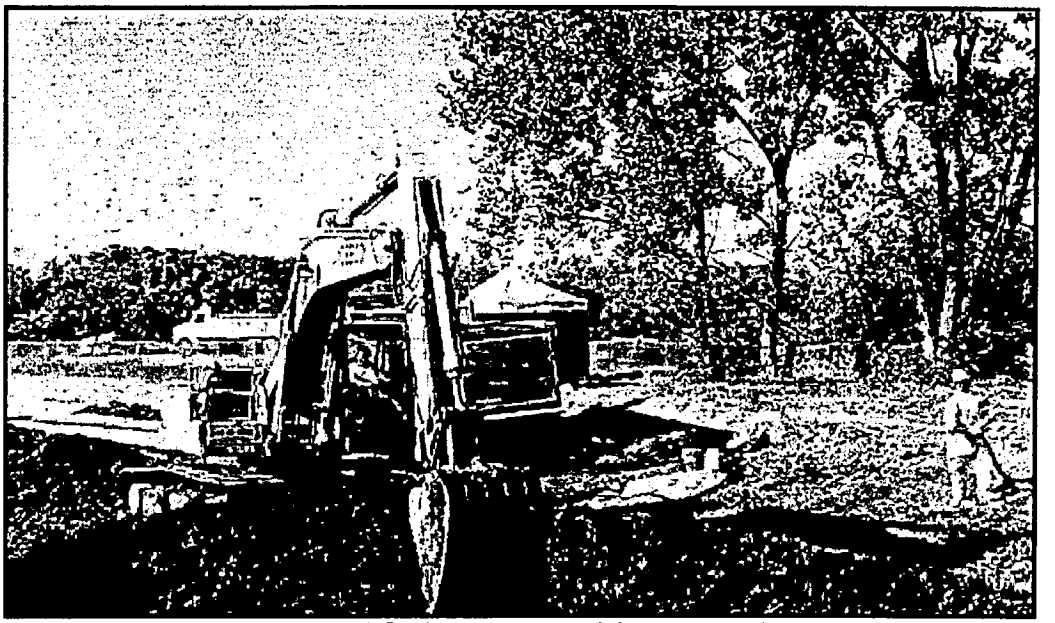
Formerly Utilized Sites Remedial Actio
U.S. Army Corps of Engineers, St. Louis Di

Protecting public health and the environment by removing low-level radioactive contamination generated by activities of the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) during the development of atomic weapons in the St. Louis Region in the 1940s and 1950s.

Background
St. Louis Sites
Newsletters
Links
St. Louis Oversight Committee



St. Louis Airport Site (SLAPS) North Ditch excavation and dust suppression.

[Background] [Contents] [Sites] [Newsletters] [Links] [District Homepage] [District Projects] [Management Menu]

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Questions about FUSRAP? Contact the FUSRAP Project Office at (314) 260-3905 or write to us at the following address: U.S. Army Corps of Engineers, St. Louis District, FUSRAP Project Office, 8945 Latty Avenue, Berkeley, Missouri 63134.

Technical point of contact for this page:
Ms. Jacqueline Mattingly, CEMVS-PM-R
Jacqueline.Mattingly@mvs02.usace.army.mil
(314) 260-3924 or (314) 260-3905.

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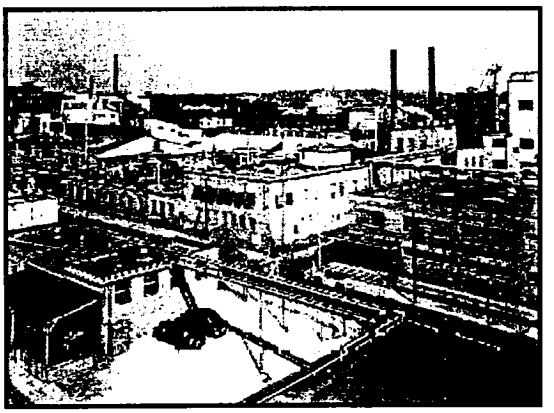
Background of FUSRAP

During World War II, the nation began a top-secret project to build the first atomic bomb. The Army created the Manhattan Engineering District (MED) to carry out much of the work of the so-called "Manhattan Project" during World War II. After the war, the nation sought ways to use nuclear energy for peaceful purposes and formed the Atomic Energy Commission (AEC) in 1946. Some of this work was performed in the St. Louis area.

From 1942 to 1957, the MED/AEC contracted with Destrehan Street Refinery and Metal Plant (later Mallinckrodt Chemical Works) to process natural uranium, producing uranium oxide, trioxide and metal uranium. This became the St. Louis Downtown Site (SLDS).



Aerial view of Mallinckrodt during MED/AEC processing period.

In 1946, MED acquired the St. Louis Airport Site (SLAPS), a 21-acre site just north of the St. Louis Airport for storage of residues and other material from the downtown site. In subsequent years, adjacent properties became contaminated as a result of erosion.

In 1966, a private company purchased SLAPS residues, which contained valuable metals, and began hauling them to a site on Latty Avenue in Berkeley, Missouri, after which they were sold for their commercial value. Later, the material was sold again and much of it shipped to Colorado. Surveys in 1977 showed that the former owners had left contamination on the Latty Avenue property. Part of this site was latter called the Hazelwood Interim Storage Site (HISS).

In addition, transport and migration of the material spread contamination along the haul routes to nearby Vicinity Properties. Although the federal government was not responsible for this contamination, Congress directed that the government add these sites to the Formerly Utilized Sites Remedial Action Program (FUSRAP).

On October 4, 1989, SLAPS and HISS were added to the Environmental Protection Agency's National Priorities List (NPL).

For information about the progress of cleanup at these sites, please use the link below to visit our "Newsletters" page. If you don't already have Adobe Acrobat Reader loaded on your computer, you will want to visit the "Links" page first where you can download free software to view documents posted on this web site in Portable Document Format (.pdf).

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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(314) 260-3924 or (314) 260-3905.

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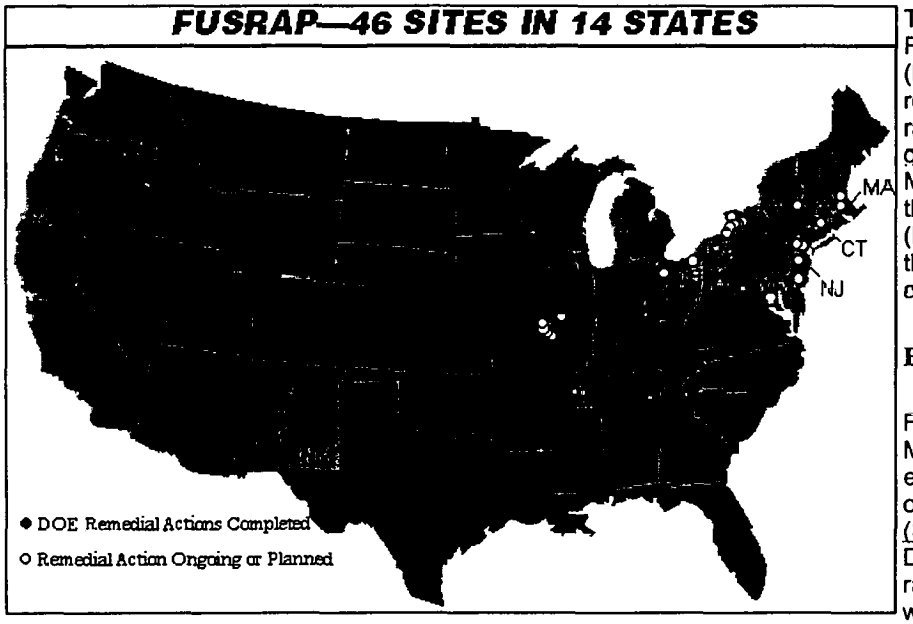
WHAT IS FUSRAP?



