging tests on uranium rods to determine if the process could be used to produce properly shaped rods for Hanford's production reactors. Two tests, each lasting less than one day, were conducted in June 1950.

DISCUSSION:

Although there was no documentation indicating decontamination, there was documentation indicating air monitoring during the test. Records indicate little likelihood of contamination after test.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website FUSRAP files, along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Fenwal, Inc.
Ashland, Massachusetts

ALSO KNOWN AS: Kidde-Fenwal

TIME PERIOD: 1967-1968

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1967 and 1968, National Lead of Ohio (Fernald) asked Fenwal to conduct tests aimed at determining the capabilities of Fenwal's fire extinguishing equipment for suppressing fires originating in uranium contaminated magnesium. The tests were conducted at Fenwal facilities and involved small amounts of uranium. Some Fenwal employees later traveled to Fernald to service fire suppression equipment.

DISCUSSION:

Documentation exists indicating that airborne radioactivity and surface contamination surveys were performed during the operation and resulted in very low radiological hazards. In addition, decontamination was performed and all material was returned to the NLO (Fernald) site.

This was a small-scale operation performed with a well-defined small amount of radioactive material.

The operation was well-defined and posed minimal radiological risks during the operation. Documentation exists indicating that monitoring and decontamination was performed.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website, memos from the director of Health and Safety of NLO (Fernald), and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Foote Mineral Co.
East Whiteland Twp., Pennsylvania

ALSO KNOWN AS: Exton Cyrus Foote Mineral Co.
Formil
Shieldalloy Metallurgical
Cyprus Foote Mineral Company

TIME PERIOD: 1942 - 1948

FACILITY DESCRIPTION:

DOE ES&H Website:

Foote Mineral had a pilot plant at its East Whiteland Township location which processed monazite sands. Monazite sands are known to have a very high thorium content. Because the AEC needed fairly large quantities of thorium, they were very interested in different methods of extracting it from monazite sands.

Other work performed by Foote Mineral on behalf of the Atomic Energy Commission, including their work with zirconium, is not covered under EEOICPA.

Foote Mineral Company was also a major importer of beryl ore from Brazil. Under contract to the Atomic Energy Commission, Foote Mineral Company procured 500 tons of beryl ore in 1947.

DISCUSSION:

In 2003 the USEPA initial cleanup approach was retracted due to the discovery of low level radioactive contamination in some onsite soils, which was investigated and confirmed as a result of the prior residual contamination determination.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website, FUSRAP Considered Sites Database, and other correspondence provided by the DOE ES&H Group. Other sources included: USEPA Current Site Information Sheet on the Foote Mineral Company updated July 24, 2006.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1949 - present

FACILITY NAME: Gardinier, Inc.
Tampa, Florida

ALSO KNOWN AS: U.S. Phosphoric Plant Uranium Recovery Unit
Cargill Fertilizer, Inc.

TIME PERIOD: 1951-1954; 1956-1961

FACILITY DESCRIPTION:

DOE ES&H Website:

Under contract to the AEC, Gardinier (under the name U.S. Phosphoric Products) operated a pilot plant from 1951 to 1954 which recovered uranium from phosphoric acid. From 1956 to 1961, it produced uranium by recovery of U_3O_8 from phosphoric acid. Maximum production was 60 tons of uranium concentrate per year. The uranium was ultimately used in weapons production.

DISCUSSION:

Following a site visit in April 1977, ORNL personnel performed a complete radiological survey of the site from December 14-19, 1977. The final report stated that the contamination at this site has been identified as uranium and radium in concentrations exceeding NRC guidelines for the release of property for unrestricted use at some points inside the process building and in the outdoor area near the process building and pilot operations building. Radioactive material other than that used for weapons production was processed during or after the time of DOE contracts and exposure to workers in that facility cannot be clearly attributed to either DOE or non-DOE sources.

Documentation reviewed confirms the presence of residual contamination outside of the period in which weapons-related production occurred, which is indistinguishable from non-related residual contamination. The facility, affected areas and conditions appear to still remain. USDOE documentation indicates that the state of Florida was notified of the conditions, actions taken are unknown.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group. Other sources of information included: 1) ORNL Survey (DOE/EV-0005/21); Radiological Survey of the Former Uranium Recovery Pilot and Process Sites; Gardinier, Incorporated; Tampa, Florida; March 1981 FL.05-2, 2) DOE Letter; Wagoner to Freedman; No Authority Determination; November 8, 1994 FL.05-8.

EVALUATION FINDINGSS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1955, 1962-present

FACILITY NAME: General Atomics
La Jolla, California

ALSO KNOWN AS: GA
Division of General Dynamics
John Jay Hopkins Laboratory for Pure and Applied Science

TIME PERIOD: 1960-1969;
Residual Radiation 1970 – 1995;
DOE 1996-1999 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

General Atomics was one of a number of private contractors that processed unirradiated scrap for the AEC in the 1960s. In addition, the Hot Cell Facility was used for numerous post-irradiation examinations of Department fuels, structural materials, reactor dosimetry materials, and instrumentation. The Department-sponsored activities at the General Atomics Hot Cell Facility primarily supported the High Temperature Gas Cooled Reactor and the Reduced-Enrichment Research Test Reactor programs. In December 1994, General Atomics notified the NRC and the State of California Department of Health Services of its intent to cease operations in the Hot Cell Facility.

General Atomics was also the operating contractor for the AEC's Experimental Beryllium Oxide Reactor (EBOR) at Idaho National Engineering Laboratory. General Atomics manufactured EBOR fuel elements (UO₂-BeO) on site and examined them in the site's hot cell.

DISCUSSION:

A final closeout survey of the facility was conducted by ORNL in 2000, and the site was released for unrestricted use.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H website, and internal DOE/AEC correspondence provided by the Department of Energy ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1970 – 1995

FACILITY NAME: General Electric Company (Ohio)
Cincinnati/Evendale, Ohio

ALSO KNOWN AS: GE Evendale
GE Cincinnati
GE Lockland
Air Force Plant 36

TIME PERIOD: 1961-1970

FACILITY DESCRIPTION:

DOE ES&H Website:

The Evendale Plant's major mission is to build aircraft engines. The AEC used this facility to work with a variety of radioactive materials, including uranium and thorium. This facility was also involved in the refining or fabrication of beryllium or beryllium oxide.

DISCUSSION:

Documentation reviewed indicates that Aircraft Nuclear Propulsion (ANP) work reportedly began at this General Electric facility in 1951 as a joint Air Force/AEC program, which subsequently ended in 1961. Use of radioactive materials reportedly continued at this facility for other AEC related work until 1973.

A radiological survey performed at Building D in 1987 by ORAU, states that “preliminary measurements identified significant residual contamination exceeding the release guidelines” for unrestricted use. This survey resulted in additional decontamination efforts, and follow-up radiological surveys.

Documentation indicates that Buildings C and D along with associated areas were remediated and/or demolished in February 1994. The NRC terminated license 34-00499-11 which had been issued authorizing the possession of the contaminated equipment and facilities.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE Worker Advocacy Website and other correspondence provided by the DOE ES&H Group. Reference: 1) ORAU 88/H-106 Confirmatory Radiological Survey of the Building D Laboratory Area, General Electric Company, Evendale, Ohio: 2) NRC Terminated License Tracking System – license # 34-00499-01 through 34-00499-11, May 28, 1997.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1971 - 1994

FACILITY NAME: General Electric Plant (Indiana)
Shelbyville, Indiana

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1956, this facility handled thorium metal under subcontract to National Lead of Ohio (Fernald). The work, which involved 500 pounds of thorium, was a test of compacting and shaping techniques using General Electric's equipment.

DISCUSSION:

Documentation exists which shows that the facility was effectively decontaminated (immediately) after the DOE work was completed.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: General Electric Vallecitos
Pleasanton, California

TIME PERIOD: 1958-1978; 1981-1982;
DOE 1998- present (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1958, General Electric Vallecitos constructed four hot cells for post irradiation examination of uranium fuel and irradiated reactor components. The U.S. Government's involvement (through the AEC and later, the DOE) was limited to a single hot cell, Hot Cell No. 4. Between 1965 and 1967, Hot Cell No. 4 was decontaminated, equipped with a stainless steel liner to contain plutonium, and dedicated to the study of mixed oxide fuel rods in support of the AEC's fast breeder reactor development programs. In 1978, Hot Cell No. 4 was placed on standby; it was used by Lawrence Livermore National Laboratory for six months in 1981 and 1982.

DISCUSSION:

Hot Cell No. 4 is currently undergoing decontamination and remediation, related to past AEC/DOE activities.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal DOE/AEC correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1979 –1980, 1983-1997

FACILITY NAME: General Electric X-Ray Division
Milwaukee, Wisconsin

TIME PERIOD: 1956-1966

FACILITY DESCRIPTION:

DOE ES&H Website:

General Electric's X-Ray Division performed research and development work which supported its activities as contractor for the Pinellas Site in Florida. This work included the operation of a small pilot plant in Milwaukee. Sandia National Laboratory managed the GE X-ray division contract as part of the nuclear weapons program. The work in Milwaukee continued until 1966 when these activities were transferred to Pinellas and the staff relocated accordingly.

DISCUSSION:

Because there is no information available describing the activities at this facility, or whether or not it was decontaminated, the assumption is made that contamination still exists at the site.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1967 - present

FACILITY NAME: Granite City Steel
Granite City, Illinois

ALSO KNOWN AS: Old Betatron Building
General Steel Castings

TIME PERIOD: 1953-1966;
Residual Radiation 1967-1992;
DOE 1993 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1958 through 1966, Granite City Steel (under the name General Steel Castings) performed quality-control work for the AEC. Specifically, it x-rayed uranium ingots to detect metallurgical flaws for the Mallinckrodt Weldon Spring site.

DISCUSSION:

No documentation reviewed indicated that the facility was adequately decontaminated after DOE work was discontinued in 1966. Survey results showed small amounts of residual radioactivity in excess of federal guidelines remained in several areas of the x-ray building. The residual radioactive material at the site was likely the result of operations, such as the rubbing off of oxidized uranium during handling. DOE cleanup of the site was completed in June 1993.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1967 - 1992

FACILITY NAME: Great Lakes Carbon Corp.
Chicago, Illinois

TIME PERIOD: 1952-1958

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1952, the Great Lakes Carbon Corp. studied graphite for the Atomic Energy Commission and in 1958 it did some Transient Reactor Test Facility (TREAT) fuel work for Argonne National Laboratory (ANL). As part of the contract, ANL agreed to decontaminate the facility used. It handled radioactive uranium and radioactive thorium under AEC contract.

DISCUSSION:

Documentation exists which shows that the facility was effectively decontaminated (immediately) after the DOE work was completed (September 12, 1958).

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Gruen Watch
Norwood, Ohio

ALSO KNOWN AS: Gruen Watch Co., Time Hall

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

The Gruen Watch Co. conducted cold shaving and stamping and hot stamping washer tests for National Lead Company of Ohio (Fernald) in May and June 1956. The tests involved shaving and stamping uranium washers on a 60-ton mechanical press and stamping washers from strips of uranium heated in a salt bath. Only small quantities of radioactive materials were handled.

DISCUSSION:

Documentation exists which shows that contamination surveys were completed immediately after the DOE work was completed.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME GSA 39th Street Warehouse
Chicago, Illinois

ALSO KNOWN AS: Resco Air Conditioning and Heating Co.

TIME PERIOD: 1942-1949

FACILITY DESCRIPTION:

DOE ES&H Website:

The 39th Street Warehouse was occupied by the Metallurgical Laboratory and Argonne National Laboratory until approximately 1949. Activities in the building included the storage of radioactive materials.

DISCUSSION:

A radiological survey of this property, including soil surface, sheds, and loading platforms in the rear yard, was completed on July 7, 1949. After decontamination, the building and grounds were determined to be below acceptable levels. ANL re-surveyed the site from July 11-14, 1977, and found no radioactivity above natural background.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Harshaw Chemical Co.

Cleveland, Ohio

ALSO KNOWN AS: Harshaw Filtrol Partners
Uranium Refinery

TIME PERIOD: 1942-1955
Residual Radiation 1956-1984

FACILITY DESCRIPTION:

DOE ES&H Website:

Harshaw Chemical Co. of Cleveland, Ohio refined black oxide and sodium diuranate to orange oxide and then to brown oxide for the Manhattan Project during World War II. The final result was a "green salt," which the Manhattan Project used to produce uranium hexafluoride for enrichment into weapons-grade fuel for nuclear weapons at the gaseous diffusion plants. Harshaw also produced uranium hexafluoride during the war. This production activity was expanded in 1947. Harshaw production was reduced in 1951, and by May of 1953 the green salt plant was dismantled and the hexafluoride plant was placed on standby. The contract for removal of AEC equipment continued until September 30, 1955.

DISCUSSION:

Available documentation indicates that Harshaw Chemical Co. provided significant quantities of uranium, in various chemical forms, to the MED/AEC during the period of 1942 through 1955. There is also documentation that radiological decontamination of the area and equipment was undertaken, potentially as late as 1960. However, subsequent radiological surveys performed in 1976 through 1979 for the DOE, and then again in 1984, identified widespread uranium contamination that could be attributed to MED/AEC activities. Widespread contamination was identified by Argonne in 1976-79, particularly in "Plant C," the building that was used for AEC/MED activities.

Documentation reviewed indicates that there is AWE related residual contamination outside of the period. This facility is currently undergoing a FUSRAP cleanup.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Other sources of information included: (1) DOE Report (DOE/EV-0005/48 and ANL-OHS/HP-84-104); Formerly Utilized MED/AEC Sites Remedial Action Program, Radiological Survey of the Harshaw Chemical Company, Cleveland, Ohio; April 1984 OH.04-2, (2) USACE Harshaw Site, Missions status sheet.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1956 - present

FACILITY NAME: Heald Machine Co.
Worcester, Massachusetts

TIME PERIOD: 1960

FACILITY DESCRIPTION:

DOE ES&H Website:

National Lead of Ohio (Fernald) conducted tests on a drilling machine at the Heald facility. The tests involved drilling a few uranium slugs on the machine which Fernald intended to purchase.

DISCUSSION:

This activity took place from May 16 to May 20, 1960. Existing documentation shows that contamination surveys and decontamination were conducted immediately after the DOE work was completed.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Heppenstall Co.
Pittsburgh, Pennsylvania

ALSO KNOWN AS: Tippins Inc.

TIME PERIOD: 1955

FACILITY DESCRIPTION:

DOE ES&H Website:

Under contract to the Mallinckrodt Chemical Co., the site was used to heat, press and water quench uranium "dingots". Approximately 100,000 pounds of normal uranium metal was shaped at Heppenstall over about a 6-month period. Records indicate that the forging was done on a 1000 ton press on a schedule of two days per month by a Heppenstall crew of eight men.

DISCUSSION:

Although the work dates are well-documented in the existing documentation, there is no documentation indicating that the facility was adequately decontaminated after DOE work was discontinued. There are indications that HASL may have performed radiological surveys during the operations. Documentation related to the radiological conditions at the end of operations has not been located.

A subsequent radiological survey was performed and documented in 1989, for the DOE, identifying no residual contamination.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE Worker Advocacy Website and other correspondence provided by the DOE ES&H Group. Reference: Oak Ridge National Laboratory Report (ORNL/RASA-89/19); "Results of the Radiological Survey at the Former Heppenstall Company site, 4620 Hatfield Street, Pittsburgh, Pennsylvania"; Issued January 1991.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1956 -1989

FACILITY NAME: Herring-Hall-Marvin Safe Co.
Hamilton, Ohio

ALSO KNOWN AS: Diebold Safe Co.

TIME PERIOD: 1943-1951
Residual Radiation 1952-1993;
DOE (remediation) 1994-1995

FACILITY DESCRIPTION:

DOE ES&H Website:

Intermittently from 1943 to 1951, the Herring-Hall-Marvin Safe Co. machined natural uranium metal slugs from rolled stock under subcontract to DuPont and the University of Chicago.

DISCUSSION:

The dates listed on the DOE website are not supported by documentation. Although the work dates are roughly documented in the existing documentation, there is no documentation which indicates that the facility was adequately decontaminated after work was discontinued.

However, there is documentation showing radiological surveys were conducted in 1988 and 1989. Both surveys indicated that there was a small amount of uranium contamination found. This small amount was decontaminated when found. In 1993, public attention was drawn to this facility by former workers who stated that the earlier surveys did not include the portion of the third floor where actual machining work was conducted. Surveys were conducted and radioactive residues were found to be in excess of DOE guidelines on over 25 percent of the third floor. Restricted access to the third floor was recommended to the current owner at this time. Decontamination of the surface contamination on the third floor was completed February 1995.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1952 - 1993

FACILITY NAME: Hooker Electrochemical
Niagara Falls, New York

ALSO KNOWN AS: Hooker Chemical Co.
Occidental Chemical Corp.
Occidental Chemical Corp., Specialty Chemical

TIME PERIOD: 1943-1948

FACILITY DESCRIPTION:

DOE ES&H Website:

In January 1943, Hooker began work for the Manhattan Engineer District to manufacture fluoridated and chlorinated organic chemicals. The by-product of this work was hydrochloric acid that was subsequently used in the chemical processing of a uranium-bearing slag as a precursor of uranium recovery. This work was continued until shortly after World War II. Activities related to this contract ended June 1948. Hooker Electrochemical's relationship with the AEC resumes between 1953 and 1958 as the Management and Operating Contractor for the Lake Ontario Ordnance Works, listed separately in this database.

DISCUSSION:

There is no documentation identifying the radiological conditions at the cessation of operations or information that can be used to determine if the facility was adequately decontaminated after DOE work was discontinued.

There is documentation of radiological surveys during the period of October 11- 15, 1976. This survey concludes that residual radioactivity levels were within current Federal and State guidelines for unrestricted use.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE Worker Advocacy Website and other correspondence provided by the DOE ES&H Group. Reference: 1) Report, Formerly Utilized MED/AEC Sites Remedial Action Program Radiological Survey of the Hooker Chemical Company Niagara Falls, New York, January 1977; 2) Report, FUSRAP Elimination Report for Occidental Chemical Corporation (Former Hooker Electrochemical Company) Niagara Falls, New York September 30, 1985

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1949 -1976

FACILITY NAME: Horizons, Inc.
Cleveland, Ohio

ALSO KNOWN AS: Lamotite, Inc.

TIME PERIOD: 1944-1956
Residual Radiation 1957 - 1977

FACILITY DESCRIPTION:

DOE ES&H Website:

During the 1940s and 1950s the metal handling facility was used for the production of granular thorium metal for the AEC and conducted some thorium research work for Savannah River. From July 1949 to November 1949, Horizons, Inc. was also under AEC contract to conduct research and perform development work on a process for the preparation of ductile, high-purity zirconium by fused salt electrolysis.

DISCUSSION:

Documentation reviewed indicates residual contamination from AWE work still exists at this facility. DOE identified contamination in a 1977 survey but determined that they had no authority to remediate this facility under FUSRAP.

Documentation also demonstrates that USDOE informed USEPA of the conditions. Facility status and/or remediation activities conducted at this point are unknown.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group. Other sources of information included: (1) Final Report (DOE/EV-0005/10); Formerly Utilized MED/AEC Sites Remedial Action Program Radiological Survey of the Former Horizons, Inc., Metal Handling Facility, Cleveland, Ohio; February, 1979 OH.05-3, (2) DOE Letter; DeLaney to Snyder; No Authority under the AEC; December 19, 1985 OH.05-1.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION:

1957 - present

FACILITY NAME: Hunter Douglas Aluminum Corp.
Riverside, California

ALSO KNOWN AS: Bridgeport Brass Co.