The Formerly Utilized Sites Remedial Action Program (FUSRAP) is an environmental remediation program. It addresses radiological contamination generated by activities of the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) during development of the atomic weapons in the 1940s and 50s.

Background

From 1942 to 1957, the Mallinckrodt Chemical Plant extracted uranium and radium from ore at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. During this time and until 1967, radioactive process byproducts were stored at an area adjacent to the Lambert-St. Louis Airport, which is now referred to as the St. Louis Airport Site (SLAPS).

In 1966, certain SLAPS wastes were purchased, moved, and stored at Latty Avenue. Part of this property later became known as the Hazelwood Interim Storage Site (HISS). During this move, improper handling, and transportation of the contamination caused the spread of materials along haul routes and to adjacent vicinity properties forming the St. Louis Airport Site Vicinity Properties (SLAPS VPs).

During the late 1950s and early 1960s, Dow Chemical Company in Madison, Illinois operated as a uranium extrusion and rod-straightening facility leaving contamination in dust located on roof beams at the Madison Site.

The United States Army Corps of Engineers (USACE), St. Louis District is conducting a radiological cleanup program for these five St. Louis Sites (SLDS, SLAPS, SLAPS VPs, HISS and Madison). The sites contain soils contaminated with radium, thorium, and uranium as a result of federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) in the 1940s and 50s (see Chronology for more information).

The 1998 Energy and Water Appropriations Bill, in which Congress transferred management of the Formerly Utilized Sites Remedial Action Program (FUSRAP) to the U. S. Army Corps of Engineers (USACE), was signed into law on October 13, 1997. Prior to the signing of this bill, FUSRAP was managed by the U. S. Department of Energy.

How Hazardous Are FUSRAP Sites?

Even though FUSRAP sites contain levels of radioactivity above current guidelines, none pose an immediate

health risk to the public or environment given their current land uses. The contaminated materials have very low concentrations and people are not exposed to them for long periods of time.

Although these materials do not pose an immediate hazard, they will remain radioactive for thousands of years, and health risks could increase if the use of the land were to change. Under FUSRAP, each site is cleaned to levels acceptable for the projected future use for the land such as residential development, industrial operations, or recreational use.

What Are FUSRAP's Objectives?

The objectives of FUSRAP are to:

- Protect human health and the environment.
- Execute the approved alternative for cleaning up the radioactive contamination above health-based cleanup guidelines.
- Minimize adverse effects on area business operations.

How Does FUSRAP Work?

FUSRAP sites undergo several steps that lead to cleanup. Information about the site is collected and reviewed. A Remedial Investigation/Feasibility Study (RI/FS) is conducted to develop cleanup alternatives. The Remedial Investigation identifies the type and location of the contamination. The Feasibility Study develops and evaluates cleanup alternatives.

The public is informed about the development of the RI/FS cleanup alternatives through public meetings and the media. Public participation is especially encouraged during the selection of the final remediation, or cleanup, method.

When a cleanup alternative is chosen, a Proposed Plan (PP) is written to explain why it was chosen. Members of the public are asked to comment on the cleanup options, including the selected alternative. After public comments have been considered, a final decision is made and documented in a Record of Decision (ROD). The Remedial Design follows the ROD and includes technical drawings and specifications that show how the cleanup will be conducted.

Cleanup, or Remedial Action, begins after the Remedial Design is complete. This phase involves site preparation and construction activities. When these remediation activities are completed, verification surveys are conducted to ensure that cleanup objectives for the site have been met and are documented in a Post Remedial Action Report (PRAR).

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[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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St. Louis Sites Contamination Chronology

1930's	**1939** World War II begins when Hitler invades Poland on September 1, 1939.
1940's	**1941** The U. S. declares war on Japan and Germany on December 8th. **1942** The Manhattan Engineering District (MED) achieves the first self-sustained nuclear chain reaction at Stagg Field at the University of Chicago using uranium oxide produced by the Destrehan Street Refinery and Metal Plant (later Mallinckrodt Chemical Works). Following the success of the Stagg Field experiment, the MED contracts with Mallinckrodt to process uranium. Under this contract, uranium and radium are extracted from ore and used to make the first atomic bombs. Years later, this facility will become known as the St. Louis Downtown Site (SLDS). **1945** The first atomic bomb is tested at White Sands Test Range in Alamogordo, New Mexico. On August 6 & 9, atomic bombs are detonated at Hiroshima and Nagasaki, leading to Japanese surrender in September. World War II officially ends. **1946** MED acquires land from the City of St. Louis and obtains consent to store process byproducts containing radioactive residuals from the Mallinckrodt plant. Most of the wastes and residues are stored on open ground. Some contaminated materials and scrap are buried at the western end and other parts of the site. Later, this land becomes known as the St. Louis Airport Site (SLAPS). Congress passes the Atomic Energy Act in September, which creates the five-member Atomic Energy Commission (AEC) to manage the atomic energy program. On December 31, the Manhattan Engineering District is deactivated. The newly created AEC assumes the

	Manhattan Engineering District's responsibilities. **1948** With AEC financing, Mallinckrodt begins to decontaminate Plants 1 and 2.
1950's	**1951** The AEC releases the Mallinckrodt Plants 1 and 2 for use without radiological restrictions. **1957** AEC operations downtown close. From 1942 to 1957, the plant had processed more than 50,000 tons of uranium product. Contaminated scrap metal and miscellaneous radioactive wastes are transported to SLAPS and buried on the western edge of the property.
1960's	**1960** AEC offers uranium processing residues and wastes at SLAPS for sale. **1965** In a waste inventory and radiological survey conducted at SLAPS, the AEC finds approximately 121,000 tons of uranium refinery residues and contaminated material. **1966** In February, Continental Mining and Milling Co. purchases wastes stored at SLAPS and begins moving them to 9200 Latty Avenue in Berkeley, Missouri. Improper storage, handling, and transportation of materials causes the spread of these materials along haul routes to Vicinity Properties (SLAPS VPs). The Latty Avenue property, where the wastes from SLAPS were stored, will later became known as the Hazelwood Interim Storage Site (HISS). After removal of most residuals to HISS, structures on SLAPS are demolished and buried on the property. Sixty truck loads of scrap metal and a contaminated vehicle are buried on the property. One to three feet of clean fill material are spread over SLAPS to achieve acceptable levels of surface radioactivity. **1967** Commercial Discount Corporation purchases the residues stored on HISS and after drying, ships much of the material to Canon City, Colorado. **1969** Cotter Corporation purchases the remaining residues at HISS, dries it and ships additional material to Canon City during 1970.
1970's	**1970** The Environmental Protection Agency is formed. **1973**

	The AEC conveys the SLAPS property by quitclaim deed to the St. Louis Airport Authority. Cotter concludes its shipping operation at HISS. The remaining contaminated material (barium sulfate) is mixed with approximately 5 times as much topsoil "to disperse and dilute the uranium bearing residues" and disposed of in a St. Louis County landfill. **1974** AEC established the Formerly Utilized Sites Remedial Action Program (FUSRAP) for the cleanup of sites not owned by the DOE but contaminated from past activities involving radioactive materials. The SLDS, SLAPS, SLAPS VPs, and HISS sites are eventually placed in FUSRAP. In a reorganization of the state government, the Missouri Department of Natural Resources (MDNR) is formed. **1975** The Atomic Energy Commission is replaced by two new federal agencies. One is the Nuclear Regulatory Commission (NRC), which is charged with regulating the civilian uses of atomic energy (mainly nuclear power plants). The other is the Energy Research and Development Administration (ERDA), whose duties include the control of the nuclear weapons complex. **1976** The Nuclear Regulatory Commission (NRC) conducts a radiological survey of HISS and determined the residual uranium concentrations, thorium concentrations and gamma exposure levels exceeded guidelines for release of the property without radiological restrictions. From 1976 until 1978, radiological investigations of SLAPS and Latty Avenue are performed. Contamination is found at both sites, along with elevated radionuclide concentrations onsite and north of the site in ditches along McDonnell Boulevard. The ditches are designated for remedial action under the FUSRAP program. **1977** ERDA is transferred to the newly created Department of Energy (DOE). The buildings and grounds at 9200 Latty Avenue are purchased by the current owner and leased to a manufacturing facility. A follow-up radiological characterization of HISS is conducted prior to occupancy. This survey disclosed uranium, thorium and radium in and around the building and subsurface. **1979** During a cleanup performed by the new owner under NRC guidance,13,000 cubic yards of material are excavated from the western half of the 9200 Latty Avenue and stockpiled on the eastern to form the main storage pile at HISS.
1980's	**1981** SLAPS is designated for remedial action under FUSRAP. A radiological characterization of the pile and portions of the northern and eastern vicinity properties for HISS is performed. Levels of contamination similar to those on the pile are found in both areas.

1982

DOE performs a radiological characterization of the ditches to the north and south of SLAPS and of portions of Coldwater Creek. The characterization sampling effort indicates radioactive levels exceed DOE guidelines then in effect.

1984

As a follow-up to the 1981 HISS/Latty Avenue survey, a detailed radiological survey of the northern and southern shoulders of Latty Avenue is conducted. Results indicate that contamination in excess of federal guidelines is present along the road beyond Hazelwood Avenue. Properties adjacent to HISS are also found to be contaminated in excess of guidelines.

The Energy and Water Development Appropriations Act directs DOE to conduct a decontamination research and development project at four sites throughout the nation, one of which is HISS. Results of the survey demonstrate that the property exceeds guidelines for residual radioactive material given in DOE Order 5400.5. Subsequently, Congress adds HISS to FUSRAP in order to expedite decontamination.

DOE is directed by Congress to reacquire SLAPS (Public Law 98-360) and use it as a permanent disposal site for waste already on the property, contaminated soil in the surrounding ditches, and the waste from HISS. The City of St. Louis refuses to transfer the property to the DOE.

The DOE begins clearing the property at 9200 Latty Avenue and selected adjacent properties; constructing a vehicle decontamination facility, installing a perimeter fence at HISS, excavating and backfilling the edges and shoulders of Latty Avenue, and consolidating and covering the contaminated soil storage pile. These activities resulted in adding 14,000 cubic yards of contaminated soils to the 13,000 cubic yards of material already in the storage pile.

1985

Erosion on the western side of SLAPS along Coldwater Creek necessitates emergency maintenance. Sloughing and seepage are causing erosion of contaminated fill and loess (soil) materials into the creek. The problem is temporarily corrected by installing a gabion wall (constructed of rock-filled wire baskets) along the western edge of the property.

DOE performs a radiological survey of the roads thought to have been used to transport contaminated materials to and from SLAPS and HISS. Gamma scans of roadsides detect exposure rates in excess of background due to elevated concentrations of radium-226 and uranium-238 in the soil. Thorium-230, an alpha emitter, is determined to be a primary radioactive contaminant in soil on the basis of its activity. Parts of Hazelwood Avenue, Pershall Road, and McDonnell Boulevard are designated by the DOE for remedial action.

1986

DOE provides radiological support to the cities of Berkeley and Hazelwood for drainage/road improvement project along Latty Avenue. An additional 4,600 cubic yards of material is placed in a supplementary storage pile at HISS.

Boreholes are drilled at SLAPS and the SLAPS VPs to define the nature and extent of the subsurface contamination and geological conditions. A radiological and limited chemical characterization of SLAPS determines that radioactive impacts extend as deep as 5.5 meters (18 feet) below grade. Further surveys identified additional areas of contamination along the shoulders of McDonnell Boulevard, Hazelwood Avenue, and Pershall Road.

1987

	Further investigation of the original transportation routes is conducted. A complete radiological characterization, which consists of sampling and analysis to determine the nature and extent of contamination, is conducted at HISS, along Coldwater Creek, and on about 70 haul road properties. Contamination on the haul road properties is found on road shoulders and adjacent properties. Contamination is shallow (less than one foot deep), and concentrations are low. Although characterization is essentially complete, some additional investigation in the creek and along haul roads is still required. Chemical characterization of SLAPS and HISS is completed. The U. S. Army Corps of Engineers requests that DOE survey an additional portion of Coldwater Creek as part of the Coldwater Creek Local Flood Protection Project. **1988** Radiological characterization, which consists of sampling and analyses to determine the nature and extent of contamination, is performed at SLDS. **1989** SLAPS and HISS are added to the Environmental Protection Agency's National Priorities List (NPL). This list requires the cleanup to proceed under the guidelines of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA). Characterization studies of the section of Coldwater Creek from Banshee Road to Old Halls Ferry Road indicate low-level radioactive contamination is present in the Coldwater Creek channel. A survey of the Dow Chemical Company Buildings in Madison, Illinois indicates low-level radioactive contamination is present in dust located on overhead surfaces in Building 6. About two cubic yards of contaminated uranium/thorium dust from MED/AEC operations is identified on roof beams at the facility.
1990's	**1990** The Environmental Protection Agency (EPA) and DOE sign a Federal Facilities Agreement, which establishes an environmental review process and establishes a schedule for the remediation of SLAPS, SLDS, and HISS. The process requires DOE to evaluate alternatives for waste management, one of which is storage at SLAPS. The City of St. Louis offers to transfer the SLAPS property back to DOE under the condition that a permanent disposal cell for radioactive wastes will not be constructed on the site. The DOE declines acceptance of the SLAPS property from the city until the environmental review process is conducted. Radiological characterization activities are conducted on the six properties adjacent to Mallinckrodt to determine whether contamination extends beyond the Mallinckrodt property boundaries. **1991** An Engineering Evaluation/Cost Analysis (EE/CA), which outlines the scope of interim removal actions at SLDS, is prepared and released for review and comment to the public. Once the DOE prepares a Responsiveness Summary to address the comments received on the SLDS EE/CA, limited removal action activities are undertaken at SLDS. **1992**

The Madison Site is added to the FUSRAP list of sites slated for cleanup. The FUSRAP site is located within a limited area of an active facility.

1994

The St. Louis Site Remediation Task Force is established. Two citizen committees are established for the purpose of working closely with FUSRAP representatives and serving as a "voice of the people". These organizations are the St. Louis Radioactive and Hazardous Waste Oversight Committee and the City of St. Louis Mayor's Advisory Task Force on Radioactive Waste. Later in this same year, the members of these two groups join together with other community stakeholders to form the St. Louis Sites Remediation Task Force.

1995

Contaminated soils are removed from seven residential vicinity properties, beginning the North County sites cleanup.

15,043 cubic yards of contaminated soil is excavated from the Mallinckrodt Plant 10 area (SLDS) and shipped to a licensed, out-of-state disposal facility.

1996

The owner of 9150 Latty Avenue, located to the east of HISS, expands the facility and stockpiles about 8,000 cubic yards of contaminated soil on the southwestern corner of the property. This stockpile becomes known as the Eastern Pile.

At SLDS, 750 cubic yards of contaminated soil is excavated from the City Property, Riverfront Trail area, and shipped to a licensed, out-of-state disposal facllity.

The 50-series buildings on the Mallinckrodt property are decontaminated and demolished. Contaminated materials are transported by covered gondola cars for disposal in a licensed, out-of-state facility. Brick and cinder blocks are crushed and piled onsite to await disposition.

The St. Louis Site Remediation Task Force releases its report containing local stakeholders' conclusions and recommendations for remediating the St. Louis FUSRAP sites.

1997

The St. Louis Oversight Committee is formed from a subset of the St. Louis Remediation Task Force to act as a citizens advisory group in the decision-making process for the St. Louis FUSRAP Sites.

Plant 6 and 7 Buildings are decontaminated and demolished. Contaminated materials are transported by covered gondola cars for disposal in a licensed out-of-state disposal facility. Brick and cinder blocks are crushed and piled onsite to await disposition.