TIME PERIOD: 1959-1963

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1959, Hunter Douglas Aluminum extruded approximately 1600 pounds of solid uranium stock for National Lead Company of Ohio (Fernald). In a subsequent subcontract, the company fabricated uranium-zirconium billets for the GE Evendale Plant.

DISCUSSION:

The facility did not have the potential for significant exposure during operations due to the small amount of uranium (1,600 lbs) used. Also, it is noted in the NLO (Fernald) contract that Hunter Douglas was responsible for the decontamination and cleanup of facilities and equipment.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: International Minerals and Chemical Corp.
Mulberry, Florida

ALSO KNOWN AS: Pilot Facility
Uranium Recovery Unit at the Bonnie Plant
Phosphate Chemicals Division, Bonnie Uranium Plant
C.F. Industries, Inc.

TIME PERIOD: 1951-1961

FACILITY DESCRIPTION:

DOE ES&H Website:

International Minerals and Chemical Corp. produced uranium as a byproduct of the recovery of phosphate chemicals and fertilizers. In 1951, AEC contracted with International Minerals and Chemical Corp. for the recovery of uranium, which was ultimately used for the production of weapons. The original production plant was shut down in 1959. During the years of operation, 100 tons of U₃O₈ were produced, with a peak production of 2-3 tons per month. Starting in 1954, the uranium recovery unit was located at the Bonnie Plant. In 1955, it switched to the phosphoric acid process. International Minerals and Chemical Corp. became Central Farmers (now C.F.) Industries. In 1969, C.F. Industries became C.F. Chemicals, Bartow Phosphate Works. The phosphoric process was shut down in 1961.

DISCUSSION:

A 1977 survey by ORNL identified radium in the soil up to 28 pCi/gram. This was not considered unusual at a phosphate plant, as these levels are apparently within expected ranges at commercial phosphate recovery facilities. While the origination of the existing soil contamination cannot be determined, it does not appear to be significant. At the time of this survey the facility where operations were conducted had already been demolished and the radiological conditions prior to demolition could not be assessed.

Documentation reviewed indicates the presence of residual contamination outside of the period in which weapons-related production occurred inside the facility.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Other information included in the evaluation included: Preliminary Survey of International Minerals and Chemical Corporation Mulberry, Florida; March 1980 FL.02-1.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1962 - 1977

FACILITY NAME: International Nickel Co., Bayonne Laboratories
Bayonne, New Jersey

TIME PERIOD: 1951-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

International Nickel plated uranium slugs with nickel for use in the nuclear weapons production system during the early 1950s.

DISCUSSION:

The records were not completely clear, but it appears this was test work that was conducted, and not production levels. There was no specific information regarding exactly how many uranium slugs were processed. Available documentation indicates that there is little likelihood of residual contamination outside the stated dates and that there is no additional documentation available for review.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred

FACILITY NAME: International Rare Metals Refinery, Inc.
Mount Kisco, New York

ALSO KNOWN AS: Canadian Radium and Uranium Corp.
Pregals Mt. Kisco Refinery
Pregal

TIME PERIOD: 1942-1949

FACILITY DESCRIPTION:

DOE ES&H Website:

The International Rare Metals Company processed pitchblende ores for the African Metals Corporation to extract radium. The same ores were processed for the Manhattan Engineer District to recover uranium. Other than the coordination of the shipments of ores and sludge, there was no MED involvement at this site. The company did apparently ship a 1 milligram and a 5 milligram source of radium to Chicago.

DISCUSSION:

Radiological surveys were reportedly conducted by the AEC at this facility during 1952 and 1956, identifying significant radiation levels, removable contamination and airborne radioactive material concentrations. These surveys were conducted in an effort to assist the state of New York evaluate the site conditions. The building was demolished in 1966, and contaminated debris and dirt were transported to another facility. Elevated radiation levels were identified in 1979 by a local reporter. These areas were localized and contained within a locked chain-link fence. The site was reportedly remediated sometime prior to 1996 with state of New York involvement. There was no survey data available regarding close-out or the present status of the facility.

Documentation available for review does not clearly substantiate that this facility was involved with AWE related activities other than being a private enterprise from which the MED purchased radium sources. A 1987 Department of Energy Memo states that the MED purchased a significant number of radium sources from the company in the early 1940s. However it does not appear they had any connection with the operation of the facility.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950 - 1966

FACILITY NAME: International Register
Chicago, Illinois

ALSO KNOWN AS: Intermatic, Inc.

TIME PERIOD: 1943

FACILITY DESCRIPTION:

DOE ES&H Website:

International Register was involved in the development of uranium machining techniques for the Metallurgical Lab and the Manhattan Project. Records indicate that a test of centerless grinding equipment took place at International Register in February 1943. Uranium rods (1" in diameter and 6" long) were ground with the accuracy of about .001" for the Met Lab.

DISCUSSION:

There was a FUSRAP elimination recommendation made in 1987, indicating little likelihood of contamination, and no further action being necessary.

There were no radiological surveys performed during or after the test that were available in the provided documentation. However, given this was a one-time test, the likelihood of significant facility contamination is remote.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Ithaca Gun Company
Ithaca, New York

TIME PERIOD: 1961-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

During 1961-1962, Ithaca Gun conducted tests involving the forging of hollow uranium billets into tubes for the metallurgical group at National Lead Company of Ohio (Fernald).

DISCUSSION:

Documentation exists which shows that the facility was effectively decontaminated (immediately) after the DOE work was completed. The document titled, "Authority Review for Ithaca Gun Co." reveals that the testing site was vacuumed down to background levels after the completion of the test. All equipment was decontaminated using rags and solvents. All material was returned to NLO (Fernald).

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: J.T. Baker Chemical Co.
Phillipsburg, New Jersey

ALSO KNOWN AS: Subsidiary of Vick Chemical Company

TIME PERIOD: 1948; 1957 - 1958

FACILITY DESCRIPTION:

DOE ES&H Website:

J. T. Baker Chemical Co. was licensed by AEC to process and distribute refined source material (uranium). The company had previously sought to purchase uranium compounds during World War II, but these were diverted for wartime use.

DISCUSSION:

Available documentation does not provide any evidence of a contractual or similar relationship with the AEC, information about AEC operations involving radioactive material or radiological survey data from the facility. The available documentation does not provide any indication that J. T. Baker was anything other than a licensed commercial facility.

Based on the available documentation there is no known or described activity that would have resulted in residual contamination.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE Worker Advocacy Website, FUSRAP files, and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Jessop Steel Co.
Washington, Pennsylvania

TIME PERIOD: 1950-1954

FACILITY DESCRIPTION:

DOE ES&H Website:

In the early and mid 1950s, the Jessop Steel Company was under contract to the AEC for metal fabrication with some work through DuPont. In the early 1950s, records indicate that uranium metal in nickel scrap was sent to Jessop to make stainless steel piping for Fernald. In 1954, tentative plans were made for Jessop to roll uranium for Fernald billet production.

DISCUSSION:

Documentation reviewed indicates that AWE activities were limited, and subsequent radiological surveys which included a private residence where dismantled facility timber had been re-used, indicated nothing above natural background levels.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group. Other sources of information utilized in this evaluation included: Oak Ridge National Laboratory Report (ORNL/RASA-89/20); "Results of the Radiological Survey at the Jessop Steel Company site, 500 Green Street, Washington, Pennsylvania (JSP001)", April 1991.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Joslyn Manufacturing and Supply Co.
Ft. Wayne, Indiana

ALSO KNOWN AS: Joslyn Stainless Steel Co.

TIME PERIOD: 1944-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

Joslyn rolled uranium rods from billets for use by the MED and the AEC in weapons production.

DISCUSSION:

The billets were received by rail. Work was conducted under MED/AEC constant supervision, and scraps and ash generated were retained by MED/AEC personnel for uranium accountability. Small furnaces were used to heat the material. Three mills and straightening, cutting, threading, and grinding equipment were used in the operation. An outdoor area was used to burn waste.

Documentation reviewed indicates that there was a comprehensive radiological survey performed at the end of AEC activities (1949), for the purpose of identifying contamination levels for a facility cleanup. While no post decontamination surveys are available for review, description of the removal of equipment and handling of accountable materials at the end of the operations, in conjunction with the conditions identified in subsequent DOE preliminary FUSRAP surveys (1976) indicates that residual contamination did not exist beyond the listed period.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group. Other sources of information used in this evaluation included: 1) DOE Report (ORNL); Preliminary Survey of Joslyn Stainless Steel Company, Fort Wayne, Indiana; March 1980, 2) ERDA Memorandum; Thornton to Kennedy; Subject: ERDA Resurvey Program: Joslyn Stainless Steel Company, Fort Wayne, Indiana; March 10, 1977.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Kaiser Aluminum Corp.
Dalton, Illinois

TIME PERIOD: 1959

FACILITY DESCRIPTION:

DOE ES&H Website:

In March 1959, Kaiser performed the extrusion of three CP-5 type fuel elements containing normal uranium oxide for Argonne National Laboratory. Documentation indicates that Kaiser was under consideration to participate in a program to develop alternate sources of uranium, but it is unclear whether that work ever took place.

DISCUSSION:

Documentation exists which shows that the facility was effectively decontaminated (immediately) after the DOE work was completed.

INFORMATIONAL SOURCES

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Kellex/Pierport
Jersey City, New Jersey

ALSO KNOWN AS: Vitro Corp. of America
Kellex Corp.

TIME PERIOD: 1943-1953
DOE 1979-1980 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1943, the M.W. Kellogg Company established the Kellex Corporation to design and construct the first gaseous diffusion uranium enrichment facility, the K-25 Plant, in Oak Ridge TN. This work was conducted under contract to the Manhattan Engineer District and later to the Atomic Energy Commission. In the 1940s and early 1950s, Kellex conducted research and development on fuel reprocessing and component testing using uranium hexafluoride, and uranium processing and recovery techniques. In 1951, the Vitro Corporation of America assumed all the rights and obligations of the Kellex Corporation. In 1953, Kellex discontinued all AEC contract work at the Kellex/Pierpont site.

DISCUSSION:

Remediation activities under the Formerly Utilized Site Remediation Action Program (FUSRAP) occurred in 1979 and 1980 by Tobar Construction and Envirosphere Co. The cleanup was certified in 1983.

A 1953 survey performed by Vitro indicated that the site had been decontaminated to standards that were applicable at that time. ORNL radiological surveys from the late 1970s identified conditions at background with the exception of a few well-defined hot spots near the location where the Lab Building used to be (it had been demolished). A report that is excerpted in the OWA files says the Kellex Lab Building, Building 11, where all the radioactive material work reportedly occurred, was demolished in 1953.

About 1,000 barrels of contaminated soil were removed from isolated areas found in the ORNL survey of March, 1979. FUSRAP remedial action was completed in 1980-1981. No documentation reviewed shows any DOE contract activity or remedial action after 1981.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE Worker Advocacy Website and other correspondence provided by the DOE ES&H Group. Reference: 1) DOE Report (DOE/EV-0005/29 and ORNL-5734); Radiological Survey of the Former Kellex Research Facility, Jersey City, New Jersey; February 1982; 2) DOE-ORNL Letter; Kaye to ORO (Attention: Keller); Subject: FUSRAP - Post Decontamination Radiological Survey of a portion of the Former Kellex Laboratory Site, Jersey City, New Jersey.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1954 -1978; 1981

FACILITY NAME: Kerr-McGee
Guthrie, Oklahoma

TIME PERIOD: 1963-1973

FACILITY DESCRIPTION:

DOE ES&H Website:

Kerr-McGee processed uranium for the AEC as part of the nuclear weapons production process. The Recycled Uranium reports show material being shipped from Kerr-McGee to both Fernald and Savannah River.

DISCUSSION:

Available documentation describes this facility as having handled recycled uranium as part of the nuclear weapons production process. Current NRC decommissioning documentation indicates the facility has completed the majority of decontamination activities necessary for unrestricted release and license termination with the exception of groundwater remediation which indicates uranium and technetium-99 contamination.

Estimated completion for these activities is identified as May 2007.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE Worker Advocacy Website and other correspondence provided by the DOE ES&H Group. Reference: NRC Sites Undergoing Decommissioning - Complex Materials - License No. SNM-928, Docket No. 70-0925.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1974 - present

FACILITY NAME Koppers Co., Inc.
Verona, Pennsylvania

TIME PERIOD: 1956-1957

FACILITY DESCRIPTION:

DOE ES&H Website:

In conjunction with the Kennecott Copper Co., Koppers conducted pilot plant tests for the production of uranium hexafluoride. In 1956, Koppers was licensed receive 2000 pounds of refined source material for use in studies toward the preparation of uranium dioxide for reactor fuel elements and 6,150 pounds of refined source material for use in research and pilot plant investigations on feed material processing. In October 1957, they were authorized to receive 110 pounds of normal uranium hexafluoride. Most of the research work appears to have taken place at the Koppers Research Department in Verona, PA.

DISCUSSION:

Documents reviewed suggest that the work which the Koppers Co., Inc. was doing was licensed and could have been strictly a commercial venture. This work may not have been AWE related. There are indications this may have been an attempt to develop a commercial UF₆ production process. On that basis, they were not considered under FUSRAP.

Based on the described activities, amounts of material involved, and the absence of radiological survey data from the period when operations were ceased, there is a potential for significant residual contamination outside the covered period.

In 1996, the NRC performed a facility safety inspection and found that general area dose rates were within natural background levels and that uranium concentrations from excavations within the building were within environmental concentrations.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group. Reference: NRC Inspection Report No. 040-90001/96-001.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958 - 1996

FACILITY NAME: La Pointe Machine and Tool Co.
Hudson, Massachusetts

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

National Lead of Ohio (Fernald) conducted a single test involving the use of uranium metal on a broaching machine and an arbor press at the La Pointe Machine Tool Company facility.

DISCUSSION:

Documentation exists which shows that the facility was effectively decontaminated immediately after DOE work was completed.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Landis Machine Tool Co.
Waynesboro, Pennsylvania

ALSO KNOWN AS: Teledyne Landis Machine

TIME PERIOD: 1952

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1952, National Lead of Ohio (Fernald) personnel performed tests involving the machining of uranium slugs at Landis Machine Tool Company. The tests were performed over a two day period.

DISCUSSION:

Documents available for review illustrate that air sampling was performed over the two day operation of September 18 and 19, 1952. Due to the limited operations and the evidence that radiological conditions were being monitored during operations, the potential for residual contamination outside the period of weapons-related production is remote.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Latty Avenue Properties
Hazelwood, Missouri

ALSO KNOWN AS: Contemporary Metals Corporation
Continental Mining and Milling
Commercial Discount Corporation
Futura Coatings, Inc.
Jarboe Realty and Investment Company
Hazelwood Interim Storage Site
HISS
Futura Coatings Site

TIME PERIOD: 1967-1974;
Residual Radiation 1975-1983;
DOE 1984-1986 (remediation)

FACILITY DESCRIPTION:
DOE ES&H Website:

The Mallinckrodt Chemical Company conducted uranium milling and refining operations under contracts with the Manhattan Engineer District and the Atomic Energy Commission at the St. Louis Downtown Site in Missouri. Mallinckrodt transported process residues to the St. Louis Airport Site (also in Missouri) for storage until the Commercial Discount Corporation of Chicago purchased them in 1967; Commercial Discount transported the residues to the Latty Avenue Properties for storage and processing. This material was sold to the Cotter Corporation in 1969 and was dried and shipped to their facilities in Canon City, Colorado. By 1974, most of the material had been sold and removed from the Latty Avenue Properties, leaving only residual contamination.

The 1984-1986 work was performed under the Bechtel National Inc. (BNI) environmental remediation umbrella contract for the DOE.

DISCUSSION:

The 1984 Energy and Water Appropriations Act directed DOE to conduct a decontamination research and development project at four sites throughout the nation, including 9200 Latty Avenue and properties in the vicinity. Although contamination in Hazelwood did not result directly from atomic energy programs, Hazelwood properties were added to the DOE's FUSRAP by Congress to expedite decontamination. A review of the FUSRAP web page suggested that Latty Avenue Properties remedial action is ongoing at the present time.

INFORMATIONAL SOURCES:

The sources of information used in performing this evaluation included the DOE ES&H Website and other correspondence provided by the DOE ES&H Group.

1. DOE (ORNL) Report, "Radiological Evaluation of Decontamination Debris at Futura Chemical Company Facility, 9200 Latty Avenue, Hazelwood, Missouri," dated September 9, 1981.
2. "Background Information, Hazelwood Site and Vicinity Properties, Formerly Utilized

- Sites Remedial Action Program," prepared for U.S. EPA by DOE, December 1986.
3. DOE (ORNL) Interim Report, "Radiological Survey of the Property at 9200 Latty Avenue, Hazelwood, Missouri," September 1977.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1975 – 1983; 1987 - present

FACILITY NAME: Linde Air Products
Buffalo, New York

ALSO KNOWN AS: Linde Air Products Div. Of Union Carbide
Linde
Linde Center
Chandler Plant
Chandler Street Plant
Linde Chandler Plant

TIME PERIOD: 1945-1947

FACILITY DESCRIPTION:

DOE ES&H Website:

The Linde Air Products facility, also known as the Chandler Plant, was involved in the development and production of barrier for the Oak Ridge Diffusion Plant. During World War II, Linde was part of the Carbide and Carbon Chemical Corporation, later known as Union Carbide.

DISCUSSION:

An AEC Realty & Lease holding report shows that the Linde Air facility in Buffalo, New York was acquired in September 1944 and terminated in November, 1947. The contracting period does not precisely correlate with the dates specified as the period in which weapons-related production occurred however documentation indicates that this facility did not handle radioactive materials and should not be mistaken for the Linde Ceramics Plant in Tonawanda, New York.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Linde Ceramics Plant
Tonawanda, New York

ALSO KNOWN AS: Tonawanda Laboratory
Linde Air
Paxair

TIME PERIOD: 1942-1953;
Residual Radiation 1954-1995
DOE 1988 – 1992; 1996 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

The Linde Air Company performed uranium and nickel processing for the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC) at the Ceramics Plant in Tonawanda. African and Canadian ores were milled to black oxides at the plant. Documents indicate that the facility was placed on standby as of March 1, 1950. Linde's contractual agreements with the AEC continued through 1953 for various activities relating to closing out work at the Tonawanda location. Linde was a part of Carbide and Carbon Chemical Corporation (C&CCC), which then became Union Carbide.

In 1980, Linde Ceramics was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) and work under this program was performed during 1988-1992 and then again in 1996. The 1996 work was performed under the Bechtel National Inc. umbrella contract for DOE environmental site remediation.

DISCUSSION:

Radiological surveys performed in the 1980s, identified conditions which subsequently led to FUSRAP actions. It is not clear from the available documentation how significant the potential radiological hazards were to workers occupying these areas after 1950. However, the presence of this residual contamination and the need for FUSRAP activities indicates the need for further investigation to determine the potential for residual contamination after 1950. Documentation indicates that FUSRAP activities were initiated in 1990.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website, documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation and the US Army Corps of Engineers Linde Site Missions Sheet.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1954 – 1987; 1993-1995; 1997-present

FACILITY NAME: Lindsay Light and Chemical Co.
W. Chicago, Illinois

ALSO KNOWN AS: Kerr-McGee
Reed-Keppler Park

TIME PERIOD: 1942-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

Lindsay Light and Chemical Co. was a commercial processor of monazite sands, which yield several commercially valuable products, including the radioactive metal thorium. The MED and then the AEC purchased thorium from Lindsay. AEC contractors purchased a variety of products from this firm as well. Documents indicate that the firm supplied thorium to the MED and AEC through at least 1953. The facility received a source material license from the AEC in 1956, and it continued to process radioactive materials for commercial purposes until 1973.