On October 13, the Fiscal Year 1998 Energy and Water Appropriations Act transferred the FUSRAP project to the U. S. Army Corps of Engineers. The St. Louis District of the Corps is chosen to carry out remediation on the St. Louis sites. Cleanup activities continue to follow CERCLA guidelines and incorporate NCP values.

After public review and comment on an EE/CA released earlier in the year under the DOE, the Corps of Engineers completes the removal of approximately 5,100 cubic yards of contaminated material from the west end of SLAPS adjacent to the gabion wall. The area is backfilled with clean soils in December 1997.

Radiological surveys in the vicinity of two bridges over Coldwater Creek in Florissant are performed to support upcoming bridge replacements.

1998

In March, the U.S. Army Corps of Engineers issues two Engineering Evaluation/Cost Analysis (EE/CA) documents (one for SLAPS and one for HISS), which identify potential cleanup measures to be used until a comprehensive cleanup can be achieved. The SLAPS EE/CA includes the Ballfields property as part of the SLAPS / SLAPS VP cleanup and evaluates several possible interim cleanup measures. The HISS EE/CA includes VP No. 2 and soils on three Latty Avenue properties as part of the HISS clean up and evaluates several possible interim cleanup measures. Both of these documents are presented for public comment and regulatory review at a public meeting in March.

In April, the U. S. Army Corps of Engineers issues a Proposed Plan to the public for review and comment detailing the preferred alternative for final cleanup of SLDS. In August, the EPA approves the final cleanup remedy outlined in the SLDS Record of Decision (ROD).

Building K is decontaminated by the government and demolished by Mallinckrodt. Contaminated materials are transported by covered gondola cars for disposal in a licensed out-of-state disposal facility.

A detailed characterization, including sampling and analysis, is performed at the Madison Site. The survey included scanning for gamma radiation on accessible floor and wall surfaces throughout the building and on overhead beams, collection and analysis of indoor dust and debris, and determination of radioactivity levels on overhead beam surfaces.

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[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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Health & Safety

Risk Assessment

A Risk Assessment is a decision-making tool used to evaluate the likelihood of an unwanted event. An unwanted event could be someone getting cancer because of exposure to contaminants or it could be great numbers of fish dying because of pollution being dumped into a stream. Specially trained individuals called Risk Assessors evaluate how threatening a hazardous waste is to human health and the environment. In order to evaluate the potential for exposure to hazards and determine the likelihood for adverse effects on humans or the environment, risk assessors consider four questions:

1. *Hazard Identification* - What contaminants exist at the site?
2. *Exposure* - How are people exposed to them?
3. *Toxicity Assessment* - How dangerous could the contaminants be to human health?
4. *Exposure & Toxicity Assessment* - What contaminant concentrations are safe?

Reliable risk assessment methods provide the information necessary to discriminate between important and trivial threats. They also help people set priorities and allocate resources responsibly. The selection of site remediation alternatives involves the interaction of regulators with the community. A key challenge at the end of a risk assessment is to present the risk in a way that is meaningful and clear to the public.

Cancer Risks

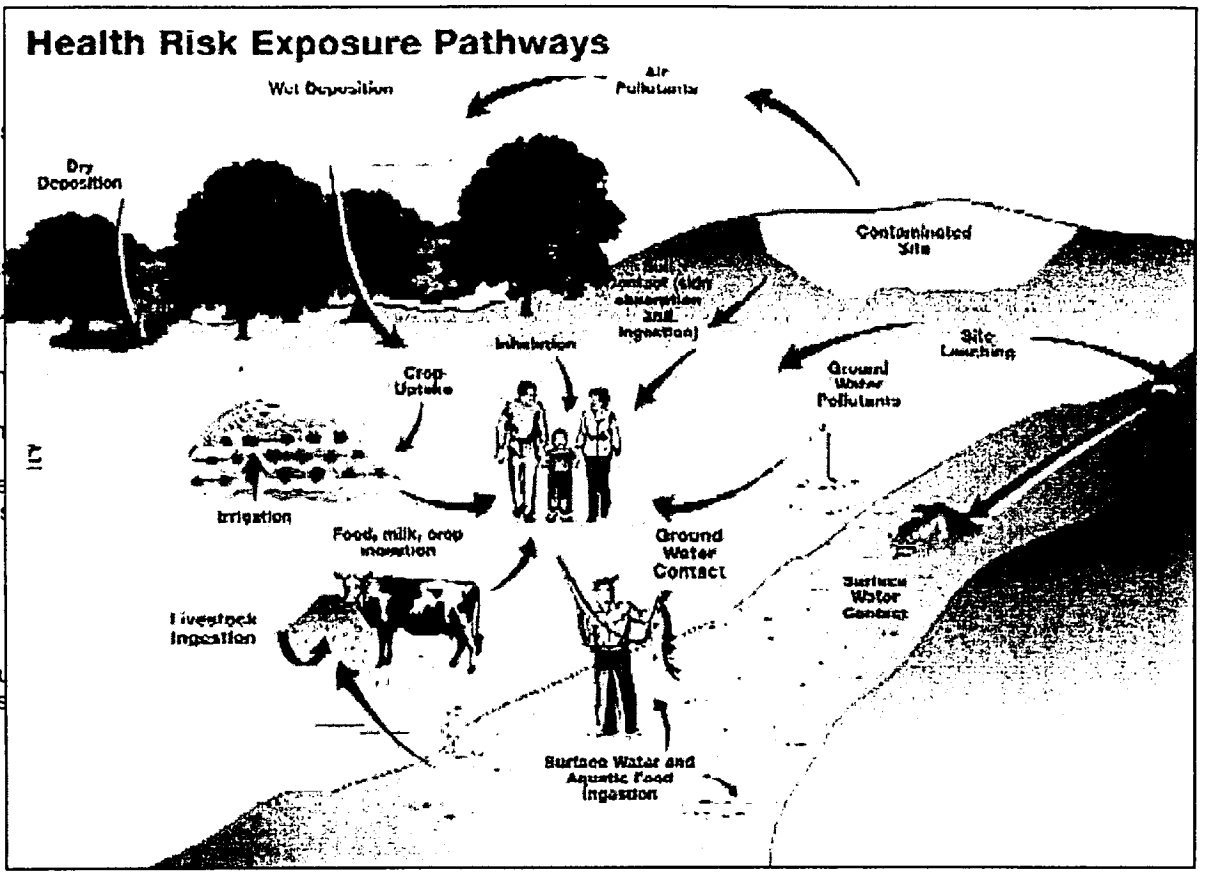
The risks of getting cancer from exposure to site waste are expressed in probabilities. According to U. S. Environmental Protection Agency (EPA) guidelines, a person should not be exposed to radiation or a cancer-causing chemical if exposure increases that person's lifetime cancer risk by more than one chance in 1,000,000 (or by .000001). Therefore, cleanup actions are selected primarily on how well they protect human health and the environment and on how well they meet safety requirements. In comparison, almost one in three people will get cancer from other causes.

Toxic Risks

A Hazard Index (HI) is used to estimate potential toxic risk from chemicals that do not cause cancer. The HI

takes into account likely exposure and the toxicity of different chemicals and elements. If the HI at a site is 1.0 or more, this means that a person's health could be affected.

Exposure Pathways



Scientists evaluate the effects of pollutants on an environment and its inhabitants by examining the exposure pathways. A pathway is a route by which hazardous materials may come into contact with people.

Although external contact with radiation can cause damage by irradiating the body from the outside, the primary hazard FUSRAP material poses is from material taken internally. Pollutants may reach people directly if they inhale or ingest contaminated air, water, or soil. Exposure is also possible via secondary pathways like a food chain. As a simplified example, dust released from a production stack settles onto a field and is mixed into the soil. Plants growing there absorb the pollutant through their roots and into the edible portions of the plant. People who eat the plants (or who eat the animals that ate the plants) might then be exposed to the pollutant.

The actual route that pollutants take can be very complex, and the quantity of material that may eventually reach people can be very small. To develop an understanding of the complexity, imagine the variables present in the figure shown. Not all materials released settle immediately; some will be washed out by rain and enter surface water or ground-water. Of the portion that does fall, not all will fall on the field. And of what does fall in the field, not all will be absorbed into plants. This process of dilution and separation alters what reaches the plant and the fruit of the plant until it is a small fraction of the initial release.

Certain plants, animals, and soils are more likely to concentrate specific pollutants and are, therefore, important points in pathways to be sampled. However, pathways frequently overlap, and it is difficult to trace pollutants precisely. Environmental sampling and analysis are performed to detect the presence and concentration of pollutants.

Assessing the St. Louis Sites

The St. Louis Sites were used to process and/or store uranium for the nation's nuclear defense program. By-product materials contained radioactive radium, thorium, and uranium, as well as processing chemicals. A Baseline Risk Assessment, which evaluated the Missouri sites in 1993, describes the potential risks to human health and the environment. The study found that if nothing was done to cleanup the site and the future land use became residential, the public could be exposed to unacceptable cancer and toxic risks.

This chart compares the carcinogenic risk at St. Louis sites to the leading mortality risks in the United States.

Chemical Risks

Carcinogenic risks from chemicals at the St. Louis sites were within the acceptable EPA range. However, the sites could pose carcinogenic risks from chemicals to people who live directly on the properties for long periods of time. Without cleanup, carcinogenic chemicals and elements could potentially affect human health and the environment.

Exposure Pathways

Although both radioactive and nonradioactive materials can reach people through the same pathways, the pathway scenarios studied at the St. Louis Sites focus on radioactive materials as the primary hazard to human health. Uranium and its daughter products, thorium and radium are the primary contaminants of concern. The two major pathways under study at the St. Louis Sites are air and liquid pathways.

Air Pathways

The air pathway at the St. Louis Sites includes airborne contamination from storage sites and buildings. Dust from construction and remediation activities, waste handling, and wind erosion are also important potential sources. The form and chemical makeup of the contaminants influence how they are dispersed into the environment. For example, fine particles and gases may be breathed in, while larger, heavier particles tend to settle rapidly. Chemical properties determine whether the pollutant will dissolve in water, be absorbed by plants and animals, or settle in sediments and soils. Airborne pollutants are subject to weather conditions. Wind speed and direction, rainfall, and temperature are important factors in predicting how pollutants are distributed in the environment.

Protective coverings are in place at SLAPS and HISS to limit the air exposure pathways and reduce health risks.

Liquid Pathways

The liquid pathway examined at the St. Louis Sites includes all releases that could carry waterborne pollutants, including radioactive materials. The first step in monitoring this pathway is to sample the effluent streams as they leave all contaminated sites. Types and concentrations of pollutants in these streams provide the first estimate of the potential dose that could be delivered via the liquid pathway. Some pollutants in the liquid effluent may be carried along as suspended solids, which eventually settle out as sediment in the stream bed. Other pollutants dissolve in water and may be absorbed by plants and ingested by animals. Fish sampling can show how pollutants are absorbed by aquatic animals and can predict how much radioactive material could reach people if they ate the affected fish. Fish are often used as biological indicators, as their bodies concentrate certain pollutants, resulting in biological effects. Fish sampling helps to develop an evaluation of long-term contamination.

Ground-water is also an important component of the liquid pathway because it is the source of water for many homes and farms in the St. Louis area. Extensive well sampling on the St. Louis Sites and in the surrounding area provides information about the status of area ground-water. By sampling ground-water in many locations and at many different depths, scientists can determine the extent of contamination.

To help limit the potential for radioactive materials to move off-site by the liquid pathway, run-off water at the St. Louis Airport Site has been diverted to a Sedimentation Basin. Protective coverings at the Hazelwood Interim Storage Site minimize erosion by wind and water.

Public Health Implications

The effects of exposure are unpredictable. If a person comes in direct contact with a contaminant by touching, eating, breathing or drinking a pollutant-bearing substance, he is exposed. Variable factors, however. affect the severity of the adverse health effect. Primarily, these variable factors include the concentration of the contaminant, the frequency and duration of exposure, the number of contaminants, and the pathways of exposure. An individual's own characteristics (age, gender, nutritional / health status, lifestyle, etc.) also influence the results of exposure to a contaminant.

Exposure pathways at the St. Louis Sites have specific standards and guidelines set by federal and state regulators that define the allowable dose limits. Health guidelines provide a way for public health administrators to compare estimated exposures with concentrations of contaminants in the soil, air, water, and food that people contact. The relative risk for cancer and other illnesses is determined, and guidelines and limits are set according to established legislation.

For more information about the progress of cleanup at these sites, please use the link below to visit our "Newsletters" page. If you don't already have Adobe Acrobat Reader loaded on your computer, you will want to visit the "Links" page first where you can download free software to view documents posted on this web site in Portable Document Format (.pdf).

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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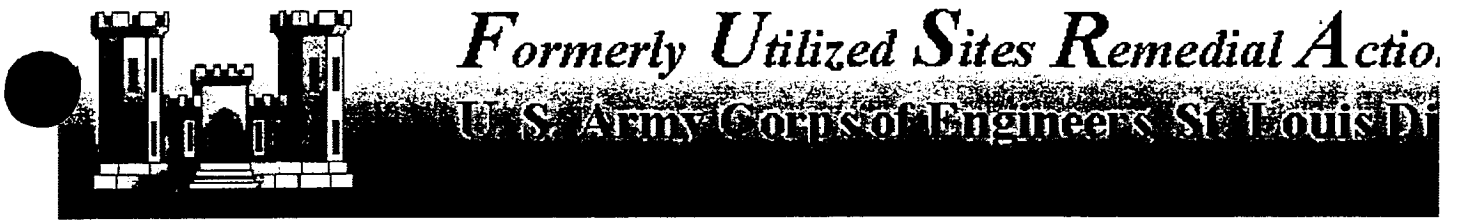

Laws & Regulations Affecting FUSRAP

- CERCLA
- NEPA
- RCRA
- Other Regulations

A number of federal laws and regulations guide every step of the FUSRAP cleanup process--from initial site identification to final certification.

It is typical for many FUSRAP sites to fall under several of these laws at the same time, depending on the type of contamination and the actions required to clean it up. Because so many different federal laws apply to environmental cleanup, compliance with these laws becomes very complex. Under certain circumstances, for example, the act of excavating contaminated soil could be affected by all of the laws discussed here. A general description of the main federal laws that apply to FUSRAP follows. While the focus of each law is different, their goals are the same: to protect human health and the environment.

CERCLA

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 is the main law governing cleanup of FUSRAP sites. In 1986 major changes to this federal law were enacted with the passing of the Superfund Amendments and Reauthorization Act (SARA), which authorized the study and clean up uncontrolled hazardous waste sites. The CERCLA (or Superfund) process consists of three phases:

- Preliminary Assessment
- Studying the site, evaluating cleanup alternatives, and selecting a cleanup plan
- Designing and implementing the chosen plan

The Preliminary Assessment is used to decide which sites should be added to the National Priorities List (NPL), which identifies the most serious uncontrolled
hazardous waste sites. Sites are scored based on their impact on public health and the environment, and those sites that exceed a certain score are added to the NPL.

The Environmental Protection Agency (EPA) oversees CERCLA activities at most NPL sites. The cleanup of FUSRAP NPL sites is guided by a Federal Facilities Agreement (FFA) with EPA and with input from state agencies where the sites are located. The FFA also sets cleanup priorities, defines agency responsibilities, document reviews, interaction among agency officials, and establishes a schedule for work at a site.

CERCLA requirements for site cleanups vary based on the site's size and the extent of contamination. At the major sites, after an initial planning period workers begin a remedial investigation to identify the types and locations of contamination present. At the same time, a feasibility study is conducted that uses the results of the remedial investigation to formulate a range of cleanup options.