DISCUSSION:

Documentation reviewed confirms the presence of significant residual contamination outside of the period in which AWE operations occurred, this residual contamination is indistinguishable from non-AWE related wastes. Multiple areas/locations are undergoing remedial actions conducted under the USEPA Superfund cleanup process.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Other sources of information used in the evaluation included: 1) Argonne NL Report to the NRC; Written by Frigerio, Larson and Stowe; Subject: Thorium Residuals in West Chicago, Illinois; September 1978; 2) USEPA site ID#'s ILD980823991 / ILD980824007 / ILD980824015 / and ILD980824031.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1954 - present

FACILITY NAME: Magnus Brass Co.
Cincinnati, Ohio

ALSO KNOWN AS: Magnus Metals
Moanes Brass

TIME PERIOD: 1954-1957

FACILITY DESCRIPTION:

DOE ES&H Website:

The site machined various forms of uranium metal under subcontract to the NLO (Fernald). The work was performed at two locations: Reading Road (from December 1954 through November 1955) and West 7th Street (from December 1955 through December 1957). Total production machining was approximately two or three hundred billets.

DISCUSSION:

Documentation demonstrates that the machining work first performed at the 533 Reading Road facility resulted in equipment and surrounding area which were “heavily contaminated”. Operations were then moved to the West 7th Street location. Prior to this move a decontamination effort was reportedly performed but no radiological survey data is available documenting post-decontamination radioactivity levels. The Reading Road facility was reportedly occupied by a new owner and has since been demolished (date unknown).

Documentation reviewed describes multiple trips that were taken from the Fernald Site to Magnus Brass for the purpose of monitoring and decontaminating the equipment used. Decontamination was declared complete in a March 19, 1958 memo to J.A. Quigley from J. F. Wing.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group and documents provided by the DOE representative at the Fernald Site. Pertinent document: DOE Memorandum; Wing to Quigley; Subject: Decontamination of Equipment and Facilities at Magnus Metals Division Cincinnati Ohio in connection with Subcontract S-129, March 19, 1958.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958

FACILITY NAME: Massachusetts Institute of Technology
Cambridge, Massachusetts

ALSO KNOWN AS: MIT, Hood Building

TIME PERIOD: 1942-1963

FACILITY DESCRIPTION:

DOE ES&H Website:

The Massachusetts Institute of Technology (MIT) was one of the institutions that contributed to early nuclear physics research in the United States. In addition to their research efforts, they also sent scientists to work at Los Alamos. For example, in 1942, MIT experimented on the process of melting and casting uranium metal, extracted uranium from low grade ores, studied the element beryllium, and experimented with nuclear propulsion systems. MIT also explored the coordination and the quality control of these processes. The building, in which the research was done, was demolished in 1963.

DISCUSSION:

Documentation indicates uranium extraction research was performed by MIT in Cambridge, Massachusetts from 1942 through 1946. In 1946, MIT reportedly transferred the operations to the Watertown Arsenal (Bldg 421). American Cyanamid took over those activities in 1950. Activities in Bldg 421 reportedly continued through 1953 when the operations were transferred to a newly constructed laboratory in Winchester, Massachusetts. Documentation is not clear as to what activities were conducted at the MIT Cambridge site from 1946 through 1954. However, from 1954 through 1958, Nuclear Metals Inc. used the MIT Cambridge site for MED/AEC research. In 1958, Nuclear Metals Inc. moved operations to Concord, Massachusetts and the MIT Cambridge site was locked down and subsequently demolished in 1963.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Mathieson Chemical Co.
Pasadena, Texas

ALSO KNOWN AS: Pasadena Chemical Corp.
Olin Mathieson Chemical Co.
Mobil Mining and Minerals Co.

TIME PERIOD: 1951-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

Mathieson Chemical extracted uranium oxides out of phosphoric acid compounds in a pilot study for the Atomic Energy Commission.

DISCUSSION:

Documentation describes the activities as bench-top type experiments for extracting uranium oxides from phosphoric acid compounds, which would most likely have been conducted under laboratory controls. There is no description of the quantities of uranium extracted or radiological conditions immediately after cessation of activities. But, it is reasonable to believe that laboratory work would not have resulted in widespread distribution or residual contamination post-operations. A radiological survey was performed for the DOE in 1977, with the only finding of residual contamination on inside surfaces of one sink and possibly the drain line, which poses no significant exposure to personnel based on the low activity levels discovered.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Maywood Chemical Works
Maywood, New Jersey

ALSO KNOWN AS: Maywood Site
Maywood Interim Storage Site
MISS
Stepan Co.
MCW

TIME PERIOD: 1947-1950

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1916 to 1959, Maywood Chemical Works extracted radioactive thorium and rare earth elements from monazite sands for use in commercial products. From 1947 to 1950 the AEC purchased thorium compounds from the Maywood Chemical Company. Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1983, no work was ever performed under this program prior to its transfer to the Army Corp.

DISCUSSION:

Documentation exists demonstrating the MED/AEC acquired thorium products from Maywood, starting in 1947, due to the “fertile” nature of the material. Documentation is unclear as to the exact quantity of material acquired. Documentation demonstrates that the radioactive material residues associated from these MED/AEC acquisitions constitutes only a portion of the overall residual contamination and potential radiological hazards. However, the inability to disregard these residues and/or distinguish them from non-MED/AEC residues necessitates the determination that a portion of the residual contamination requiring FUSRAP activities beginning in 1984, are attributable to former AWE activities.

Documentation reviewed indicates that significant residual contamination from AEC/DOE activities, exists outside the covered period. The facility and/or affected areas are presently undergoing remediation under agreements established between the USACOE and USEPA.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Other sources of information utilized for this evaluation included: 1) USEPA and USDOE Federal Facility Agreement for the Maywood Interim Storage Site; Agreed to by DOE on 7/23/1990 and EPA on 9/17/1990, and 2) USACOE Fact Sheet - Maywood, New Jersey, January 2004.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1951 - present

FACILITY NAME: McKinney Tool and Manufacturing Co.
Cleveland, Ohio

ALSO KNOWN AS: Parker Rust Proof
Meister-matic Inc.
KC&F

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

Between May and August of 1944, McKinney Tool and Manufacturing Co. of Cleveland, Ohio, turned and ground unbonded slugs to provide fuel for the first nuclear reactors, including the three Chicago piles; the Oak Ridge X-10 reactor; and the Hanford B, D, and F production reactors and 305 test pile.

DISCUSSION:

Radiological survey data gathered for the DOE in 1981 and 1991 demonstrates that no residual contamination existed at that time however, there is no documentation identifying the radiological conditions at the end of the operations in 1944.

A review of documented radiological conditions observed at C.H. Schnorr in Springdale, Pennsylvania and Baker Brothers in Toledo, Ohio, where similar activities were conducted, indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred.

Based on the nature of the work, the absence of additional documentation, coupled with no radiological survey data until 1981, the presence of residual contamination cannot be ruled out up until the time of the survey.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Pertinent documents included: (1) DOE/Oak Ridge Laboratory Survey; R. Foley and M. Uziel; Subject Results of the Rad. Survey at the Former McKinney Tool and Mfg. Co., 1688 Arabella Road, Cleveland, OH (MTC001 and MTC002); ID#: ORNL/RASA-91/7; November 1991. (2) DOE report; Subject; Elimination Report for Former McKinney Tool Mfg. Co.; January 1994.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1945 -1981

FACILITY NAME: Medart Co.
St. Louis, Missouri

TIME PERIOD: 1951-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

The Medart Company manufactured steel mill machining equipment which was useful in uranium processing. In 1952, Medart conducted broaching machine and arbor tests turning uranium for the National Lead Company of Ohio (Fernald). According to a former Medart employee, the bar turning machine was eventually shipped to Fernald for use at the Feed Materials Production Center.

DISCUSSION:

Radiological monitoring was performed during operations and the data identifies significant airborne radioactive material concentrations as having been generated. This data indicates a strong potential for the dispersion of contamination throughout the immediate area of the facility where operations were performed. No documentation has been found to demonstrate that decontamination efforts were initiated, or to describe post-operational radiological conditions.

Documentation reviewed indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred. No additional information has been located, and there does not appear to have been any radiological survey of the facility located at 3535 Dekalb Street where the operations were reportedly conducted.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1953 - present

Facility Name: Metallurgical Laboratory
Chicago, IL

Also Known As: Eckhardt Hall (+ West Stands, New Chem. Lab and Annex,
Ryerson Physical Lab, Kent Chem. Lab) , Met Lab

TIME PERIOD: 1942-1952;
Residual Radiation 1953-1983;
DOE:1982-1983;1987 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

The University of Chicago Metallurgical Laboratory was involved in early uranium metallurgical work in 1942-1943. The first self-sustaining nuclear chain reaction was achieved at the university in a "pile" called the Chicago Pile 1, built by Enrico Fermi and his Met Lab colleagues. The Met Lab is the direct predecessor of Argonne National Laboratory. The University of Chicago continued to perform research and metallurgical work for Atomic Energy Commission until the early 1950s. The University of Chicago site includes seven buildings that were associated with Manhattan Engineer District/Atomic Energy Commission nuclear research and development between 1942 and 1952. These include the new Chemistry Laboratory and Annex, West Stands, Ryerson Physical Laboratory, Eckhart Hall, Kent Chemical Laboratory, Jones Chemical Laboratory, and Ricketts Laboratory. Under the direction of DOE, decontamination activities at the University of Chicago were conducted by Argonne National Laboratory in 1982 and 1983 and by Bechtel National, Inc. (BNI) in 1987. Cleanup of the sites where this work was performed was certified complete in 1989.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent documents included, Radiological Surveys performed by Argonne National Laboratories during 1977 (DOE/EV - 0005/23 0005/24 and 0005/26), along with a Draft Certification Docket for the Remedial Action Performed at the University of Chicago , Chicago, Illinois, From December 1982 to October 1987.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1953-1981, 1984-1986

FACILITY NAME: Metals and Controls Corp.
Attleboro, Massachusetts

ALSO KNOWN AS: M&C Nuclear
Metals and Controls Nuclear Corp.
M & C
Texas Instruments

TIME PERIOD: 1952-1967

FACILITY DESCRIPTION:

DOE ES&H Website:

Records indicate that the Metals and Controls Corp. fabricated fuel elements for production reactors, but it is unclear whether its work was related to the nuclear weapons complex. For example, Metals and Controls Corp. fabricated uranium foils for reactor experiments and fuel components, fabricated complete reactor cores for the Naval Reactors program, and fabricated uranium fuel elements for experimental and research reactors. Records indicate shipments of depleted uranium between Rocky Flats and M&C during the period from 1955-1958.

DISCUSSION:

Documentation reviewed indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred. It appears that an onsite area was remediated due to residual contamination where burn-off activities were performed. There was no radiological data available for review from inside the facility, where the activities were conducted.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1968 - present

FACILITY NAME: Middlesex Municipal Landfill
Middlesex, New Jersey

ALSO KNOWN AS: MML

TIME PERIOD: 1948-1960;
Residual Radiation 1961-1986;
DOE 1984; 1986

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1948 to 1960, the Middlesex Sampling Plant conducted thorium and uranium activities and disposed of the wastes at the Middlesex Municipal Landfill. Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1980, the only years in which remediation work took place were 1984 and 1986. This work was performed under the Bechtel National Inc. umbrella site remediation contract and by local subcontractors.

DISCUSSION:

Documentation is available and adequate to determine that the site was used for disposal of contaminated soils in 1948. In 1960, discovery of the contamination was made through observance of abnormal background radiation readings during a civil defense drill. Documentation establishes that subsequent to interactions between local and federal authorities, 650 cubic yards of surface material was removed on May 18, 1961. Residual subsurface contamination still existed after this action, but awareness of this condition and the documented radiation levels is considered to pose no significant exposure scenario. The *Certification Docket for Remedial Action Performed at the Middlesex Municipal Landfill in Middlesex, New Jersey in 1984 and 1986* confirmed that the actions taken in 1986 were successful.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website, documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and information found on the FUSRAP considered sites database especially the *Certification Docket for Remedial Action Performed at the Middlesex Municipal Landfill in Middlesex, New Jersey in 1984 and 1986*.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1961 – 1983; 1985

FACILITY NAME: Midwest Manufacturing Co.
Galesburg, Illinois

ALSO KNOWN AS: Maytag Co.

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

A November 7 1944 document indicates that Midwest Manufacturing Co. worked on the "self lubricating draw die" which was related to metal fabrication for the Manhattan Project.

DISCUSSION:

It is not clear if radioactive material was involved, nor is it clear what activities were involved in the process development operations.

Review of the available documentation related to this facility, indicates that there is little potential for residual contamination outside of the covered period.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Pertinent documents included: (1) DOE Letter; Wagoner to Kimble; Subject; Midwest Manufacturing Co. Information; February 10, 1995. (2) Memorandum/Checklist; Wallo to the File; Subject; Midwest Manufacturing Co.; November 3, 1987. (3) MED Memorandum; Methods and Materials Section to Stearns; Subject; Metallurgical Fabrication and Physical Studies; November 7, 1944.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Mitchell Steel Co.
Cincinnati, Ohio

TIME PERIOD: 1954

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1954, Mitchell Steel Company may have participated in the machining of a sample lot of four hollow extrusion uranium billets from ingots for National Lead of Ohio (Fernald). It is unclear whether Mitchell conducted the test or performed any additional work for NLO or the AEC.

DISCUSSION:

This facility reportedly performed a machining test on limited quantities of uranium (4 billets), and there is no documentation to demonstrate further work was performed. The 1954 National Lead Company of Ohio document "Request for a Subcontract to Produce Hollow Extrusion Billets on a Lump Sum Basis" which identifies Mitchell Steel Company and four other companies suggests that the Magnus Brass Manufacturing Company of Cincinnati was the contractor selected to continue this work.

Due to the limited amount of work performed at this facility, machining of four billets, the potential for significant residual radioactivity outside of the period of weapons related work is considered low.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Mitts & Merrel Co.
Saginaw, Michigan

ALSO KNOWN AS: Genesse Packing Co.

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

In a test for National Lead of Ohio (Fernald), Mitts and Merrel reduced a thorium metal chunk to small particle size pieces in its Hog Grinder.

DISCUSSION:

The available documentation refers to thorium metal (+10 pounds) without specification of the isotope, having been ground up to fine particles producing heavy visible dusting outside of the equipment. Without further documentation of follow-up decontamination actions taken at that time, and consideration of the assumption that no additional post-operations radiological survey documentation exists, it is determined that there is a significant potential for residual contamination after completion of this operation.

The facility where this work was reportedly performed was referred to as the "north" or "river side" facility. Based on an interview with a knowledgeable former employee, this facility was demolished in 1959-1960 and replaced with a parking lot.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1957 - 1960

FACILITY NAME: Monsanto Chemical Co.
Dayton, Ohio

ALSO KNOWN AS: Runnymede Playhouse
Scioto Laboratory
Dayton Project
Old Schoolhouse
Units I, III and IV

TIME PERIOD: 1943-1949

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1943, the Manhattan Engineer District began the Dayton Project to investigate the chemistry and metallurgy of polonium. Monsanto was chosen for the project because of its earlier work at its Scioto Research Laboratory (also in Dayton). Work for the MED was initially performed at Monsanto's facility on Nicholas Road in 1943 (Unit I). As the project expanded, it moved into a location on West First Street (Unit III) with all operations being transferred to Unit III by October 1944. By 1944 it was clear that even this space was inadequate, and so the former Runnymede Playhouse was converted to a laboratory and referred to as Unit IV, to be operated in conjunction with Unit III. When space became too tight in the combined areas of Units III and IV, preparations were made to move the operations to the present day Mound facility in Miamisburg. Processing began at Mound in February 1949 and shortly thereafter Units III and IV were dismantled and decontaminated.

DISCUSSION:

Documentation reviewed demonstrates that the sites referred to as Dayton I, Dayton III, Dayton IV and the Dayton Warehouse were decontaminated and/or demolished at the end of AWE related activities in 1950.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP, specifically the Preliminary Assessment/Site Inspection Reports for Unit I, III, IV and the Dayton Warehouse.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950

FACILITY NAME: Museum of Science and Industry
Chicago, Illinois

TIME PERIOD: 1946-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

Portions of the East Pavilion of the Museum of Science and Industry were used by employees of the Metallurgical Laboratory and the ANL. Although the facility was primarily used as office space, it is believed that radioactive materials were handled at this facility and that a spill of radioactive material may have taken place near the service elevator on the ground floor.

DISCUSSION:

While a description of specific activities performed and/or material handled is not available, it is clear that work was performed for the AEC by ANL at this facility from 1946 through 1953. Documentation demonstrates that decontamination activities and radiological surveys were performed by ANL in the East Pavilion of the facility in 1949. It should be noted that while no such documentation was available for review relative to the West Court, which ANL occupied through 1953, a radiological survey was performed for the DOE in 1977 resulting in no identifiable residual contamination above normal background readings.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: National Guard Armory
Chicago, Illinois

ALSO KNOWN AS: Washington Park Armory

TIME PERIOD: 1942-1951;
Residual Radiation 1952-1987;
DOE 1987 (Remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

In the 1940s, the Manhattan Project leased the National Guard Armory from the State of Illinois for uranium processing and radioactive material storage. In 1951, the site was returned to the State of Illinois.

Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1985, the only year in which remediation work took place was 1987.

DISCUSSION:

A radiological survey was performed for the DOE from September 1977 through October 1978, identifying widespread contamination in several areas of the facility and localized concentrations in others. After reviewing the radiological survey data, it is determined that the potential for residual radioactivity existed between 1951 and the beginning of DOE activities in the 1980s. This determination is principally based on the identification of removable surface contamination in overhead areas up to 1,700 dpm/100cm² alpha and 2,500 dpm/100cm² beta-gamma.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1952 - 1986

FACILITY NAME: National Research Corp.
Cambridge, Massachusetts

ALSO KNOWN AS: NRC

TIME PERIOD: 1944-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

National Research Corp. had Manhattan Engineer District experience in working with vacuum centrifugal castings, in developing jets and baffles for diffusion pumps, and in developing cold trap systems. National Research's work with vacuum centrifugal castings (contract W-7405-eng-293) involved casting tube alloy (uranium metal) using the "lost wax" technique. In 1948, National Research did work for Mallinckrodt involving the vacuum melting of approximately 500 pounds of uranium.

A December 1946 letter indicates that National Research Corp. requested a "leak detector for use in connection with some special development work on beryllium." It is not clear whether this work was ever actually done.

DISCUSSION:

Documentation reviewed indicates a potential for significant residual contamination outside of the period in which weapons-related production occurred. The location and/or facility and associated equipment used for these activities is described as a "shack" adjacent to the 70 Memorial Drive laboratory. Records indicate that the shack was demolished and replaced with an apartment building sometime prior to 1987.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation. Other sources of information included: 1) The Aerospace Corporation memo, title: Elimination Recommendation Former National Research Corporation Site 70 Memorial Drive, Cambridge, Mass.; from Charles D. Young to Andrew Wallo III, dated 5 October 1987. 2) USDOE Memo to W. Cottrell from Andrew Wallo III, titled Survey of the Former National Research Corporation Site at 70 Memorial Drive, Cambridge, Massachusetts.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1953 - 1987

FACILITY NAME: Naval Research Laboratory
Washington, District of Columbia

TIME PERIOD: 1943-1945;
DOE 1959

FACILITY DESCRIPTION:

DOE ES&H Website:

During World War II, the Naval Research Laboratory produced quantities of enriched uranium through a thermal diffusion process. The Navy built a small pilot plant at the Anacostia facility for this purpose.