CERCLA allows and encourages public involvement at all stages in the process that leads to a decision for cleaning up a site. The public has an opportunity to comment on the results of the remedial investigation and the analysis of alternatives. To keep the public informed, the Corps uses various community outreach programs, including public information centers, public meetings, and periodic fact sheets. Key documents used in making a cleanup decision at a site make up an administrative record, which is available to the public at a location near the site.

After the public comment period on the proposed plan is closed, the Corps prepares a draft Record of Decision and submits it to EPA. For NPL sites, EPA concurs or makes the final decision on site cleanup after considering input from state agencies and from the public, and the decision is final when the regulators and the Corps sign a legally binding Record of Decision.

NEPA

The National Environmental Policy Act (NEPA) sets basic national policy on environmental protection. This 1969 federal law established a process for determining if a proposed federal action will have significant environmental effects. NEPA requires federal agencies to consider environmental effects before proceeding with proposed actions.

Proposed federal actions are evaluated in light of NEPA guidelines to determine potential environmental effects and the level of NEPA documentation required. Depending on the results of initial findings, NEPA specifies several options: if an action will clearly have no significant impact, no further studies are required. If an action may have an impact on the environment, an Environmental Assessment or an Environmental Impact Statement (EIS) may be required.

In preparing an Environmental Assessment, information is gathered and studied to decide whether impacts are great enough to mean a more complete EIS study is needed. If an EIS is not required, a "finding of no significant impact" is issued.

When an EIS is required for an action at a site, NEPA requires public input early in the process of studying site conditions and cleanup options. Public involvement at all stages of the process helps ensure that problems are identified, focuses energies and efforts on those areas that must be resolved, and makes for a balanced and complete EIS.

THE CERCLA / NEPA PROCESS

Because many requirements of CERCLA and NEPA are similar or over-lapping, most FUSRAP sites are cleaned up under an integrated CERCLA / NEPA process. Actual cleanup and decision-making activities are achieved under the requirements of CERCLA. Community relations activities are combined under the more comprehensive provisions of CERCLA and may borrow from the special requirements of NEPA where necessary. Coordination of CERCLA and NEPA requirements results in a means for open decision-making that involves the public, as well as local, state, and federal agencies. Site investigations, analyses, and documentation requirements of these laws are integrated to simplify regulatory review, reduce paperwork, and increase cost-effectiveness.

RCRA

In addition to CERCLA and NEPA, a number of other federal regulations may also apply to FUSRAP sites, such as the Resource Conservation and Recovery Act (RCRA). Passed in 1976 as an amendment to the Solid Waste Disposal Act, RCRA establishes a "cradle to grave" system for controlling hazardous waste from the time it is generated until its ultimate disposal.

Contaminated materials at FUSRAP sites may contain both hazardous and radioactive waste. This mixed

waste presents special challenges to the FUSRAP program. RCRA provides very specific requirements stating how mixed waste can be managed, treated, and disposed. RCRA also requires appropriate systems for permits and waste management at all FUSRAP sites that involve mixed waste.

OTHER REGULATIONS

Each FUSRAP site is unique and may need to meet the requirements of other specific laws designed to apply to certain types of contaminants or to particular types of cleanup circumstances. For example, if performing an excavation that may release contaminated dust particles into the air, FUSRAP many need to comply with the requirements of the Clean Air Act. In other situations FUSRAP may need to comply with different laws such as the Toxic Substances Control Act, the Clean Water Act, and/or the Safe Drinking Water Act. Many other federal, state, and local standards that may also apply to the FUSRAP cleanup.

Do you want to learn more about the CERCLA cleanup process? Check out Section 2.0 "The CERCLA Cleanup Process, Project Organization, and Agency Agreements" of our Community Relations Plan online! For more information about the progress of cleanup at these sites, please use the link below to visit our "Newsletters" page. If you don't already have Adobe Acrobat Reader loaded on your computer, you will want to visit the "Links" page first where you can download free software to view documents posted on this web site in Portable Document Format (.pdf).

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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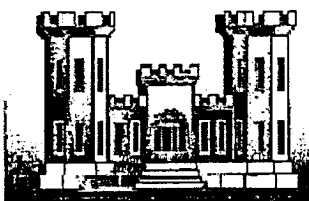


Formerly Utilized Sites Remedial Actio
U. S. Army Corps of Engineers, St. Louis Di

Public Participation in FUSRAP

Effective communication between the U. S. Army Corps of Engineers (USACE) and the public (government officials, interest groups, area residents) encourages understanding and knowledge of FUSRAP activities, minimizing or avoiding rumors and misinformation.

The USACE has developed a community relations program designed to involve the public in activities and decisions related to the cleanup of St. Louis FUSRAP Sites. Our public involvement program attempts to include community residents living near these sites in the decision-making process by:

- providing opportunities for citizens to express comments and concerns and to providing input into technical decisions,
- informing the public of planned or ongoing actions.
- identifying and resolving conflicts, and
- facilitating community relations planning.

To accomplish these objectives, the USACE developed several activities to encourage community involvement.

Information Repositories

The USACE established Information Repositories for FUSRAP. These Information Repositories consist of either an Administrative Record or an Administrative Record File and have been established to offer the community access to site-related information. Information such as the documents used to select a cleanup method, documents regarding site activities, and general Superfund information are placed in the the Administrative Record or Administrative Record File. The information is available to the public so that they may make informed comments on the selection of a final site remedy. More information about the Administrative Record and/or Administrative Record Files is available online.

Community Relations Plan

The USACE developed a Community Relations Plan (CRP) based on information gathered from discussions with members of the community of how they would like to be involved in the remediation of these sites. The Community Relations Plan provides a communication framework created to enhance public participation. Among other benefits, it enables public participation in the decision-making process to be conducted in as well informed a manner as possible. An electronic version of the Community Relations Plan is available online. The USACE will review the Community Relations Plan each year and update it as needed to ensure it continues to address the concerns of the community.

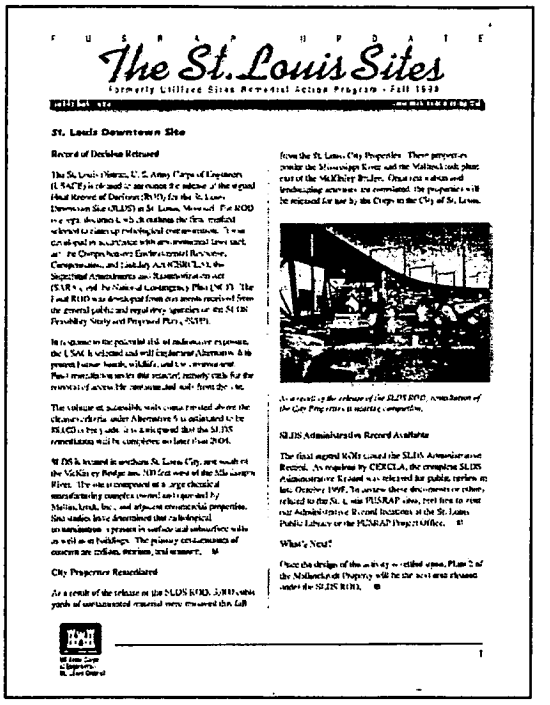
Newsletters

The USACE publishes a quarterly newsletter (shown at right) to inform the community of the status and progress of work at the St. Louis Sites. Upcoming events, public meetings, and recently released documents that are

available for public review are also announced in the newsletter. Copies are forwarded to individuals on our mailing list, placed in local repositories and with the Administrative Record or Administrative Record File. Copies of our quarterly newsletters are also available online along with instructions for adding your name to our mailing list.

Informational Products

The USACE develops informational products designed to summarize specific cleanup topics and activities, which may include fact sheets, brochures, or presentations. Posters, exhibits and photos are also utilized to provide easy-to-understand illustrations of cleanup activities. Many but not all of the fact sheets we have developed can be found on this website.