In the 1950s, the Laboratory handled radioactive materials for different research applications, and it is listed in the AEC annual report for 1959 as having just over \$2 million in AEC-owned equipment on-site.

DISCUSSION:

Available documentation does not include surveys demonstrating the radiological conditions during or after these operations. This facility has been managed by the DOD under AEC/NRC license since inception.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1946-1958, 1960-present

FACILITY NAME: New England Lime Co.
Canaan, Connecticut

ALSO KNOWN AS: NELCO

TIME PERIOD: 1963

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1963, the New England Lime Co. (NELCO) conducted tests on “prill,” a magnesium-uranium waste product, to determine the feasibility of recovering these materials for re-use in the nuclear weapons production system. The prill came from the AEC’s NLO (Fernald) facility. Six drums of prill were sent from NLO (Fernald) to NELCO for the test. The New England Lime Co. also provided magnesium and calcium to the MED and AEC from 1944-1956. This work did not involve radioactive materials.

DISCUSSION:

Documentation available for review describes the material handled as waste, bearing low uranium concentrations. This material description suggests a low potential for dispersion at significant activity levels. Documentation also indicates that the workforce involved received fundamental training with respect to radioactive material handling, controls and monitoring, which provides support for the determination that there is little potential for residual contamination after operations.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: New York University
New York, New York

TIME PERIOD: 1946-1952

FACILITY DESCRIPTION:

DOE ES&H Website:

New York University (NYU) worked on the development of counting equipment for the MED/AEC. NYU handled a small quantity of uranium for research purposes.

DISCUSSION:

Available documentation does not clearly establish that research and development work performed for the AEC involved the handling of radioactive materials. There is documentation describing a request for a small quantity of UO₃ made in 1952, but there is no evidence of receipt or disposition of this material.

Based on the information contained in available documentation, recognizing that laboratory controls would have likely been implemented to prevent cross-contamination of the detector instruments being developed and tested, and the limited amount of radioactive materials handled, there is little potential for residual contamination outside the covered period.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Norton Co.
Worcester, Massachusetts

TIME PERIOD: 1945 -1957

FACILITY DESCRIPTION:

DOE ES&H Website:

Norton manufactured refractory products from boron, beryllium, uranium, thorium, and magnesium oxide for the MED and the AEC.

As early as 1943, Norton was providing boron to the SAM laboratory. Documents show that Norton began working with beryllium for the MED in approximately September 1944 and that work with beryllium continued through 1956. Work with thorium and uranium continued through 1957 at Norton's Worcester location.

Norton continued to manufacture refractory products until at least 1965 for the AEC weapons complex, including Rocky Flats, Hanford and Y-12. However, after 1957 these contracts specified that the refractory products were to be made out of magnesium oxide. Since magnesium oxide is not radioactive, Norton's work with it does not qualify it as an Atomic Weapons Employer for these years.

DISCUSSION:

Norton also provided thorium and uranium products to the MED/AEC. The company produced uranium crucibles for Argonne and fused thoria slugs that were irradiated in Hanford reactors. Contracts indicate Norton continued to produce refractory materials for the AEC until 1961.

Documentation reviewed indicates work with radioactive materials, performed for the AEC may have ended sometime in the late 1950s. Norton received an AEC license in the mid 1950s. Residual contamination from prior MED/AEC AWE activities in the 1940s through the 1950s would be indistinguishable from non-AWE work.

Documentation reviewed indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred. Air monitoring results performed at various times during operational activities indicates a high potential for dispersal of radioactive materials. No post-operational radiological survey data has been located. This facility still exists at the same location, however the status of the equipment used during the AWE activities is unknown.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958 - present

FACILITY NAME: Nuclear Materials and Equipment Corp. (NUMEC)
Apollo, Pennsylvania

ALSO KNOWN AS: Babcock & Wilcox
Atlantic Richfield Corp. (ARCO)

TIME PERIOD: 1957 -1983

FACILITY DESCRIPTION:

DOE ES&H Website:

The Nuclear Materials and Equipment Corp. (NUMEC) began operations at the Apollo and Parks Township facilities in the late 1950s. The Atlantic Richfield Corp.(ARCO) purchased the stock of NUMEC in 1967. In 1971, Babcock & Wilcox (B&W) purchased NUMEC and is the current owner of the Apollo and Parks Township facilities.

NUMEC processed unirradiated uranium scrap for the AEC in the 1960s. This facility also provided enriched uranium to the naval reactors program and included a plutonium plant, plutonium plant storage area, high-enriched uranium fuel facility, metals and hafnium complex and a uranium hexafluoride storage area. The facility also fabricated plutonium-beryllium neutron sources.

The B&W Apollo facility ceased manufacturing nuclear fuel in 1983.

DISCUSSION:

Documentation reviewed indicates residual contamination existed outside of the period in which weapons-related production occurred. Facility remediation was completed in 1995, under NRC license termination with partial funding through the DOE.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation including NRC-SECY-97-015, *Removal of the Babcock & Wilcox Apollo Site from the Site Decommissioning Management Plan.*

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1984 -1995

FACILITY NAME: Nuclear Materials and Equipment Corp. (NUMEC)
Parks Township, Pennsylvania

ALSO KNOWN AS: Babcock & Wilcox
Atlantic Richfield Corp. (ARCO)

TIME PERIOD: 1957-1980

FACILITY DESCRIPTION:

DOE ES&H Website:

The Nuclear Materials and Equipment Corp. (NUMEC) began operations at the Apollo and Parks Township facilities in 1957. The Atlantic Richfield Corp.(ARCO) purchased the stock of NUMEC in 1967. In 1971, Babcock & Wilcox (B&W) purchased NUMEC and is the current owner of the Apollo and Parks Township facilities.

The primary function of the NUMEC Parks Township facility was the fabrication of plutonium fuel, the preparation of high-enriched uranium fuel, and the production of zirconium/hafnium bars. The Parks Township facility ceased fuel fabrication activities in 1980.

DISCUSSION:

Documentation reviewed indicates that significant residual contamination existed outside of the covered period in which weapons-related production occurred, which is indistinguishable from non-related contamination. An August 2004 U.S. NRC document indicates that SNM-414 was terminated and the Parks Township facility was released for unrestricted use on August 24, 2004.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE, FUSRAP documentation, and U.S. NRC document, SECY-04-0163, *Weekly Information Report - Week Ending August 27, 2004.*

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1981 - 2004

FACILITY NAME: Nuclear Metals, Inc.
West Concord, Massachusetts

ALSO KNOWN AS: NMI
Starmet, Inc.
MIT Met Lab
Whittaker Corp., Nuclear Metals Division

TIME PERIOD: 1954-1990

FACILITY DESCRIPTION:

DOE ES&H Website:

Nuclear Metals, Inc. was incorporated in 1954. It's work evolved out of the MIT Metallurgical Laboratory. In 1958, the company moved from Cambridge (where the MIT lab had been) to Concord. The company's current name is Starmet.

In 1958, Nuclear Metals began operating as a facility that produced depleted uranium products, primarily as penetrators for armor-piercing ammunition. It also supplied copper-plated uranium billets that were used to fuel Savannah River's production reactors. Other work at this facility included the manufacture of metal powders for medical applications, photocopiers and other applications. Thorium and thorium oxide were also handled at the site under license to the NRC.

DISCUSSION:

During the period from 1962-1986, Nuclear Metals was the sole source supplier for beryllium alloy end closure fuel element rings used in the "N" Reactor in Richland. Records also indicate beryllium work for the AEC at various times during the 1940s and 1950s. Documentation reviewed indicates that significant residual contamination exists outside of the period in which work was performed with weapons-related material. This facility is on the USEPA National Priority Listing (NPL) and is undergoing cleanup.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of written communications by or for the DOE and FUSRAP documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1991 - present

FACILITY NAME: Oliver Corp.
Battle Creek, Michigan

TIME PERIOD: 1956-1957; 1961-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

The Oliver Corporation participated in green salt briquetting testing for the National Lead Company of Ohio (Fernald). Records indicate that testing took place in November 1956, July 1957, May 1961 and May 1962. It is unclear from the documentation whether the company ever performed this work at a production level. The Oliver Corporation AEC license history indicates that it was licensed to receive 350 pounds of normal uranium (40-6977 - 03/08/63) and 20,000 pounds of uranium enriched U-235 (70-646 – 03/26/62) (but comments that records indicate that it is not related to its work for NLO).

DISCUSSION:

Trip reports from this period report that post-work surveys found no detectably contamination above background. These reports detail steps taken to minimize contamination before operations; monitoring that was performed during the activity; and decontamination efforts performed after the activities. This determined to be sufficient evidence to support the dates provided, 1956-57 and 1961-62.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

Pertinent documents includes;

1. Memo, D.E. Carr to J.A. Quigley, M.D., "Trip Report to Oliver Corporation, Battle Creek, Michigan, from October 31 to November 5, 1956," dated Dec 17, 1956.
2. Memo, E.M. Chenault to J.A. Quigley, M.D., "Trip Report to Oliver Corporation, Battle Creek Michigan, on July 22-26, 1957," dated Aug 7, 1957.
3. Memo, R. L. Bipes to J.A. Quigley, M.D., "Trip Report to the Oliver Corporation, Battle Creek, Michigan, on April 23-27 and May 3-5, 1962," dated May 21, 1962.
4. Memo, R.H. Starkey and E.M. Chenault to H. A. Kraus, "Additional precautionary health and safety steps necessary at Oliver Corp.," dated Aug 14, 1961.
5. Memo, R.H. Starkey and E.M. Chenault to J.A. Quigley, M.D., "Trip Report to the Oliver Corporation, Battle Creek, Michigan, on April 10-14, 1961," dated May 1, 1961.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Painesville Site (Diamond Magnesium Co.)
Painesville, Ohio

ALSO KNOWN AS: Uniroyal
Lonza Chemical

TIME PERIOD: 1951-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

The Painesville Site was formerly a magnesium production facility, owned by the Diamond Magnesium Company. In 1951, 1952 and 1953, Diamond Magnesium received approximately 1650 tons of radioactively contaminated scrap steel from the Lake Ontario Ordnance Works, to be used to control chlorine emissions during the magnesium production process.

Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1992, no work under this program occurred prior to its transfer to the Army Corps.

DISCUSSION:

Although the magnesium plant was constructed in the early 1940s, the information available indicates that the radioactive contamination was introduced with contaminated steel in 1952 and 1953. Information reviewed in the Army Corps of Engineers website indicate that remediation at the site is on-going.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website, internal AEC/DOE correspondence provided by the DOE ES&H Group, and the US Army Corps of Engineers Painesville Site Mission Sheet.

Pertinent documents reviewed:

1. Memo, R. P. Whitfield to Manager, Oak Ridge Operations, "Authorization for Remedial Action at the Former Diamond Magnesium Facility, Painesville, Ohio," dated Oct 8, 1992.
2. Memo, James W. Wagoner, II to L. Price, "Authorization for Remedial Action at Diamond Magnesium Site in Painesville, Ohio," dated Sept 25, 1992.
3. Foley, R.D. and R.F. Carrier, "Radiological Characterization Survey of the Former Diamond Magnesium Company Site, 720 Fairport-Nursery Road, Painesville, Ohio (DMP001, DMP002)," ORNL/TM-11817, December 1991.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1954 – present

FACILITY NAME: Penn Salt Co.
Philadelphia/Wyndmoor, Pennsylvania

TIME PERIOD: 1953-1956

FACILITY DESCRIPTION:

DOE ES&H Website:

Penn Salt Co. experimented with samples of fluoride-containing by-products from AEC operations to determine if they could be used for hydrogen fluoride production or to extract uranium from the material. Penn Salt Co. was licensed to receive scrap from AEC operations.

DISCUSSION:

Penn Salt Co. was licensed at one time to receive 2,000 pounds of magnesium fluoride scrap for testing. There is no information regarding any more than 350 pounds that were actually received and tested. Other information reviewed suggests that the material had a maximum of 5 percent U content. The site was removed from FUSRAP in 1987 because of low probability for contamination.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Philadelphia Naval Yard
Philadelphia, Pennsylvania

ALSO KNOWN AS: Abelson's Pilot Plant
Koppers Co.
Naval Boiler& Turbine Laboratory

TIME PERIOD: 1944-1945

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1944, the Navy built a thermal diffusion pilot plant using concentric hot and cold pipes at the Philadelphia Naval Yard. The S-50 plant at Oak Ridge was a large-scale version of this plant. A large quantity of uranium hexafluoride was processed at this site.

DISCUSSION:

The site was not included in the FUSRAP system, as it is controlled by the Department of Defense. Neither the exact dates of operations, nor the condition of the site when operations were concluded can be determined from the available documentation.

This facility was identified by the DOE as potentially contaminated in 1987 and notification was provided to the DOD. No documentation was available describing any radiological surveys and/or remediation.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Reference: DOE Letter; Fiore to Schafer; Referral of DOD or Former DOD Sites for Consideration Under Appropriate DOD Programs; May 29, 1987. Enclosure 2; Department of the Defense Installations/Facilities; Number 8.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1946-present

FACILITY NAME: Podbeliniac Corp.
Chicago, Illinois

ALSO KNOWN AS: Capitol Associates

TIME PERIOD: 1957

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1957, National Lead Company of Ohio (Fernald) used equipment at the Podbeliniac Corp. to conduct an extraction experiment using uranium in solution. NLO later traveled to the site to oversee the decontamination of equipment used in the experiment.

DISCUSSION:

Available documentation includes a National Lead of Ohio, trip summary describing the decontamination efforts and residual contamination levels after completion of a limited scale operation. Based on the available documentation and the premise that no further activities with radioactive materials were performed, there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Precision Extrusion Co.
Bensenville, Illinois

TIME PERIOD: 1949-1950; 1956-1959

FACILITY DESCRIPTION:

DOE ES&H Website:

Precision Extrusion Co. was involved in several projects for the AEC and ANL. From 1949 to 1950, it extruded experimental fuel channel tubes from aluminum and aluminum-lithium alloys. During 1956 through 1959, Precision Extrusion performed several uranium extrusion projects on a small-scale basis.

DISCUSSION:

It was not clear in the documentation whether the site handled any radioactive material in 1949-1950. All the work at that time appeared to be with aluminum and various alloys.

The work in 1956-1959 seemed to be experimental in basis and was not performed on a production scale. All testing operations were accompanied by ANL personnel, and decontamination and surveying of the machinery was conducted after each test.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

Pertinent documents included;

1. Memo, H. Wm. Gaut to John R. Novak, "Extrusion of Uranium Oxide Aluminum Billets in Bensenville, Illinois," dated April 17, 1956.
2. Memo, G. T. Lonergan and C. S. McKee to John R. Novak, "Extrusion of Billets, Precision Extrusion Company, May 24, 1958," dated Aug 12, 1958.
3. Memo, C. S. McKee to J. R. Novak, "Survey at Precision Extrusion Company Following Extrusion of Billets," dated March 30, 1959.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Purdue University
Lafayette, Indiana

ALSO KNOWN AS: Chemistry Building, Locomotive Lab

TIME PERIOD: 1942-1946

FACILITY DESCRIPTION:

DOE ES&H Website:

Purdue University was involved in Nuclear Physics research during the Manhattan Project.

DISCUSSION:

Documentation indicates Purdue University performed work related to “Hydrochlorination of T salts followed by a vapor phase chlorinization of the resulting residue to give satisfactory TCl₄ product with no appreciable loss of T material.”

Other work included unspecified testing of metal sawdust, and process development in the manufacture of fluorocarbons.

Materials used appear to be small research quantities. A FUSRAP determination made in 1987 indicates little likelihood for radioactive contamination.

Documentation reviewed suggests that limited research quantities of material were used. While there is no documentation identifying radiological surveys or decontamination that was provided, little potential exists for radioactive contamination resulting from AEC/DOE research beyond the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Quality Hardware and Machine Co.
Chicago, Illinois
ALSO KNOWN AS: Ravenswood Venture, Marden Manufacturing

TIME PERIOD: 1944-1945

FACILITY DESCRIPTION:

DOE ES&H Website:

Quality Hardware and Machine Co. had a contract to support the University of Chicago. The company canned experimental unbonded uranium slugs for Hanford, and may have canned all of the slugs used in the Hanford production reactors during World War II.

DISCUSSION:

As many as 48,000 slugs may have been canned by Quality Hardware and Machine Co. in the time frame of 1944-1945. The slug canning process that was probably used was developed by DuPont, and involved a “triple dip” including: 1) cleaning the slug in a nitric acid bath; 2) bathing in a molten bronze, tin, aluminum-silicon mixture; and, 3) water quenching. There is nothing to indicate that machining or turning of the uranium slugs occurred at these facilities. However, there would be removable contamination from the oxidization of the uranium slug prior to nitric acid cleaning. Once the slug was coated in aluminum, the potential for contamination is essentially eliminated.

Records indicate that the work may have been conducted at two facilities in the Chicago area. A 1978 internal DOE memo indicates that site 1, located on North Ravenswood in Chicago, was occupied by a furniture manufacturing company, Marden Manufacturing. There was no information regarding how long Marden Manufacturing has occupied the property. However, records indicate that the property had been transferred in 1968.

The facility at site 2, 1046 West Fullerton in Chicago, was apparently demolished and replaced by a grocery store as late as 1976. The Atlantic and Pacific Tea Company (a.k.a. A&P Grocery Store) was the property owner as of 1976, and DOE memoranda indicate that the building appeared new. There is no information regarding the use of the property prior to that.

Site 1 was recommended for a designation survey by ORNL in 1987, and FUSRAP records indicate that a survey was completed in 1989. The conclusion of this survey was that no contamination in excess of current levels was identified.

Documentation exists supporting that there was a significant quantity of material processed between 1944 and 1945. After 1945 however, there is no evidence that further coating of uranium was performed. The results of the 1989 survey indicate that no contamination in excess of current levels was identified. , little potential exists for radioactive contamination resulting from AEC/DOE research beyond the period in which weapons-related production occurred, as the process used to can the slugs should not have resulted in a significant spread of radioactive contamination.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website, DOE report DOE/EM-0319 “Linking Legacies”, along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: R. Krasburg and Sons Manufacturing Co.
Chicago, Illinois

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1944, R. Krasberg entered into a subcontract with the University of Chicago for services and supplies for the Metallurgical Laboratory. The subcontract required Krasberg to provide necessary personnel, facilities and equipment to produce special machining of parts for special equipment, tools, jigs, fixtures, etc., from materials furnished by the University. It is unclear from the documentation whether Krasberg handled any radioactive materials as part of its work.

DISCUSSION:

A radiological survey of the facility conducted by Oak Ridge Associated Universities (ORAU) did not identify any radioactive contamination at the facility above the levels specified in 10 CFR 835. Exposure rates in the facility were well within the range typically considered background levels. The facility was removed from FUSRAP status in late 1989.

Documentation provided does not identify that radioactive material was used at the facility. Radiological surveys conducted support the facility is not contaminated above accepted guidelines.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: R. W. Leblond Machine Tool Co.
Cincinnati Ohio

TIME PERIOD: 1961

FACILITY DESCRIPTION:

DOE ES&H Website:

National Lead Company of Ohio (Fernald) contracted with Leblond Machine for the purchase of a rapid boring machine. In 1961, acceptance tests, using 17 tons of natural uranium, were conducted at Leblond Machine.