F U S R A P U P D A T E

The St. Louis Sites

Formerly Utilized Sites Remedial Action Program - Fall 1998

St. Louis Downtown Site

Record of Decision Released

from the St. Louis City Properties. These properties

As a result of the release of the SLDS ROD, remediation of the City Properties is nearing completion.

SLDS Administrative Record Available

The final signed ROD created the SLDS Administrative Record. As required by CERCLA, the complete SLDS Administrative Record was released for public review in Jan. - October 1998. To review these documents or others related to the St. Louis FUSRAP sites, feel free to visit our Administrative Record locations at the St. Louis Public Library or the FUSRAP Project Office.

What's Next?

Once the design of the [illegible] Plant 2 of the Mallinckrodt Property will be the next area cleaned under the SLDS ROD.

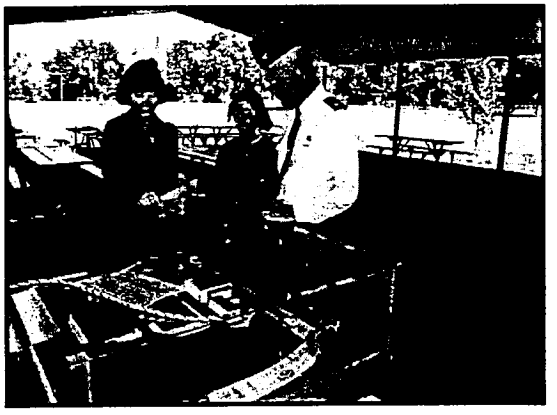


Photo courtesy of Mr. Van Beydler, MDNR

Educational Outreach

Educational outreach activities have been designed for students of all ages. The USACE continues to offer to give presentations to groups, schools and associations. If you would like to hear from one of our experts in the field of management, engineering, geology, chemistry, physics, or industrial hygiene, please feel free to contact the St. Louis District, FUSRAP Project Office at (314) 260-3905.

Public Meetings

Monthly meetings (open to interested citizens) provide the community opportunities to discuss environmental issues with USACE staff and/or technical experts. These meetings are held by the St. Louis Oversight Committee (developed from members of the St. Louis Site Task Force) at the FUSRAP Project Office on Latty Avenue in Berkeley, Missouri. Meeting dates and times are published in advance in the newsletter.

If you would like more information about how to become involved in the St. Louis FUSRAP sites' cleanup, please contact the FUSRAP Project Office during regular business hours at (314) 260-3905.

For more information about the progress of cleanup at these sites, please use the link below to visit our "Newsletters" page. If you don't already have Adobe Acrobat Reader loaded on your computer, you will want to visit the "Links" page first where you can download free software to view documents posted on this web site in Portable Document Format (.pdf).

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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(314) 260-3924 or (314) 260-3905.

Last modified: 09/10/2001 13:03:21

FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

ST. LOUIS SITES

COMMUNITY RELATIONS PLAN
(REVISION 3)

January 2001

U.S. Army Corps of Engineers
St. Louis District Office
St. Louis, Missouri

FUSRAP ADMINISTRATIVE RECORD

US Army Corps of Engineers

St. Louis Downtown Site Fact Sheet

The U. S. Army Corps of Engineers (USACE), St. Louis District is conducting a radiological cleanup program for the St. Louis Downtown Site (SLDS). The site contains soils contaminated with radium, thorium, and uranium as a result of federal defense activities performed under contracts with the Manhattan Engineer District and the Atomic Energy Commission (MED/AEC) in the 1940s and 50s.

The U. S. Environmental Protection Agency (EPA) and USACE have signed the Record of Decision (ROD) that outlines the final cleanup remedy for SLDS. As required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), the USACE is announcing the availability of the Administrative Record for SLDS.

The Corps of Engineers encourages private citizens to participate fully in the cleanup program.

To learn more about FUSRAP sites or to inquire about public involvement opportunities, contact the FUSRAP Project Office at (314) 524-4083 or write to the St. Louis District, Corps of Engineers, FUSRAP Project Office, 9170 Latty Avenue, Berkeley, Missouri 63134.

The Administrative Record is the collection of documents that contain the information used by the lead agency to make its decision on the selection of a response action. Its purpose is to provide the public access to site-related information so that they may make informed comments on the selection of a remedy.

Under section 113 (k) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), 42 U.S.C. 9601 et seq., the U. S. Army Corps of Engineers (USACE) is required to establish an Administrative Record for every response action. A copy of the Administrative Record is available to the public for review at the FUSRAP Project Office and at the St. Louis Public Library during normal business hours. Questions regarding the maintenance of the record should be directed to the FUSRAP Project Office.

Normally, the Administrative Record closes when the Record of Decision (ROD) is signed. If changes in the scope, performance, or cost of the final plan do not fundamentally alter the remedy selected in the ROD, an explanation of significant differences will be placed in the Administrative Record and the Information Repository. On rare occasions, when the ROD is amended, a public comment period and public meetings will be held. An explanation of the amended ROD and response to comments will be placed in the Administrative Record and Information Repository before the remedial action begins.

Individuals may photocopy any documents contained in the record, according to photocopying procedures at the local repository.

The USACE welcomes comments at any time on documents contained in the Administrative Record. Comments should be directed to the FUSRAP Project Office, 9170 Latty Avenue, Berkeley, Missouri 63134.

FUSRAP ADMINISTRATIVE RECORD FILE

US Army Corps of Engineers

St. Louis Downtown Site Fact Sheet

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Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, to provide a federal authority to directly respond to real or potential releases of hazardous substances that may endanger public health or the environment.

CERCLA has specific reporting requirements and requires that an Administrative Record be collected. This legal file must include documents used to help select a cleanup method, including documents regarding site activities, general information about the Superfund program, and site-specific information. Until all required documents have been developed or gathered, a complete Administrative Record for a given site cannot exist. A temporary file, an Administrative Record File or simply Record File, is maintained with all available information. This Record File documents current progress and provides the public with current data for the St. Louis sites. Record Files for each site will be available for review at the FUSRAP Project Office and at the St. Louis Public Library during normal business hours.

At the local community's request, the United States Army Corps of Engineers has also established a location at the Henry Clay Elementary School library to place a limited number of documents regarding SLDS. Questions regarding these documents should be directed to the FUSRAP Project Office.

Individuals may photocopy any documents contained in the record, according to photocopying procedures at the local repository.

The USACE welcomes comments at any time on documents contained in the Administrative Record. Comments should be directed to the FUSRAP Project Office, 9170 Latty Avenue, Berkeley, Missouri 63134.

Formerly Utilized Sites Remedial Actio

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St. Louis FUSRAP Sites Newsletters

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This online tool will immediately convert PDF documents into either HTML or ASCII text for better viewing. Click here to convert pdf document. Visit our "Background" page to better understand the low-level radiological cleanup process!

- Fall 1998 Edition (.pdf)
- Fall 1999 Edition (.pdf)
- Winter 2001 Edition (.pdf)
- Winter 1999 Edition (.pdf)
- Spring 2000 Edition (.pdf)
- Summer 2001 Edition (.pdf)
- Spring 1999 Edition (.pdf)
- Summer 2000 Edition (.pdf)
- Fall 2001 Edition (Coming in October!)
- Summer 1999 Edition (.pdf)
- Fall 2000 Edition (.pdf)

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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F U S R A P U P D A T E

The St. Louis Sites

Formerly Utilized Sites Remedial Action Program • Fall 1998

(314) 624-4083 www.mvs.usace.army.mil

St. Louis Downtown Site ROD Issued

The St. Louis District, U.S. Army Corps of Engineers (USACE) is pleased to announce the release of the signed Final Record of Decision (ROD) for the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. In response to the potential risk of radioactive exposure, the USACE and U.S. Environmental Protection Agency (EPA) have selected a final remedial action which is protective of human health and the environment. The selected remedy, Alternative 6, calls for the removal of certian contaminated soils, consisting of radium, thorium, uranium, arsenic, and cadium, from the site if they are above the criteria.