DISCUSSION:

It is not clear on the exact quantity of uranium that was used during the first test; however, there are references to fourteen 7-inch x 21-inch billets being successfully drilled. For the second test, documentation exists to support 60,000 pounds of uranium metal being shipped to the R.W. Leblond Machine Tool Co. for the test.

At the conclusion of each test, there is documentation describing decontamination of equipment, and a return of all metal, machining chips, fines, turnings and decontamination equipment to the FMPC. The cutting oil used in the process was released to Leblond after analysis showed that the uranium contamination was 2.4 mg/liter.

There is little likelihood of significant residual contamination remaining at the facility at the conclusion of the September testing period.

Documentation indicates that there were only two tests conducted at the facility. Given the nature of the described decontamination effort, and controls that were put in place during the testing, there is little potential for significant contamination at the facility after the second test was complete.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Radium Chemical Company, Inc
New York, New York

ALSO KNOWN AS: J. Kelly

TIME PERIOD: 1943 - 1950

FACILITY DESCRIPTION:

DOE ES&H Website:

Beginning in 1943, the Radium Chemical Co. supplied most of the radium required for the Manhattan Engineer District. Combinations of material supplied and/or mixed by the Radium Chemical Company included radium bromide and radium bromide mixed with powdered beryllium. Brass was also used.

DISCUSSION:

The facility was in operation as late as the 1980s. In 1987, the New York State Attorney General issued a Stipulation and Order intended to result in the ultimate decontamination of the facility. Decontamination was initiated in 1988, by the State of New York.

Documentation reviewed indicates there is a potential for residual contamination outside of the covered period, which in part resulted from contracted work with the MED/AEC, and would be indistinguishable from non-AWE work residues. This facility was eliminated from FUSRAP, but added to the National Priority Listing under the USEPA.

In the late 1980s approximately 100 curies of radium needles were removed which were most likely not AWE related. The EPA then selected the final site remedy. This consisted of partial decontamination of the building, followed by its complete dismantling and disposal in appropriate facilities. Cleanup actions began in November 1990 and all work was completed in July 1994.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1951 - 1994

FACILITY NAME: Rare Earths/W.R. Grace
Wayne, New Jersey

TIME PERIOD: 1950-1960; Residual Radiation 1961-1984
DOE 1985-1987

FACILITY DESCRIPTION:

DOE ES&H Website:

Rare Earths extracted thorium from monazite sands from 1950-1960 under various contracts with the AEC. The AEC needed the thorium for its weapons program. Although the processing of monazite sands continued at Rare Earths through 1971, it was no longer performed under contract for the AEC, but rather was for commercial purposes.

Remediation activities were conducted from 1985-1987 by Thermo Analytical/Eberline and Bechtel National Inc. (BNI) under the BNI umbrella contract as part of the Formerly Utilized Site Remediation Action Program (FUSRAP).

DISCUSSION:

Radiological surveys were conducted at the property in 1981 and 1982, and the site entered the FUSRAP process. The site was added to the National Priorities List in 1985.

Based on the inability to distinguish AEC related contamination from that of commercial operations, results in a determination that AEC related residual contamination existed outside the period in which weapons-related production occurred. A January 2006 Fact Sheet on the US Army Corps of Engineers website indicates that removal of all contaminated materials was completed in December of 2001.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website, internal DOE/AEC correspondence provided by the DOE ES&H Group, and the US Army Corps of Engineers document FUSRAP Wayne Interim Storage Site, January 2006.

Pertinent documents:

1. Contract No AT(29-6)-993 [might actually be contract AT(49-6)-993], dated July 9, 1957.
2. "An Aerial Radiological Survey of the W.R. Grace Property, Wayne Township, New Jersey," EG&G Survey Report, NRC-8113, November 1981.
3. "Radiological Survey of the W.R. Grace Property, Wayne Township, New Jersey," Final Report, January 1983 (performed by ORAU).
4. Contract No. AT(30-1)-1037, dated Nov 2, 1950.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1961–1984; 1988-2001

FACILITY NAME: Reed Rolled Thread Co.
Worcester, Massachusetts

ALSO KNOWN AS: Reed Rolled Thread and Die

TIME PERIOD: 1955

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1955, Reed Rolled Thread and Die was scheduled to thread roll a test lot of 1500 Savannah River plant slugs for National Lead Company of Ohio (Fernald).

DISCUSSION:

A memo from National Lead of Ohio to C.L. Karl states that 1500 slugs will be thread rolled on September 14 and 15, 1955. Another NLO memo states that 1711 slugs were successfully thread rolled on September 27 and 28 of 1955.

A FUSRAP determination in 1990, listed the site as “TBD”. There is no new documentation indicating whether or not radiological surveys were conducted as part of this test or afterwards.

With the absence of any known radiological survey data from this or any other period, based on the assumption that the work did occur, there is a potential for the existence of significant residual contamination after completion of the operations.

This company/facility appears to still exist at an address in Holden, Massachusetts. It is unknown if this is the same facility where the AWE work was performed.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation. Reference: 1) National Lead Company of Ohio Letter (extract); To C.L. Karl; Subject: Resume Activities July 1955; August 3, 1955; 2) OTS/Weston Note; Stout to Williams; Subject: Additional Considered Sites; December 18, 1990; 3) DOE Memorandum; Murphie to Osheim; Subject: Documents Pertaining to Sites Being Evaluated in the Formerly Utilized Sites Remedial Action Program; January 24, 1995.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1956 - present

FACILITY NAME: Revere Copper and Brass
Detroit, Michigan

TIME PERIOD: 1943-1950s
Residual Radiation 1960-1984

FACILITY DESCRIPTION:

DOE ES&H Website:

Between 1943 and 1946, Revere Copper and Brass extruded uranium rods in its Detroit plant. During the late 1940s and early 1950s Revere rolled or extruded uranium rods.

DISCUSSION:

Documentation also suggests that thorium metal (presumably Th-232) was formed, rolled extruded, and /or machined by Revere Copper and Brass sometime during the period above. There is no indication of the quantity of material that was processed.

Argonne National Laboratory personnel performed a preliminary survey of the facility in 1981, finding no significant residual contamination in readily accessible areas or equipment. It was recommended in that report that a more detailed and thorough survey be performed to assess overhead and other surface areas for accumulated airborne uranium aerosols/dust based on the nature of the prior work performed and the absence of ventilation systems for control. Information indicates that some of the equipment that was used during the AEC contract was still in use at the facility as late as 1981, but subsequently stolen when the facility was closed and demolished in 1984, prior to a detailed survey having been performed. DOE eliminated the facility from FUSRAP actions in 1990, based on the preliminary survey results (1981) and the absence of the facility due to demolition (1984).

Based on the nature of uranium extrusion work and associated activities with thorium, coupled with the lack of a detailed radiological survey, it is determined that this facility poses a potential for significant residual contamination outside the period in which weapons-related production occurred up to the time that the facility was demolished.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation. Pertinent documentation included;

1. ANL Preliminary Survey Report; Subject: Notes and Comments Revere Copper and Brass, Detroit, MI, circa 4/22/81;
2. DOE Report, FUSRAP Elimination Report for the Former Revere Copper and Brass Corporation, 5851 West Jefferson Street, Detroit Michigan, March 30, 1990.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1960 – 1984

FACILITY NAME: Roger Iron Co.
Joplin, Missouri

ALSO KNOWN AS: Roger Iron Works Company

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

The Roger Iron Company conducted a test operation involving crushing of a dolomite c-liner for the AEC. The liner had trace amounts of uranium and magnesium fluoride. The test involved four individuals, including two employees of National Lead of Ohio (Fernald). NLO also monitored the air during the time of the test.

DISCUSSION:

This was a single point test conducted at the vendor's facility. Air monitoring was performed during the crushing operation, both Breathing Zone and General Area samples were collected.

There is little information regarding the disposition of the material following the test. Given the results of the air monitoring, and the fact that this test was conducted over a short period of time, with material containing trace quantities of radioactive material, it is doubtful that there was a significant spread of radioactive contamination.

A FUSRAP determination made in 1990, excluded the site from further consideration.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Sciaky Brothers, Inc.
Chicago, Illinois

TIME PERIOD: 1953

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1953, Argonne National Laboratory suggested that Sciaky Brothers be used to perform a stitch welding operation for a uranium cord, zirconium clad specimen EBR irradiation. The documentation does not indicate whether this work actually took place. The company may also have done electron beam melting or welding of uranium metal on an experimental basis.

DISCUSSION:

This appears to be a single operation involving only one specimen. Given that the uranium was clad when provided to Sciaky Brothers, and the operation apparently only occurred once, there is little potential for radioactive contamination at this facility. The facility was removed from FUSRAP in 1987, and no further actions were recommended or taken.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Seaway Industrial Park
Tonawanda, New York

ALSO KNOWN AS: Charles St. Plant

TIME PERIOD: 1974

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1974, the Ashland Oil Company constructed bermed areas on the Ashland #1 property to hold two petroleum tanks. Some of the soil removed during construction was disposed of in three areas of the Seaway Industrial Park landfill. Subsequent investigations determined that the soil from the Ashland site contained radioactive contaminants exceeding Department of Energy (DOE) guidelines. This soil came from an area used for disposal of radioactive residues from the nearby Linde Air Products site. This company processed uranium for the Atomic Energy Commission and the Manhattan Engineer District, predecessor agencies of the Department of the Energy (DOE).

Although the Seaway Industrial Park was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1984, no work under this program was performed prior to its transfer to the Army Corps of Engineers.

DISCUSSION:

A radiological survey of the property was conducted in 1978 as part of the FUSRAP process. The survey indicated that the site was contaminated in an approximately 13-acre area of the landfill. External exposures ranged from 8-80 microrem per hour, and averaged 36 microrem per hour. DOE cleanup activities were apparently begun, under the FUSRAP program in 1984. There is no documentation identifying when or if that activity was completed.

Documentation reviewed indicates the presence of residual contamination outside of the period in which weapons-related production occurred. Remediation is ongoing under FUSRAP and is scheduled for completion in 2007.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation. Other sources of information used for the evaluation included: 1) DOE Report (DOE/EV-0005/6); FUSRAP Radiological Survey of the Seaway Industrial Park Tonawanda New York; May 1978 (Final Report) 2) USACE Seaway Site Missions Sheet.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1975 - present

FACILITY NAME: Seymour Specialty Wire
Seymour, Connecticut

ALSO KNOWN AS: Reactive Metals, Inc.
National Distillers and Chemical Co.
Bridgeport Brass Co.

TIME PERIOD: 1962-1964; Residual Radiation 1965-1984;
DOE 1992-1993(remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1962 to 1964, the Bridgeport Brass Company performed contract work at the Seymour site for the Atomic Energy Commission (AEC). This work involved developing an extrusion process for natural uranium metal. After 1964, the work was consolidated at the Reactive Metals site in Ohio. Operation of the Seymour site was later taken over by employees and the facility eventually became the Seymour Specialty Wire Company.

Although this site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1985, remediation only took place during 1992 and 1993. This work was performed under the Bechtel National Inc. umbrella contract or DOE site environmental remediation.

DISCUSSION:

A radiological survey was conducted at the facility in 1964. According to the records, removable contamination ranged from 20-90 dpm/100 cm² and fixed contamination ranged from <800 dpm-3200 dpm/60 cm². The facility was substantially renovated sometime prior to 1977, to house corporate printing operations and a warehouse. While residual contamination in 1964 met existing standards and a survey in 1977 didn't find a need for decontamination, subsequent surveys in 1985 and 1993 found areas that exceeded then-applicable standards. A December 1985 memo determining that this site should be remediated, also states that the remaining contamination is inaccessible, and therefore if not disturbed poses no threat to anyone.

In 1985, the site was designated under FUSRAP for remedial action because of contamination detected in floor drains, soil contamination and minor surface contamination. Cleanup of the site was completed in 1993 with the removal of approximately 38 cubic yards of waste.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

Pertinent documents:

1. DOE memo Hazard Assessment dated 8/10/93;
2. ORNL survey report from 1985;
3. ORNL survey report from 1993;
4. ORNL final verification survey report from 1995.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1965 - 1991

FACILITY NAME: Shattuck Chemical
Denver, Colorado

ALSO KNOWN AS: Dawn Mining Corp
Denn Mining Corp

TIME PERIOD: 1950s, 1963

FACILITY DESCRIPTION:

DOE ES&H Website:

Shattuck Chemical prepared uranium compounds and uranium oxide in the late 1950s. (This was probably done under a Source Materials License issued by the Atomic Energy Commission.) Shattuck also processed refined uranium and produced natural uranium oxides on a commercial basis for the private market, and in 1963, supplied a small quantity of uranium to the Rocky Flats plant.

DISCUSSION:

In 1987, a FUSRAP elimination recommendation was made with the basis being “no records found which indicate there were any contracts between MED/AEC and Shattuck.”

Available documentation indicates that residual contamination from AWE related work is indistinguishable from non-AWE related contamination. This facility was undergoing soil removal and site remediation under USEPA Superfund projects program. Final Status Surveys were reportedly completed in July 2004.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation. Reference: USEPA Shattuck Superfund Site Summer 2004 Update.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950s - 1962, 1964 - 2004

FACILITY NAME: Shpack Landfill
Norton, Massachusetts

ALSO KNOWN AS: Metal and Controls Nuclear Corp.
Texas Instruments
M&C Nuclear

TIME PERIOD: 1960-1965;
Residual Radiation 1966-1998

FACILITY DESCRIPTION:

DOE ES&H Website:

The Shpack Landfill began operating as a private landfill in the early 1960s and received both industrial and domestic wastes. The landfill was closed in 1965 under court order. In 1978, a concerned citizen who had detected elevated radiation levels at the site contacted the Nuclear Regulatory Commission. The Commission investigated the site and confirmed the presence of radioactivity in excess of natural background levels for the area. Exactly when these contaminants were deposited at the site is not known. However, the Nuclear Regulatory Commission determined that the Texas Instruments plant (see Metals and Controls Corp.) of Attleboro had used the landfill to dispose of trash and other materials. The Nuclear Regulatory Commission concluded that the contaminants probably resulted from this waste stream.

DISCUSSION:

Residues and waste containing uranium (enriched to > 90%), thorium, and radium have been detected in the soil and groundwater of the site. Radiological surveys taken in the late 1970s revealed extensive contamination at the landfill.

The site was turned over to the Army Corps of Engineers in 1997. FUSRAP update reports include remediation plans as recently as 2004. There is no evidence that the remediation has been completed.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website, and internal AEC/DOE correspondence provided by the DOE ES&H Group.

Pertinent documents:

1. Memo, Sheldon Meyers to R.J. Hart, "Shpack Landfill, Norton, Massachusetts," dated Jan 27, 1981.
2. "Radioactive Material in Uncontrolled Location, Norton, Massachusetts," Report No. 078-154-A Part 1 of 2, U.S. NRC Office of Inspection and Enforcement, Mar 13, 1979.
3. "Radioactive Material in Uncontrolled Location, Norton, Massachusetts," Report No. 078-154-A Part 2 of 2, U.S. NRC Office of Inspection and Enforcement, June 7, 1979.
4. "Radiological Survey of the Shpack Landfill, Norton, Massachusetts," DOE/EV-0005/31, ORNL-5799, Dec 1981

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1966-present

FACILITY NAME: Simonds Saw and Steel Company
Lockport, New York

ALSO KNOWN AS: Allegheny-Ludlum Steel Corp.
Simonds Saw and Steel Division
Guteri Special Steel Corp.

TIME PERIOD: 1948-1956
Residual Radiation 1957 - 2003

FACILITY DESCRIPTION:

DOE ES&H Website:

Simonds Saw and Steel rolled uranium billets into rods for the AEC as part of the multi-site process overseen by the New York Operations Office for the production of uranium metal for fabrication into slugs for fueling Hanford production reactors. Simonds also rolled thorium metal whose most likely use was irradiation in Hanford reactors for the weapons program. Simonds rolled between 25 million and 35 million pounds of uranium and between 30,000 to 40,000 pounds of thorium.

DISCUSSION:

Records indicate that between 25 million and 35 million pounds of uranium, and 30,000 to 40,000 pounds of thorium may have been processed at this facility. Contract activities with AEC ended sometime in the 1957-58 period. As part of contract termination, a large-scale facility decontamination was required to have been performed, but it is unclear whether it was ever performed. A 1958 NLO (Fernald) Trip Report, indicated that facility surveys and decontamination were conducted, but neither the extent of the surveys, nor the effectiveness of the decontamination was described. A 1976 ORNL survey of the facility identified alpha contamination was within "acceptable "limits, but beta-gamma radiation "...in some areas exceeded the maximum allowable for unrestricted use specified in NRC guidelines."

Documentation reviewed indicates significant residual contamination outside of the period in which weapons-related production occurred. This facility is in the remediation process, managed by the Buffalo District of the USACOE FUSRAP program.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Other sources of information included: 1) ORNL Letter; Cottrell to Turi; Radiological Survey of the Guterl Steel Facility, Lockport, New York; July 20, 1984, 2) ORISE Report (99-1699); Radiological Survey of the Guterl Specialty Steel Corporation, Lockport, New York, Final Report; December 1999, 3) DOE Letter; Fiore to Van Winkle, concerning the eligibility of the site for cleanup under FUSRAP; May 19, 2000.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1957 - present

FACILITY NAME: Southern Research Institute
Birmingham, Alabama

TIME PERIOD: 1955-1958; 1962; 1976

FACILITY DESCRIPTION:

DOE ES&H Website:

The Southern Research Institute was involved in several AEC projects. During the period from November 10, 1955 through June 1, 1958, it was licensed (License #C-3417) to receive source material from National Lead Company of Ohio (Fernald) for research on the properties of uranium-liquid metal fuel elements. The Institute performed hot tensile tests on uranium metal and was authorized to receive 300 pounds of normal uranium from NLO. Records also indicate that it handled test quantities of radioactive metals for NLO in 1976. The file also contains a proposal to NLO to test uranium workability at elevated temperature, but does not indicate if the work was done.

DISCUSSION:

There is no mention of the work performed in 1976, other than a FUSRAP document identifying test quantities of uranium. However, there is no mention of this work actually being performed.

From available documentation it appears that the work conducted by SRI was limited in scope and involved small amounts of radioactive material (uranium). No radiological survey data available from during or after the performance of this work is known to exist. It does appear that SRI was aware of, and implemented, appropriate laboratory controls during the work, which would limit the potential for residual contamination. However, in the absence of any radiological survey data, residual contamination cannot be ruled out.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1959 - 1961, 1963 - 1975, 1977 - present

FACILITY NAME: Spencer Chemical Co., Jayhawks Works
Pittsburg, Kansas

TIME PERIOD: 1958-1963

FACILITY DESCRIPTION:

DOE ES&H Website:

The Spencer Chemical Company, Jayhawks Works, processed unirradiated uranium scrap for the AEC, recovering enriched uranium from it for use in the weapons complex. In 1963, Kerr-McGee took over Spencer Chemicals' nuclear operations.

DISCUSSION:

Other information in the provided documentation indicates there was some work with uranium hexafluoride, uranium oxide, and thorium. Uranium enrichments apparently ranged from depleted to 93%.

There were two Special Nuclear Material licenses issued to Spencer Chemical at this facility, #154 and #329. SNM-329 allowed the facility to possess up to 1,000 kilograms of 5% enriched uranium at any one time. SNM-154 was not available for this review, but in the absence of any identified license amendments to SNM-329, higher enriched work and thorium work may have been conducted under SNM-154. Spencer Chemical also had a Source Material License (C-4352) issued, however the specifications of that were unavailable. Spencer Chemical was cited for non-compliance with license conditions as a result of a May 2-5, 1961 inspection by the AEC.

The total quantities of material handled under these licenses were not identified in the documents reviewed, and in 1962, SNM-154 and SNM-329 were cancelled. As a condition of the license cancellations, Spencer Chemical was required to provide documentation to the AEC that all material had been removed from the facility, and that remaining contamination levels should not exceed specified contamination levels which are consistent with current standards.

Documentation reviewed indicates that AEC licenses were terminated no later than 1963, at which time an AEC performed a final closeout inspection of the decommissioned facility.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group, consisting of US Army Corps of Engineers correspondence, and internal DOE facility evaluation documentation including written communications between Spencer Chemical Company Representatives and the U.S. Atomic Energy Commission.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Sperry Products, Inc.
Danbury, Connecticut
ALSO KNOWN AS: PCC Technical Industries

TIME PERIOD: 1952-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1952 and 1953, Sperry developed processes for testing and examining uranium plates for the Sylvania Corp., a major AEC contractor.

DISCUSSION:

Based on documentation provided, the testing involved ultrasound of uranium plates. As much as 70 kg of uranium may have been processed through the facility between 1952 and 1953.

Given the nature of the work and the limited quantity of material used at the facility, there is little likelihood for residual radioactive contamination and subsequent employee exposure.

Documentation exists supporting that there was only a small quantity of material processed. While there is no documentation containing the results of radiological surveys, little potential exists for radioactive contamination resulting from AEC/DOE testing beyond the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group, consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: St. Louis Airport Storage Site (SLAPS)
St. Louis, Missouri

ALSO KNOWN AS: Robertson Airport
Robertson Storage Area

TIME PERIOD: 1946-1966; Residual Radiation 1967-1998

FACILITY DESCRIPTION:

DOE ES&H Website:

The St. Louis Airport Site Vicinity Properties are associated with both the St. Louis Airport Site and the Latty Avenue Properties. The Manhattan Engineer District acquired the St. Louis Airport Site in 1946 and used it to store uranium-bearing residues from the St. Louis Downtown Site from 1946 to 1966, when Continental Mining and Milling Company of Chicago purchased the waste, removed it from the storage site near the airport, and placed it in storage at Latty Avenue under Atomic Energy Commission license. Although the SLAPS site was designated as part of the Formerly Utilized Site Remediation Action Program (FUSRAP) in 1984, no work under this program was performed prior to its transfer to the Army Corps of Engineers.

DISCUSSION:

The information indicates that as much as 121,000 tons of refining residue were stored at the site, containing as much as 236 pounds of uranium.

A draft environmental assessment conducted in 1981 indicates that “in 1973. . .the Airport Authority removed more residue from the site, razed and buried all onsite structures except the fence, and spread clean fill over the entire site to reduce radiation levels and control runoff and erosion.”

Radiological survey data from 1979 identified residual contamination. The site was turned over to the US Army Corps of Engineering for remediation under FUSRAP in 1997.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Environmental reports from 1981 and 1986. Pertinent document: DOE Report (DOE/EV - 0005/16); Radiological Survey of the St. Louis Airport Storage Site, St. Louis, Missouri; Sept. 1979.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1967 - 1998

FACILITY NAME: Standard Oil Development Co. of NJ
Linden, New Jersey

ALSO KNOW AS: Bayway Exxon

TIME PERIOD: 1942-1945

FACILITY DESCRIPTION:

DOE ES&H Website:

Standard Oil performed a variety of tasks during World War II. It was under contract to coordinate materials for work to be done by the Metallurgical Laboratories of the Manhattan Engineer District. It also conducted studies to develop uranium metal through chemical reduction process, and to develop and construct centrifuges for uranium separation. The company continued to provide consulting and analytical services for the Atomic Energy Commission, but it is not clear if any radioactive materials were handled there after World War II.

DISCUSSION:

Documentation reviewed indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred. Work may have been done through 1953. Early facilities may have been dismantled and disposed of sometime around 1949-1950, however there is no data or documentation describing the radiological conditions or disposition of contaminated materials.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent documents included: (1) Oak Ridge Associated Universities Letter; Berger to Wagoner; Subject: Visit to Potential Sites in Newark and Linden New Jersey; February 12, 1990. (2) Exxon Research and Engineering Company Letter; Buckman to Willis (Weston/OTS); providing a plot plan of the Linden Technology Center (old Standard Oil Development Company site); July 18, 1988. (3) Weston OTS Note; Stout to Williams (DOE); Revised Site Summary for the Exxon Company in Linden, New Jersey; March 22, 1991.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1946 - present

FACILITY NAME: Star Cutter Corp.
Farmington, Michigan

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

The Star Cutter Corporation manufactured machine tools. Records indicate that National Lead of Ohio (Fernald) conducted a one-time test of a Star Cutter drill to hollow uranium slugs.

DISCUSSION:

The test involved approximately 100 pounds of uranium. There is no evidence of any subsequent operations involving uranium. The site was removed from FUSRAP action in 1991.

Little potential exists for radioactive contamination resulting from processing this material beyond the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group, consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Staten Island Warehouse
New York, New York

ALSO KNOWN AS: Archer Daniels Midland Company

TIME PERIOD: 1942

FACILITY DESCRIPTION:

DOE ES&H Website:

This warehouse was used for uranium ore storage from the Belgian Congo. From this warehouse, the ore was transported to various Manhattan Engineer District (MED) sites for long-term storage and/or processing. The ore was the property of the African Metals Corporation and the MED contractor purchased only the U₃O₈ content of the ore while African Metals retained ownership of the radium and precious metals in the ore.

DISCUSSION:

Documentation identifies that ores stored at this location from 1939 through 1942 were a result of an independent speculative business enterprise. The MED learned of this material in 1942 and subsequently purchased and removed the ores at that time. The building where these ores were stored appears to have been demolished after MED acquisition of the materials sometime between 1942 and 1946. A radiological survey of the area of the demolished storage facility in 1980 identified a localized area of potential contamination.

This material was not government controlled or owned, unlike the materials stored at the Baker and Williams Warehouses, until 1942 whereupon it was removed.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Stauffer Metals, Inc.
Richmond, California

ALSO KNOWN AS: Stauffer-Tenescal Co.
Tenescal Co.

TIME PERIOD: 1961

FACILITY DESCRIPTION:

DOE ES&H Website:

Stauffer performed electron beam melting tests on uranium metal for National Lead of Ohio (Fernald). The company had performed similar tests for Hanford.

DISCUSSION:

There is no information regarding this facility in the FUSRAP records. Because this was a one-time test, the likelihood for significant long-term contamination at the facility is remote. There is little likelihood of long-term significant contamination resulting from this one-time operation.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Superior Steel Co.
Carnegie, Pennsylvania

ALSO KNOWN AS: Copper Weld, Inc.
Lot and Block 102J210

TIME PERIOD: 1952-1957
Residual Radiation 1958-2001

FACILITY DESCRIPTION:

DOE ES&H Website:

Superior Steel produced uranium strip and rolled uranium slabs for use by the Savannah River Laboratory. In 1955, for example, they hot rolled twenty-five tons of uranium into strip.

DISCUSSION:

There is little information in the FUSRAP files regarding Superior Steel Co. The company apparently rolled production quantities of uranium metal for NLO (Fernald) in the time frame identified above.

A 1981 ORNL survey indicated that the site was contaminated in the area where the uranium operations took place, on and under floors, in sumps and on some of the machinery that was used during production.

Documentation reviewed indicates residual contamination from AWE work still exists at this facility. DOE identified the contamination in a 1981 survey but eliminated the facility from FUSRAP.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Other sources of information included the following: (1) Aerospace Corporation Letter with Enclosures; C. Young to A. Whitman; Authority Review - The Former Superior Steel Corporation Site - AEC Contract No. AT(30-1)- 1412; September 30, 1985 PA.03-1, (2) DOE Letter; A. Whitman to A. Wallo; comments and authority decisions on various sites; October 28, 1985 PA.03-2, (3) DOE Letter; J. Wagoner to Mayor Willard; Information on the former Superior Steel Company site; January 27, 1995 PA.03-3, (4) ORNL/DOE Preliminary Survey; T.E. Myrick and C. Clark; Preliminary Site Survey Report for the Former Superior Steel Mill at Carnegie, Pennsylvania; April 1981 PA.03-4.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958 - present

FACILITY NAME: Sutton, Steele and Steele Co.
Dallas, Texas

TIME PERIOD: 1951; 1959

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1951, AEC and AEC contractor personnel conducted tests at Sutton, Steele, and Steele, Inc. which were aimed at devising means of recovering uranium from low grade wastes and residues. The tests were to determine the feasibility of separating fused dolomite from magnesium fluoride slag and uranium. In 1959, National Lead of Ohio (Fernald) personnel evaluated Sutton, Steele, and Steele's dry tabling equipment for the separation of normal uranium shot.

DISCUSSION:

During the first test, 2 tons of C-liner and C-special were processed to determine whether the uranium could be separated from the dolomite and magnesium fluoride. As this was liner material, the uranium concentrations were relatively low, and only about 50 pounds of uranium were processed through the equipment. At the conclusion of the test, the equipment was decontaminated and residues were returned to the AEC.

In 1959, NLO (Fernald) personnel evaluated Sutton, Steele and Steele's dry tabling equipment for the separation of uranium shot. Fifty pounds of normal uranium were processed in a single test to evaluate particle size separation. As in the first test, the equipment was decontaminated and monitored after the operation.

Sutton, Steele and Steele was eliminated from FUSRAP action in 1993 based on the low potential for residual contamination at the facility.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Swenson Evaporator Company
Harvey, Illinois

TIME PERIOD: 1951

FACILITY DESCRIPTION:

DOE ES&H Website:

Swenson Evaporator was scheduled to perform a raffinate spray drying test for National Lead Company of Ohio (NLO) on March 20, 1951. This test would have involved some radioactive residue. The drums containing the raffinate were shipped to Swenson by Mallinckrodt, but it is believed that they were not opened and the test not performed.

DISCUSSION:

Documentation indicates that because of public relations issues, and health department intervention, the test was never performed. There were approximately 40 drums of raffinate liquor that were delivered to Swenson for the test. Evidence indicates that the drums were never opened and subsequently returned to NLO (Fernald). The exact dates of the shipments are not clear.

A FUSRAP determination made in 1987 recommended the removal of this facility from the FUSRAP process because of low potential for residual contamination.

Documentation indicates that a limited evaluation was scheduled, however, never performed. There is little to no potential for residual contamination remaining at the site as a result of AEC/DOE activities.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Sylvania Corning Nuclear Corp.-Bayside Laboratories
Bayside, New York

ALSO KNOWN AS: Sylvania Electric Products, Inc.
Metallurgical Laboratory
Sylvania Electric Corporation, Atomic Energy Division
Sylvania Bayside Laboratories
Sylcor

TIME PERIOD: 1947-1962

FACILITY DESCRIPTION:

DOE ES&H Website:

The Metallurgical Laboratory of the Sylvania Electric Company investigated uranium and thorium powder metallurgy. It also produced powdered metal slugs, developed bonding techniques, and plated uranium slugs with nickel. The work with slugs included the conversion of uranium metal to uranium hydride using hydrogen. A February 1948 AEC Monthly Summary of Activities indicates that the Lab's "initial program will involve determining the physical properties and the health hazards of beryllium and uranium powders and the applications of powder metallurgy to these metals and their alloys." In 1948, the work required 315 pounds of raw beryllium metal. Beryllium was handled first in the regular metallurgical building and then, after the objections of the AEC medical division, in a special AEC metallurgical development laboratory.

DISCUSSION:

Other work at the facility included UO₂ wafer production, flat plate production, pipe cutting using abrasive wheel cutters, canning slugs, thorium slug canning, and thorium metal production.

In 1973, a FUSRAP site status report indicated that New York had terminated the facility's license after verifying there was no contamination at the site. The facility was demolished sometime before 1977. An ORNL survey of the property in 1977 identified no contamination at the site distinguishable from background. The site was removed from FUSRAP in 1993. Based on a description of the survey performed prior to turn-over to GTE Labs in 1962, coupled with results from follow-up surveys in 1973 and 1977, there is no indication that residual contamination existed beyond the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent documentation included, Aerospace Corporation memorandum from Vierzba to Mott, Sylvania-Corning Nuclear Corporation, Inc. Bayside, New York Disposition of Radioactive Materials.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Sylvania Corning Nuclear Corp.- Hicksville Plant
Hicksville, New York

ALSO KNOWN AS: General Telephone and Telegraph Laboratories
Sylcor

TIME PERIOD: 1952-1966

FACILITY DESCRIPTION:

DOE ES&H Website:

Under Atomic Energy Commission (AEC) contracts, the facility was used for research and development with radioactive materials, principally uranium and thorium. It was also licensed by the AEC to fabricate reactor fuel elements for the AEC, for Sylvania use, for sale, and for research purposes.

DISCUSSION:

There is little information in the file regarding the operations performed or quantities of material that were used at the Hicksville facility.

A final release survey of the facility was conducted in 1965 by the Savannah River Company. A subsequent survey by ORNL (no date given) identified some residual activity (no quantity given).

Documentation reviewed indicates that significant AWE related contamination existed up until the specified end date of 1966. Available documentation included a report of the decontamination/dismantlement activities and an associated radiological survey from 1965-1966.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Reference: (1) AEC (SROO) Letter; Stetson to Pittman; Subject: Decontamination and Decommissioning of AEC Facilities (Your TWX, 10/29/73); November 13, 1973.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Tech-Art, Inc.
Milford, Ohio

TIME PERIOD: 1952

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1952, National Lead Company of Ohio (Fernald) used Tech-Art to grind inserts as part of a study of Firth Sterling HF carbide profile inserts in conjunction with the machining development program. Additional documentation shows that Tech-Art possessed a subcontract with NLO for "[m]achine shop operations on Government owned materials at prescribed hourly rates of pay."

DISCUSSION:

Based on the available documentation, there is little likelihood that this facility handled any radioactive material. There is a reference to "machine shop operations on government-owned materials at prescribed hourly rates of pay," but exactly what was performed is not clear. It appears that the inserts were ground by Tech Art for use in machining operations. The inserts were not radioactive. There is reference to a 1990 memorandum to the file, indicating that this site was to be evaluated by FUSRAP, but there is no documentation indicating that this was ever completed. The site remains classified as FUSRAP-TBD.

With the absence of any information confirming that radioactive material was used at this facility, the presence of residual radioactivity is unlikely.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Tennessee Valley Authority
Muscle Shoals, Alabama

TIME PERIOD: 1951-1955

FACILITY DESCRIPTION:

DOE ES&H Website:

At its National Fertilizer Development Center, the TVA performed research and development on uranium recovery under formal agreement with the AEC. The work involved the extraction of uranium during the production of fertilizer from leached zone phosphate ore. A laboratory and pilot plant were operated at the fertilizer plant, but little uranium (about 2.5 kilograms of uranium concentrate) was produced.

DISCUSSION:

Very little uranium was produced at this facility. A preliminary survey of the facility, conducted in 1980 by ORNL showed that the radiation and contamination levels at the facility did not vary significantly from background.

A FUSRAP determination made in the 1980s recommended elimination from the process based on the limited material processed and low potential for radioactive contamination remaining at the facility after the operation was ceased.

There was limited radioactive material produced at the facility. Little potential exists for radioactive contamination beyond the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Texas City Chemicals, Inc.
Texas City, Texas

ALSO KNOWN AS: American Oil Company
Morden, Incorporated
Smith Douglass
Amoco Chemical Company

TIME PERIOD: 1952-1956

FACILITY DESCRIPTION:

DOE ES&H Website:

Texas City Chemicals, Inc. produced uranium by recovery of U_3O_8 from a phosphate fertilizer production plant. The AEC contracted with Texas City Chemicals for the recovery of uranium which was ultimately used in weapons production.

DISCUSSION:

Contract specifications identify that as much as 12 tons of U_3O_8 per year may have been produced at the plant during the contract years of 1952-1956.

Texas City Chemicals subsequently declared bankruptcy in 1956, and the facility in which the uranium was produced was demolished at an unknown time after that.

A preliminary survey conducted by ORNL in 1977 (issued in 1980), did not identify radiation/contamination levels above what would normally be expected at a phosphate fertilizer plant in that region of the country. The facilities associated with AWE work had been demolished at some time prior to this survey.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group including DOE Report (ORNL); Preliminary Survey of Texas City Chemicals, Inc. (Borden Chemical Division of Borden, Inc.) Texas City Texas; March 1980.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Titanium Alloys Manufacturing
Niagara Falls, New York

ALSO KNOWN AS: Humphreys Gold Co.
Titanium Alloys Manufacturing Co, Division of NLO
Titanium Alloys Metals
Titanium Pigment Co.

TIME PERIOD: 1950-1956

FACILITY DESCRIPTION:

DOE ES&H Website:

In the early 1950s, Titanium Alloys Manufacturing was under contract to the AEC to provide zirconium tetrachloride. In 1955, TAM was issued an AEC source material license to do work related to the conversion of thorium scrap to anhydrous tetrachloride. Correspondence from Oak Ridge indicates that it was not interested the company's thorium work. In 1956, this division reduced ores and other uranium compounds by arc melting in an induction furnace.

DISCUSSION:

Documentation reviewed includes radiological air and area monitoring data from furnace operations conducted in 1956. These surveys indicate that both airborne radioactivity concentrations and area contamination levels were very low during furnace operations. Therefore the potential for residual contamination after operation ceased are low.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Other sources of information utilized in this research included: 1) Analytical Data Sheets; No. 9806 and 9805; Analytical Dept. - Health and Safety Division; Received by Analytical Chemistry Section July 13, 1956; 2) Analytical Data Sheets; No. 9804 and 9803; Analytical Dept. - Health and Safety Division; Received by Analytical Chemistry Section July 12, 1956.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Titus Metals
Waterloo, Iowa
ALSO KNOWN AS: Titus, Incorporated

TIME PERIOD: 1956

FACILITY DESCRIPTION:

DOE ES&H Website:

Titus Metals performed extrusion of uranium oxide billets into fuel plates for the Argonaut reactor at Argonne National Laboratory on June 29, 1956.

DISCUSSION:

Records also indicate that, at the completion of the operation, the facility and equipment were decontaminated to non-detectable levels.

A FUSRAP determination made in 1987 recommended elimination from the process based on the decontamination of the facility, the limited material processed, and low potential for radioactive contamination remaining at the facility after the operation was ceased.

There was limited radioactive material use, and the operations only lasted a few days.

Documentation indicates that the facility was decontaminated at the conclusion of the operations at Titus Metals.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Tocco Induction Heating Div.
Cleveland, Ohio

ALSO KNOWN AS: Ohio Crankshaft Company
Tocco Heat Testing
Park Ohio Industries

TIME PERIOD: 1968-1969

FACILITY DESCRIPTION:

DOE ES&H Website:

Tocco had a contract with National Lead of Ohio (Fernald) to develop induction heating coil equipment for heating uranium fuel cores. Tocco performed operational tests of these units at its Ohio facility, which took place during 1968-1969. The company received 2000 pounds of natural uranium machined fuel cores and 5600 pounds of depleted uranium machined fuel cores from NLO for testing.

DISCUSSION:

The license was amended in 1967 to authorize up to 16,000 pounds of uranium. A 1968 inspection of the facility by AEC identified several areas of low-level contamination on the working area floor (300-1500 dpm/100cm²) and on the machinery (3,000-4,500 dpm/100 cm²).

In 1968, the facility sent a letter to AEC stating that all materials had been returned to NLO (Fernald), and questioning whether the license should be cancelled or allowed to expire. In January 1969, the AEC terminated the license. There was apparently no follow-up inspection of the facility.

In 1993, the NRC conducted a survey of the facility and found that the radiation levels and contamination levels in the facility did not vary significantly from background. Removable contamination surveys were also performed at the facility and there was no evidence of removable contamination detected.

Documentation reviewed indicates that the facility was licensed to perform work under contract with NLO (Fernald) from 1966 to 1969. There is however, no reason to expect that significant radioactive contamination existed at the facility after the 1969 date when the AEC license was terminated.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Torrington Co.
Torrington, Connecticut

TIME PERIOD: 1951-1953

FACILITY DESCRIPTION:

DOE ES&H Website:

The Torrington Company performed small-scale swaging experiments on uranium rods in the early 1950s. Torrington conducted this work for two companies: the Bridgeport Brass Company and American Machine and Foundry.

DISCUSSION:

Given the short duration of the testing, and the limited use of uranium, it is not likely that significant contamination existed at the facility beyond the dates identified on the DOE ES&H Website.

A FUSRAP determination made in 1987 recommended elimination from the process, based on the limited quantity of material and low potential for radioactive contamination.

There was limited radioactive material use, and the resultant tests only lasted a few days. While there is no documentation containing the results of radiological surveys, little potential exists for radioactive contamination resulting from the limited use of radioactive material used at the site beyond the period in which weapons-related production occurred.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Tube Reducing Co.
Wallington, New Jersey

TIME PERIOD: 1952; 1955; 1957

FACILITY DESCRIPTION:

DOE ES&H Website:

Tube Reducing Co. conducted tests for National Lead of Ohio (Fernald) on shaping and sizing uranium rods. In January 1952, two uranium rods were processed. More tubes were extruded in a reduction experiment in January 1955. Another test was conducted in 1957. The firm is also mentioned in World War II-era reports as a possible location for uranium machining, but there are no indications that any such work was done at the facility during that time period.

DISCUSSION:

Given the short duration of the testing, and the limited use of uranium, it is not likely that significant contamination existed at the facility beyond the dates identified on the DOE ES&H Website.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Tyson Valley Powder Farm
St Louis, Missouri

TIME PERIOD: 1942-1949

FACILITY DESCRIPTION:

DOE ES&H Website:

The Tyson Valley Powder Farm was a storage site for radioactive materials in the late 1940s. Records show, for example, that at the end of 1946, 206,110 pounds of uranium metal were stored at this location for the Manhattan Engineer District.

DISCUSSION:

Given the quantity of material at the facility and the variety of storage methods used, it is reasonable to assume that radioactive contamination was present in the facility during the time the storage took place.

The materials were removed from the site in 1948, and records suggest that the site was sold to a local municipality, and subsequently developed into a park.

INFORMATIONAL SOURCES:

Sources of information reviewed during this evaluation included the DOE ES&H Website along with documentation provided by the DOE ES&H Group consisting of internal DOE facility evaluation documentation.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: U.S. Steel Co., National Tube Division
McKeesport, Pennsylvania

TIME PERIOD: 1959-1960

FACILITY DESCRIPTION:

DOE ES&H Website:

Tests at the Christy Park Works, National Tube Division of the U. S. Steel Corporation, conducted in 1959 and 1960, demonstrated that rotary piercing of uranium was possible. The tests were conducted for National Lead of Ohio (Fernald).

DISCUSSION:

There is a 1967 report indicating that the testing phase occurred during the 1959-1960 time-frame. Rotary piercing of uranium was never adopted by NLO (Fernald).

The documentation reviewed includes descriptions the radiological controls that were in place during the operation and the decontamination efforts effort after operations. Post operational surveys indicate that decontamination efforts were successful.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Halcomb, R. N., to Quigley, "Trip Report to National Tube Division, Christy Parks Works, McKeesport, Pennsylvania on February 15 to March 2, 1960"

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: United Lead Co.
Middlesex, New Jersey

ALSO KNOWN AS: Perry Warehouse; Middlesex Sampling Plant

TIME PERIOD: 1950-1967;
Residual Radiation 1968-1984

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1950 to 1955, United Lead Co., a subsidiary of National Lead Company, was the AEC's operating contractor for the Middlesex Sampling Plant. The Middlesex Sampling Plant sampled, assayed, stored, and shipped uranium, thorium, and beryllium ores. The plant discontinued uranium and beryllium assaying and sampling activities in 1955. Until 1967, the site was used as a thorium storage and sampling site.

DISCUSSION:

Documentation indicates that operations began at this facility in 1943 and ended in 1955, at which time the facility was used for storage of radioactive materials through 1967. Work included receiving, storing, crushing, grinding, and sampling of ores received from African Metals and other sources.

In 1969, the property was transferred to the Department of the Navy and used as a Marine Corps training facility. In 1978, the property was transferred back to the DOE for remedial activities.

Documentation states that prior to the GSA transfer, the site was decontaminated. A subsequent survey performed by ORNL in 1976 identified significant residual contamination that led to decontamination and restoration activities at the facility and surrounding properties. A survey performed in 1985 indicated that radioactive contamination exceeded unrestricted release criteria. In 1997 the responsibility for site remediation was turned over to the U.S. Army Corps of Engineers under FUSRAP.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Specific documents include DOE/OR/20722-20, *Radiological Survey Report for the Former Middlesex Sampling Plant, Middlesex New Jersey, March 1985.*

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1968 - present

FACILITY NAME: United Nuclear Corp.
Hematite, Missouri

ALSO KNOWN AS: Mallinckrodt Chemical Works, Chemical Div.

TIME PERIOD: 1958-1969

FACILITY DESCRIPTION:

DOE ES&H Website:

The United Nuclear Corporation in Hematite, Missouri, processed unirradiated uranium scrap for the AEC, recovering enriched uranium from it for use in the nuclear weapons complex. Mallinckrodt Chemical Works owned the Hematite plant until 1961.

DISCUSSION:

The exact quantities and forms of radioactive material processed at the facility could not be readily determined from available documentation. There are statements in the records that “thousands of pounds of uranium” were processed. Enrichments of the uranium varied from low-enriched to > 90%.

In 1970, United Nuclear Corp. received a contract from the AEC to fabricate fuel plate elements which was apparently terminated in 1972.

There is no documentation supporting the radiological status of the site at the end of the contract. However, United Nuclear Corp. was contracted to supply uranium fuel for the commercial nuclear industry as well as the AEC.

Documentation reviewed indicates that residual contamination related to AWE work exists outside of the period in which weapons-related production occurred, which is indistinguishable from non-weapons’ related contamination.

This facility is currently owned by Westinghouse/BNFL which is investigating conditions and options with respect to clean-up. Remediation is being conducted under Nuclear Regulatory Commission (NRC) oversight.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1970 - present

FACILITY NAME: University of California
Berkeley, California

ALSO KNOWN AS: California Resources and Development

TIME PERIOD: 1942 – 1949; Residual Radiation 1950-1980;
DOE 1981-1983 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

Gilman Hall, located on the University of California-Berkeley campus, was the site of nuclear research involving plutonium and uranium. These activities were conducted on behalf of the Manhattan Engineer District and the Atomic Energy Commission.

From December 1981 through February 1983, under agreement between DOE and the University, Lawrence Berkeley Laboratory personnel performed remedial action decontamination and shielding of the contaminated areas. Remedial action was certified complete in 1985.

DISCUSSION:

No radiological survey data was available from the period ending MED/AEC activities in the 1940s however, the 1976 survey performed by Lawrence Livermore National Laboratories which identified low-level residual contamination and subsequently led to decontamination of the facility, indicates the potential for significant residual contamination post MED/AEC operations.

DOE completed the cleanup of all FUSRAP-related radioactive contamination in FY 1982. DOE-FUSRAP has no continuing presence at the site.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent documents included DOE documents related to the Conditional Certification of Gilman Hall, University of California, May 1985.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1950 - 1980

FACILITY NAME: University of Denver Research Institute
Denver, Colorado

TIME PERIOD: 1963-1965

FACILITY DESCRIPTION:

DOE ES&H Website:

The University of Denver Research Institute is listed as a processor of radioactive materials for National Lead of Ohio (Fernald). It appears that the University of Denver handled test quantities of radioactive metal in February 1965.

DISCUSSION:

From available documentation, the work conducted by the University of Denver was limited in scope and involved test quantities of radioactive material. The University was/is licensed, was aware of, and implemented, appropriate laboratory controls during the work which would limit the potential for residual contamination.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. References: (1) DOE Memorandum J. Wagoner to Mayor E. Webb; Subject - Information related to the U. of Denver Research Institute; January 23, 1995, (2) DOE Memorandum E. DeLaney to R. Lynch with NLO Memo enclosure; Subject - Commercial Facilities Used By NLO in Support of Feed Materials Production Center Operations, July 28, 1986

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: University of Florida
Gainesville, Florida

ALSO KNOWN AS: J. Hillis Miller Health Center
College of Medicine, Department of Radiology

TIME PERIOD: 1963-1969

FACILITY DESCRIPTION:

DOE ES&H Website:

Documents indicate that the University of Florida handled test quantities of radioactive material under a National Lead of Ohio (Fernald) sub-contract between 1963-1969. Upon completion of the project, the material was sent to the Savannah River Site.

The University also obtained licenses to handle radioactive material from the Nuclear Regulatory Commission. Work done under these NRC licenses was not related to nuclear weapons production and is not covered under EEOICPA.

DISCUSSION:

Available documentation indicates that work conducted by the University of Florida was limited in scope and involved test quantities of radioactive material. The University of Florida was/is licensed, was aware of, and implemented, appropriate laboratory controls during the work which would limit the potential for residual contamination.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

Reference: DOE Letter; Fiore to Sjoblom; Subject: NRC Licensed Sites; June 20, 1990.

Attachment: Enclosure 1 - Formerly Utilized Sites Eliminated from FUSRAP; Circa 1990.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: University of Michigan
Ann Arbor, Michigan

TIME PERIOD: 1944

FACILITY DESCRIPTION:

DOE ES&H Website:

The University of Michigan developed radar fuses and conducted ordnance research to assist Los Alamos in atomic bomb research and production.

Records indicate that small quantities of uranium metal were handled at the University of Michigan under AEC contract. The contract expired April 10, 1944. It is unknown whether or not similar work was performed before or after this date.

DISCUSSION:

The testing involved developing a coating mechanism to can uranium slugs to prevent them from corrosion. The University of Michigan subsequently was involved in the development of a non-destructive evaluation method to verify the integrity of the canning of the slugs.

All contract work was apparently terminated in April, 1944. It is apparent that only small quantities of material were used during these tests.

In 1987, the University of Michigan was removed from FUSRAP consideration under a general elimination recommendation.

There is little potential for significant facility contamination at the University of Michigan resulting from MED/AEC activities.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: University of Virginia
Charlottesville, Virginia

TIME PERIOD: 1942–1949; 1960s

FACILITY DESCRIPTION:

DOE ES&H Website:

The University of Virginia played an integral role in developing the process to use uranium in the development in nuclear weapons. The Naval Research Laboratory asked Dr. Jesse Beams, of UVA, about the possibility to using isotope separation by centrifuge for the enrichment process of uranium. He was able to successfully enrich uranium by the use of his high-speed centrifuge.

Later, the University of Virginia's Nuclear Reactor Facility, operated by the Department of Mechanical, Aerospace and Nuclear Engineering, housed the UVAR, a light-water-cooled and moderated research pool-type reactor which began operation in 1960 and ceased operations in 1998.

DISCUSSION:

There were indications that work under AEC contract may not have ceased until 1985 when research into the centrifuge process was terminated by DOE.

Available documentation indicates that small quantities of uranium were enriched through development and testing of an operational centrifuge. The operation was reportedly shut down in June of 1985 and the uranium and equipment, including the centrifuge, were shipped to DOE Oak Ridge, Tennessee.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1970 – 1985

FACILITY NAME: Utica St. Warehouse
Buffalo, New York

ALSO KNOWN AS: Linde Air Products

TIME PERIOD: 1945

FACILITY DESCRIPTION:

DOE ES&H Website:

Residues from Linde Air operations were stored and rebarreled at this location.

DISCUSSION:

As of 1945, as much as 355,000 pounds of residues were stored at the facility in steel and wooden barrels. There is no information regarding how long the material was in storage, but it is indicated that several of the drums required repackaging because of deterioration.

The material was apparently moved out of the warehouse in late 1945. The facility was subsequently demolished sometime prior to 1981 and replaced with a parking lot. Surveys by ORNL conducted in 1982 did not indicate any radioactivity above what would be considered background and the site was removed from FUSRAP determination.

There is no information concerning the radiological status of the facility after the material was moved in 1945.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Ventron Corporation
Beverly, Massachusetts

ALSO KNOW AS: Metal Hydrides Corp., Ventron Division
Morton Thiokol, Inc.

TIME PERIOD: 1942-1948;
Residual Radiation 1949-1995;
DOE 1986; 1996-1997 (remediation)

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1942 to 1948, Metal Hydrides Corp. was under contract to the Manhattan Engineer District and the Atomic Energy Commission to convert uranium oxide to uranium metal powder. This work, as well as later operations to recover uranium from scrap and turnings from a fuel fabrication plant at Hanford, was conducted at a foundry at the site. During this period, Metal Hydrides was the AEC's primary uranium scrap recovery contractor.

Cleanup activities at this location included the removal of an underground storage tank in 1986. Further remediation was performed between May 1996 and August 1997 by Bechtel National Inc. and a number of local subcontractors as part of the Formerly Utilized Site Remediation Action Program (FUSRAP).

The plant is currently owned by the Ventron Division of Morton International.

DISCUSSION:

The Ventron Site consisted of several buildings that were once used to support AEC contracts. The buildings that were used as the foundry for scrap recovery operations were demolished shortly after the contract with AEC expired in 1948.

The site was surveyed as part of the FUSRAP process in 1982 and found to be significantly contaminated. Remedial cleanup was conducted in 1996-1998, and nearly 10,000 cubic yards of contaminated material were removed to a licensed facility. On August 8, 1997 DOE determined that the site was clean, and released it for unrestricted use.

It was clear from available documentation that the site was significantly radiologically-contaminated for the entire period in which weapons-related production occurred.

Documentation reviewed indicates that the potential for significant residual contamination existed outside of the period in which weapons-related production occurred, specifically between 1948 and 1986.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1949-1985; 1987-1995

FACILITY NAME: Virginia-Carolina Chemical Corp.
Nichols, Florida

ALSO KNOWN AS: Conser Department of Phillips Brothers Div.
Englehard Minerals and Chemical Corp.
Socony Mobile Oil Co.
Virginia-Carolina Chemical Corp.

TIME PERIOD: 1952-1957

FACILITY DESCRIPTION:

DOE ES&H Website:

The Virginia-Carolina Chemical Corp. produced uranium as a byproduct of the recovery of phosphate chemicals and fertilizers. The AEC contracted with the Virginia-Chemical Corp. for the recovery of the uranium, which was ultimately used in weapons production.

DISCUSSION:

The Virginia-Carolina Chemical Corp. was under contract to produce 12 tons of U₃O₈ per year during the years 1952-1959. The facility that was used to extract the uranium was disassembled in 1960.

The plant underwent a complete shutdown and abandonment between the years 1969-1973, and as of 1979, was completely remodeled and modified from its original configuration.

Documentation reviewed indicates that there is potential for significant residual contamination outside of the period in which weapons-related production occurred. The facility used for these operations was removed in 1960, a subsequent survey in 1977 identified some residual soil contamination around the remaining pad which was removed and does not appear to be significant.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group including DOE - FUSRAP Ineligibility Report; Former Virginia-Carolina Chemical Company Nichols, Florida; March 8, 1984.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958 - 1960

FACILITY NAME: Vitro Corp of America (New Jersey)
West Orange, New Jersey

ALSO KNOWN AS: Heavy Metals Co.
Vitro Chemical Co.

TIME PERIOD: 1951-early 1960s; Residual Radiation 1960s-1977

FACILITY DESCRIPTION:

DOE ES&H Website:

In December 1951, Vitro was asked to submit a proposal for research on thorium fluoride production, scrap recovery and waste recovery to involve 14 chemists and analysts. Though it is not certain whether this work was undertaken, by the late 1950s and early 1960s, Vitro conducted work under AEC contract converting low-enrichment uranium dioxide to uranium carbide spheres. The uranium dioxide was shipped from Rockwell International (then known as the Atomics International Division of North American Aviation, Inc.) to Vitro for conversion into uranium carbide and was then shipped back to Rockwell. Around 1958, Vitro also conducted work under contract to the AEC Oak Ridge Operations Office for the separation of fission products.

DISCUSSION:

Available documentation indicates that scrap uranium recovery work was conducted and also indicates that production of ThF₄ from thorium nitrate work was being planned. There is an indication that Rockwell International received shipments of enriched uranium from Vitro (assumed to be New Jersey) as late as 1965. The processing facility used for these operations was demolished sometime prior to 1977 when radiological surveys were conducted identifying no radioactivity above what would be considered background. At the time of the survey the property was owned and occupied by the West Orange Tennis club. With the absence of any radiological survey data from the operational period or the facility after operations were completed, it is concluded that there is a reasonable potential that residual contamination existed at the facility up until the time the building was demolished.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent documentation included a DOE Report; FUSRAP Elimination Report for the former Vitro Laboratories Vitro Corporation; West Orange, New Jersey; September 30, 1985.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

early 1960s - 1977

FACILITY NAME: Vitro Corp. of America (Tennessee)
Chattanooga, Tennessee

ALSO KNOWN AS: Chattanooga Site owned by W.R.Grace
Vitro Chemical, a subsidiary of Vitro Corporation
Heavy Minerals Company.

TIME PERIOD: 1957- 1968

FACILITY DESCRIPTION:

DOE ES&H Website:

Records indicate that "Vitro Corporation" of Chattanooga, TN performed some beryllium work for Y-12 during the period 1959-1965. A 1962 document also mentions that the AEC met with members of the beryllium industry, including representatives from "Vitro Chemical" (no address), but does not mention whether any contracts were involved in these discussions. The original owner of this site was Heavy Metals Inc. and possessed an AEC license to process uranium and thorium products beginning as early as 1957. Documentation indicates that the company provided price quotes to the AEC for thorium products as early as 1954, but there is no indication that it received a contract for that work. Vitro Chemical of Chattanooga, TN, a subsidiary of Vitro Corporation, took over the site at the end of 1959 and was under contract to the AEC to produce thorium metal, thorium fluoride and thorium oxide. The current owner, W.R. Grace, purchased the site in 1965 and continued operations until 1983, but records do not reveal any weapons-based link after 1968. The State of Tennessee took over licensing of this site in 1968.

DISCUSSION:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which AWE related activities occurred which is indistinguishable from non-related contamination. There is no radiological data available from the time these activities ceased, and the facility has been under an AEC/NRC or State license since the early 1960s.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. References: (1) Memorandum/Checklist; D. Mackenzie to the File; Subject: Elimination Recommendation of Vitro Chemical Co. from the FUSRAP Program; June 28, 1990, (2) DOE Letter; J. Wagoner to Mayor Roberts; Information on the Vitro Chemical Company site; January 13, 1995, (3) DOE Letter to Michael H. Mobley, Director of Tennessee Division of Radiological Health, from James Fiore acting Director for Division of Eastern Area Programs of the Office of Environmental Restoration, dated May 8 1991, concerning FUSRAP elimination of Vitro Chemical Site in Chattanooga.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1969 - present

FACILITY NAME: Vitro Manufacturing (Canonsburg)
Canonsburg, Pennsylvania

ALSO KNOWN AS: Vitro Rare Metals Company

TIME PERIOD: 1942-1957

FACILITY DESCRIPTION:

DOE ES&H Website:

Starting in 1948, Vitro was under contract to recover uranium from scrap. In the period from 1954-1956, Vitro had a contract to process production quantities of radioactive material (UF4) for National Lead of Ohio (Fernald). Vitro also received uranium scrap from the Tyson Valley Powder Farm sometime in 1949. After 1957 the site was used only for storage. Canonsburg was a major uranium milling facility and although the EEOICPA definition of an Atomic Weapons Employer excludes mining and milling, this site is covered because of its scrap processing activities performed under contract to the Atomic Energy Commission. A 1948 document indicates that General Electric shipped scrap containing beryllium to the Canonsburg site. The Canonsburg site is one of 24 former uranium mill sites designated for Department of Energy remediation by the Uranium Mill Tailings Radiation Control Act (UMTRA).

DISCUSSION:

In 1976, an ERDA survey identified “excessive radium contamination” at the facility. The Canonsburg site was designated for DOE remediation by the Uranium Mill Tailings Radiation Control Act

Documentation reviewed indicates that there is significant residual contamination outside of the period in which AWE production occurred. Documentation from DOE UMTRA and NRC agencies indicates that surface contamination remediation was completed in 1996.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1958 -1996

FACILITY NAME: Vulcan Tool Co.
Dayton, Ohio

TIME PERIOD: 1959

FACILITY DESCRIPTION:

DOE ES&H Website:

At the request of National Lead Company of Ohio (Fernald), Vulcan Tool Company conducted experiments involving the cutting of normal uranium slugs and tubes on a Brehm cutter in October 1959.

DISCUSSION:

There was a single test performed at the facility. The likelihood of significant contamination is remote at this facility.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: W.E. Pratt Manufacturing Co.
Joliet, Illinois

ALSO KNOWN AS: William E. Pratt Manufacturing Co.
Klassing Handbrake
Altrachem, Inc.

TIME PERIOD: 1943-1946

FACILITY DESCRIPTION:

DOE ES&H Website:

The W.E. Pratt Manufacturing Company performed metal fabrication tasks (machining and grinding) for the University of Chicago Metallurgical Laboratory beginning in the spring of 1943. The purpose of the machining done by Pratt was to speed up delivery of pieces for the experimental pile and to learn all that could be learned about handling uranium metal in turret lathes and automatic screw machines. In 1944, Pratt was subcontracted by the University of Chicago to finish "short metal rods" by centerless grinding. This work continued until June 30, 1946. The Manhattan Engineer District History indicates that DuPont placed an order with Pratt to turn and grind unbonded Hanford slugs.

DISCUSSION:

The contract with the University of Chicago was terminated in 1946 when operations were consolidated at the Hanford site.

Documentation available for review does not provide enough information to definitively rule out residual contamination at the end of operations in 1946. Radiological survey data from 1989 confirms the radiological status of the facility as being below guideline values.

Based on the nature of the work and absence of radiological survey data until 1989, it is determined that there is a potential for significant residual contamination after the operational period.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Other sources of information included: 1) Survey Report, Radiological Survey at 18 Henderson Street, Joliet, Illinois, M.R. Landis, October 1989 IL.12-3; 2) DOE Report, FUSRAP Elimination Report For Former William Pratt Manufacturing Company, 18 Henderson Street, Joliet, Illinois, July 1990 IL.12-4.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1947 – 1989

FACILITY NAME: W.R. Grace (Tennessee)
Erwin, Tennessee

ALSO KNOWN AS: Nuclear Fuel Services
Davison Chemical

TIME PERIOD: 1958-1970

FACILITY DESCRIPTION:

DOE ES&H Website:

The Davison Chemical Division of W.R. Grace Co. (later Nuclear Fuel Services) processed unirradiated uranium scrap for the AEC, recovering enriched uranium from it for use in the nuclear weapons complex. Correspondence from 1963 also indicates that the company also worked with thorium.

DISCUSSION:

The company received an AEC license to engage in the conversion of UF₆ to forms needed for the fabrication of fuel elements for research and development. It is unclear what the elements were used for, as they may have been part of fuel manufacture for the Department of the Navy.

While it is unclear whether weapons development work was concluded in 1969, there is a potential for significant residual contamination outside of the period in which weapons-related production occurred that is indistinguishable from non AEC/DOE activities. Documentation indicates this facility is still in the DOE determination phase with respect to FUSRAP eligibility.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1971 - present

FACILITY NAME: W.R. Grace and Company (Maryland)
Curtis Bay, Maryland

ALSO KNOWN AS: Davison Chemical Corp.
Agri-Chemicals Division

TIME PERIOD: 1955-1958; Residual Radiation 1959-1975

FACILITY DESCRIPTION:

DOE ES&H Website:

Processing of radioactive materials at W.R. Grace began in July 1955 when Rare Earths, Inc. (W.R. Grace's predecessor) entered into a contract with the Atomic Energy Commission to extract thorium and rare earths from naturally-occurring monazite sands. In 1956, the Atomic Energy Commission contract and Rare Earths' license to possess, transfer, and use radioactive thorium were transferred to W.R. Grace & Company. The facility where thorium processing took place (Building 23) operated until late spring of 1957, when W.R. Grace and the Atomic Energy Commission agreed to terminate the contract, effective January 31, 1958.

DISCUSSION:

The wastes were buried in a landfill-type area covering about 4 acres. The site currently supports commercial activity. In 1978, the landfill area was fenced off, and patrolled by the facility security guards to preclude access. Also in 1978, a radiological survey was conducted indicating that the landfill area was contaminated at depths up to 15 feet. The building where processing took place (Building 23) was also identified as contaminated, indicating “excessive alpha contamination on all five floors” and “radiation levels as high as 3 mr/hr around the vats and hoppers.”

Confirmation of residual contamination, 30 years after termination of AEC activities led to subsequent FUSRAP action authorization. This facility is currently undergoing FUSRAP activities.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent document; ORNL Report (ORNL/TM-10439); Results of the Indoor Radiological Survey at the W.R. Grace Co. Curtis Bay Site Baltimore Maryland; Issued – July 1989.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1959 - present

FACILITY NAME: W.R. Grace Co., Agricultural Chemical Div. (Florida)
Ridgewood, Florida

TIME PERIOD: 1954

FACILITY DESCRIPTION:

DOE ES&H Website:

For one month in 1954, W.R. Grace performed the pilot plant work on solvent extraction for Armour Fertilizer, which used the solvent process to extract uranium from phosphates.

DISCUSSION:

Documentation available for review indicates that a short term (1 month) operational pilot plant was operated and the test facility was subsequently demolished. Based on this information and the results of radiological surveys performed for the DOE, it does not appear that significant AWE related residual contamination existed outside the listed period.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group including DOE Report (ORNL); Preliminary Survey of W.R. Grace Company, Ridgewood, Florida; March 1980.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Wah Chang
Albany, Oregon

ALSO KNOWN AS: Teledyne Wah Chang

TIME PERIOD: 1956-1959; 1971-1972

FACILITY DESCRIPTION:

DOE ES&H Website:

Wah Chang operations began in 1956 when, under contract with the U.S. Atomic Energy Commission, Wah Chang Corporation reopened the U.S. Bureau of Mines Zirconium Metal Sponge Plant. Construction of new facilities, at the location of the existing plant, began in 1957. These facilities were established primarily for the production of zirconium and hafnium sponge; however, tantalum and niobium pilot facilities were also included. Melting and fabrication operations were added in 1959. Wah Chang may also have been involved in thorium work. In 1971-1972 a subcontract existed with Union Carbide Corporation (Y-12 plant) for melting uranium-bearing material.

DISCUSSION:

Available documentation indicates that process wastes, including naturally occurring radioactive isotopes, generated during AWE related activities still exist at this facility, and are indistinguishable from non-AWE related wastes. This facility is currently undergoing cleanup action through the USEPA Superfund project.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Reference: USEPA CERCLIS ID File ORD050955848

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1960-1970, 1973 - present

FACILITY NAME: West Valley Demonstration Project
West Valley, New York

ALSO KNOWN AS: Nuclear Fuel Services, West Valley
Western New York Fuel Services Center

TIME PERIOD: 1966-1973
Residual Radiation 1974-1979
DOE 1980-present

FACILITY DESCRIPTION:

DOE ES&H Website:

From 1966 to 1972, Nuclear Fuel Services, Inc., under contract to the State of New York, operated a commercial nuclear fuel reprocessing plant at the Western New York Nuclear Services Center. The plant reprocessed uranium and plutonium from spent nuclear fuel; sixty percent of this fuel was generated at defense facilities. Spent nuclear fuel reprocessing generated approximately 600,000 gallons of liquid high-level radioactive waste; this waste was stored onsite in underground tanks.

In 1980, the United States Congress passed the West Valley Demonstration Project Act (Public Law 96-368), which authorized the Department of Energy (DOE) to conduct a technology demonstration project to solidify the liquid high-level waste at the Western New York Nuclear Services Center. Under this act, DOE is also responsible for developing containers suitable for the permanent disposal of the solidified high-level waste at an appropriate Federal repository; transporting the containers to this repository; disposing of low level waste and transuranic waste generated by high level waste solidification; and decontaminating and decommissioning facilities used for the solidification. DOE is also responsible for dispositioning the spent nuclear fuel stored at the site.

In 1982, DOE selected vitrification as the treatment process for high level waste. This process solidifies and stabilizes nuclear waste by mixing it with molten glass. Pretreatment of the high-level waste began in 1988 and was successfully completed in 1995. DOE expects to complete the West Valley Demonstration Project by 2005.

DISCUSSION:

Documentation supports the presence of significant residual contamination outside of the period in which weapons-related production occurred. This facility is presently undergoing remedial action under the DOE.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1974 - 1979

FACILITY NAME: Westinghouse Nuclear Fuels Division
Plutonium Fuel Laboratories and the Advanced Fuel Lab
Cheswick, Pennsylvania

ALSO KNOWN AS: Westinghouse Commercial Manufacturing

TIME PERIOD: 1971 - 1972

FACILITY DESCRIPTION:

DOE ES&H Website:

The Westinghouse Nuclear Fuels Division received shipments of nuclear materials from the AEC nuclear weapons complex in 1971 and 1972. The Cheswick site received a shipment of enriched uranium from the AEC's Fernald plant in 1971. It also received a shipment of plutonium in 1972 from the West Valley facility. This plutonium originated out of Hanford. Because this material came from the nuclear weapons complex, the site qualifies as an Atomic Weapons Employer for these years.

Although the Westinghouse facility in Cheswick, PA, conducted substantial work with radioactive materials in other years, this work is not covered under EEOICPA because it was not related to nuclear weapons production. This includes the fabrication of nuclear fuels and reactor subsystems for naval, space, and civilian applications. Among the projects to which the Cheswick facility contributed were the Naval Nuclear Propulsion Program, the Nuclear Engine for Rocket Vehicle Application (NERVA) program, and the Liquid Metal Fast Breeder Reactor (LMFBR) program.

DISCUSSION:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred that could not be differentiated from contamination originating from non-weapons related work.

Buildings 7 and 8, which were associated with these operations, were decontaminated and decommissioned in 1979, under NRC.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1973 - 1979

FACILITY NAME: Westinghouse Atomic Power Development Plant
East Pittsburgh, Pennsylvania

ALSO KNOWN AS: East Pittsburgh Plant

TIME PERIOD: 1942-1944

FACILITY DESCRIPTION:

DOE ES&H Website:

Westinghouse prepared uranium metal for Enrico Fermi's Stagg Field experiment and conducted development and pilot-scale production of uranium oxide fuel elements.

DISCUSSION:

Records indicate that at the conclusion of MED activities, all equipment and all of the facilities were decontaminated or shipped to other sites.

A 1976 survey by ORNL did not identify any radioactive contamination above which could normally be considered background at the East Pittsburgh facility. The site was eliminated from FUSRAP consideration in 1985.

Documentation reviewed indicates that this facility was decontaminated at the end of AWE contracted work and that all contamination and/or contaminated items were removed.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group including DOE Report; Certification Docket: Westinghouse Atomic Power Development Plant, East Pittsburgh Plant, Forest Hills Pittsburgh, Pennsylvania; Circa 1985.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Westinghouse Electric Corp. (New Jersey)
Bloomfield, New Jersey

ALSO KNOWN AS: North American Phillips Lighting

TIME PERIOD: 1942-1943; Residual Radiation 1944-1993

FACILITY DESCRIPTION:

DOE ES&H Website:

Westinghouse Electric Corp., located in Bloomfield, NJ, was one of the large commercial contributors to Manhattan Project research with specific tasks related to uranium metal production and enrichment. Because developing the technology to produce pure uranium metal became a priority for the Manhattan Project, universities and private companies with experience in related chemical processes participated in the task. From 1942-1943, Westinghouse used a photochemical process for metallic uranium and supplied metallic uranium for the first self-sustaining chain reaction in Chicago. In addition to contributing to uranium metal production, Westinghouse Electric participated in activities related to uranium enrichment.

Westinghouse also worked with thorium, but it is unclear if that work took place in Bloomfield, or at another Westinghouse location.

DISCUSSION:

Records indicate thorium work may have occurred as late as 1949 at a Westinghouse facility. Three MED contracts were identified covering the dates August 1942-August 1944. There were two additional MED contracts that were issued in which the dates could not be verified.

A confirmatory survey was requested and performed by ORISE, of Building 7 in 1993 which identified areas of localized residual uranium surface contamination throughout several elevations of the facility, and widespread distribution of residual uranium surface contamination within the basement elevation. These survey results confirm that in 1993, the removable contamination levels were below the regulatory criteria and two areas exhibited direct radiation levels in excess of the regulatory criteria for unrestricted use. There was no documentation available confirming the radiological status of this facility after 1993.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent document: ORISE 93/H-110 Confirmatory Survey of Buildings 7,8,9, and 10A Bloomfield Lamp Plant Westinghouse Electric Corporation Bloomfield, New Jersey dated August 1993.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1944 – present

FACILITY NAME: Woburn Landfill
Woburn, Massachusetts

ALSO KNOWN AS: Winchester Engineering Vicinity Property

TIME PERIOD: 1955-1960

FACILITY DESCRIPTION:

DOE ES&H Website:

Fifty 55-gallon drums of low grade uranium ore were buried at the Woburn site. The material came from the AEC Raw Materials Development Laboratory (see the Winchester Engineering and Analytical Center) operated by the National Lead Company under contract from 1955-1960.

DISCUSSION:

Documentation indicates that the material in question had an activity level similar to granite, and was dumped from the drums into a truck for disposition, and subsequently co-mingled with other refuse and waste. The original landfill was excavated in 1974 and was replaced with clean backfill to support construction of a light industrial complex.

Radiological surveys of the old landfill site and the new landfill (where the excavated material was taken to) do not indicate radioactivity greater than expected background levels at either facility.

It appears that the dumping of the contents from fifty drums occurred in 1960, whereupon the drums were reused. Based on the described low-level radiological characteristics of the material and subsequent radiological surveys from the affected areas there is no indication or reason to suspect residual contamination of any consequence existed beyond the date of 1960.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Wolff-Alport Chemical Corp.
Brooklyn, New York

TIME PERIOD: 1949-1950

FACILITY DESCRIPTION:

DOE ES&H Website:

Wolff-Alport Chemical Corp. was under contract with the AEC (#AT-30-1-Gen-287) for the procurement of thorium containing sludge for stockpiling by the AEC. A March, 1949 document mentions the "current contract expires June 30, 1949 and will probably be extended for another year. Cost is approximately \$50,000 annually." This same document shows that almost 30,000 pounds of thorium oxalate sludge was provided to the AEC that year.

DISCUSSION:

Records further indicate that activities were conducted as early as 1948 and continued on through 1954 when 238 drums of thorium oxalate sludge were sold to the AEC.

Inventory records indicate that each year from 1948 to 1951 a minimum of 3,400 kilograms of thorium oxalate sludge were transferred to AEC.

Documentation reviewed indicates that residual contamination at this facility, if it exists, is not attributable to AWE related work, rather it was a result of commercial operations. Records do however indicate that purchase of sludges began in 1948 and continued through 1954, whereupon the material handling was AWE related.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Pertinent documentation included DOE Letter; Fiore to Solon; Subject; Notification of no DOE authority for Remedial Action at Wolff-Alport Chemical Corp.; 9/29/87. Attachment: FUSRAP Summary Report and Designation/Elimination Analysis for Wolff-Alport Chemical Corp. Brooklyn, N.Y. 1987.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1951-present

FACILITY NAME: Wolverine Tube Division
Detroit, Michigan

ALSO KNOWN AS: Hermes Automotive
Mamif Corporation
Division of Calumet Consolidated Copper Company

TIME PERIOD: 1943-1946

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1943, the University of Chicago subcontracted to Wolverine Tube of Detroit, Michigan, for help in extrusion of metals that were needed as part of the Manhattan Project. Wolverine Tube performed research on the fabrication of aluminum slugs and the process of aluminum canning and also experimented with thorium and beryllium. This contract ended in 1946. Wolverine Tube received other AEC contracts because of its extrusion expertise.

DISCUSSION:

Available documentation does not include information on specific quantities of radioactive materials handled or radiological surveys from the time of, or immediately after, AWE related activities. There are indications that AWE related work may have been performed outside the listed period. Documentation states that "Work probably continued through 1955 under sub-contract with Dupont (Savannah River Operations)."

ORAU performed a radiological survey in October of 1989, verifying the absence of significant residual contamination.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group. Reference: (1) DOE Report; FUSRAP Elimination Report for Former Wolverine Tube Division 1411 Central Avenue, Detroit, Michigan; June, 1990, (2) DOE (ORAU 90/A-16) Report; Radiological Survey at 1411 Central Avenue, Detroit, Michigan; February 1990

EVALUATION FINDINGS:

Documentation reviewed indicates that there is a potential for significant residual contamination outside of the period in which weapons-related production occurred.

PERIOD OF POTENTIAL RESIDUAL CONTAMINATION

1947 - 1989

FACILITY NAME: Wyckoff Drawn Steel Co.
Chicago, Illinois

ALSO KNOWN AS: Wyckoff Steel Co.
Ferranti Steel and Aluminum Company

TIME PERIOD: 1943

FACILITY DESCRIPTION:

DOE ES&H Website:

In 1943, the Metallurgical Laboratory conducted experiments of center-less grinding equipment on uranium. Wyckoff Drawn Steel Co. surfaced two tubes and one rod; however, its process was deemed to be too expensive and too slow to be used in production.

DISCUSSION:

Given that only one test was conducted using a limited amount of material, the facility is not likely to be contaminated beyond the date indicated on the DOE website.

In 1987, DOE FUSRAP completed an elimination report, removing this facility from FUSRAP activities.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.

FACILITY NAME: Wykoff Steel Co.
Newark, New Jersey

TIME PERIOD: 1950

FACILITY DESCRIPTION:

DOE ES&H Website:

Wykoff Steel conducted tests of methods to straighten and finish uranium rods on September 6, 1950.

DISCUSSION:

There were no radiological surveys performed during or after the test that were available in the available documentation. However, given this was a one-time test, the likelihood of significant facility contamination is remote.

INFORMATIONAL SOURCES:

The sources of information used in this evaluation include information on the DOE ES&H Website and internal AEC/DOE correspondence provided by the DOE ES&H Group.

EVALUATION FINDINGS:

Documentation reviewed indicates that there is little potential for significant residual contamination outside of the period in which weapons-related production occurred.