Under Alternative 6, all accessible contaminated soil that is above the composite criteria outlined in the ROD will be excavated and shipped offsite for disposal. Cleanup activities have been designed so that the site will meet specific threshold levels established to protect human health.

SLDS is located in an industrial area on the eastern border of St. Louis, 300 feet west of the Mississippi River and 11 miles southeast of the Airport area. The site is composed of a large chemical-manufacturing complex owned and operated by Mallinckrodt, Inc. The site also includes adjacent commercial and city-owned properties. Site studies have determined that radiological contamination is present in surface and subsurface soils as well as in buildings. The primary contaminants of concern are radium, thorium, and uranium. The volume of accessible soils contaminated above the cleanup criteria, under Alternative 6, is estimated to be 8,000 cubic yards.

The ROD is a legal document which outlines the selection of the final cleanup method to clean up radiological contamination. It was developed in accordance with several environmental laws and guidance documents, including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Superfund Amendments and Reauthorization Act (SARA), and the National Contingency Plan (NCP). The ROD was developed after incorporating comments received from the general public and regulatory agencies on the SLDS Feasibility Study and Proposed Plan (FS/PP). With the signing of the ROD, the SLDS Administrative Record was completed. As required by CERCLA, the complete SLDS Administrative Record was released for public review in late October 1998.

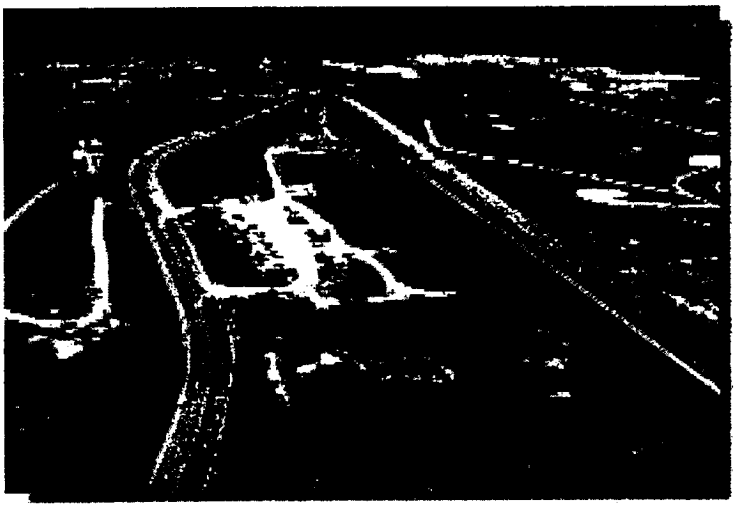
SLAPS Rail-Loading Facility Completed

In August, the St. Louis District of the U.S. Army Corps of Engineers (USACE) completed the construction and installation of a rail-loading facility at the St. Louis

As a result of the release of the SLDS ROD, remediation of the City Properties is nearing completion.

Inside the Sites

US Army Corps of Engineers
St. Louis District



Aerial photograph of SLAPS and the North Ditch Area.

Airport Site (SLAPS). Located along the East End of SLAPS, the load-out facility consists of a 1,200-foot rail spur in addition to a major staging area where excavated materials are placed before being loaded into railcars. The USACE shipped contaminated materials to a licensed out-of-state disposal facility.

The SLAPS load-out facility was built to support the removal actions outlined in the Final SLAPS Interim Action Engineering Evaluation/Cost Analysis (EE/CA), September 1997, which also allowed the remediation of the SLAPS West End. This new infrastructure will increase the District's load-out capacity by as much as 167 percent per day over what was possible previously. The SLAPS load-out facility can easily accommodate 10 gondola rail cars at one time and includes a staging area that holds up to 5,000 cubic yards of contaminated material for shipping. The increased load-out capacity has allowed the Corps to accelerate cleanup activities in the North St. Louis County area. Another benefit is that the Corps can take advantage of favorable construction weather without delays from coordinating major shipping campaigns.

Over 3,000 cubic yards of contaminated material were removed to build this larger, more efficient facility. When the facility was completed, the materials excavated from this construction effort were the first to be loaded into gondolas and shipped to a licensed disposal facility from SLAPS. As of November 24, 1998, 302 rail cars of excavated materials had been shipped.

Preliminary Site Characterization Activities Begin at the Madison Site

This summer, the St. Louis District, U.S. Army Corps of Engineers (USACE) pursued characterization activities at the Madison Site in Madison, Illinois. The site consists of two buildings owned by a component manufacturer at the corner of College and Weaver Streets in Madison, Illinois.

Like the St. Louis Downtown Site (SLDS), the Madison Site hosts an active business. It consists of a series of large, interconnected buildings of similar design and shape. The Madison Site is the smallest of five that comprise the St. Louis Sites, whose cleanup is managed by the Formerly Utilized Sites Remedial Action Program (FUSRAP).

Uranium was previously processed at the Madison Site for the Manhattan Engineer District/Atomic Energy Commission (MED/AEC). Based on a 1989 survey, the site was added to FUSRAP after radiological contamination was found. The survey report concluded that above-background levels of radiation were present only in the dust located on overhead surfaces of the main building (Buildings 4 & 6). The survey also determined that the residual radioactive contamination found did not pose health risk to workers, current occupants, or nearby neighbors and residents.

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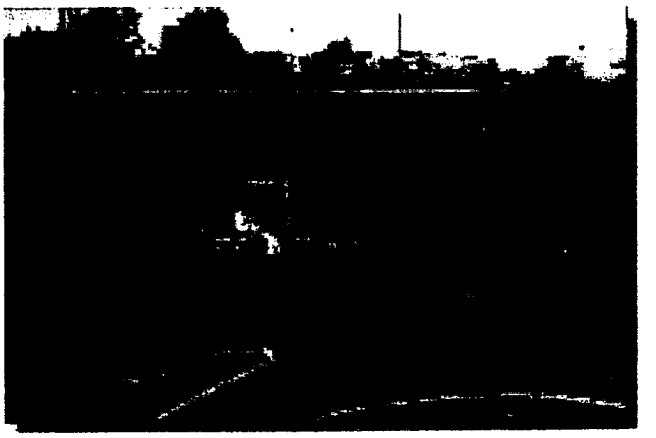


The USACE constructed a sedimentation trap to manage runoff north of McDonnell Boulevard.

(continued from page 2)

Scientists are performing current site characterization activities in order to validate previous data. These activities serve to assure the continued safety of production and maintenance personnel throughout daily operations. Characterization information also allows a strategy to be developed for future remediation, if warranted. The Preliminary Site Characterization Report summarizing the results will be issued this winter after researchers complete their analysis of sampling data.

SLAPS Site Stabilization Efforts Focus on Coldwater Creek

McDonnell Boulevard motorists may have noticed significant remediation activities underway at the St. Louis Airport Site (SLAPS). This progress is a result of the Corps' commitment to the community and stakeholders to protect human health, wildlife, and the environment. Under the Final SLAPS Interim Action Engineering Evaluation/Cost Analysis (EE/CA), September 1997, and the SLAPS EE/CA, March 1998, the St. Louis District of the U. S. Army Corps of Engineers (USACE) began removal efforts in September to stabilize the migration of radioactive sedimentation into Coldwater Creek.

The USACE designed and constructed a sedimentation basin (sed basin) on SLAPS (just east of last year's excavated area), which will significantly reduce the migration of contaminated material into Coldwater Creek. The purpose of the sedimentation basin is to collecting stormwater run-off. While the run-off is collecting it is simultaneously released, at a slow rate, through a pipe in the bottom of the basin. The release flow significantly slows as it travels toward the creek out fall. In this process, any sediments suspended in the water have a chance to settle out. Thus, the sed basin greatly reduces the amount of SLAPS material entering the creek. Monitoring by USACE personnel ensures that water released into the creek is below the published standards.

Community Relations Upcoming Events

Information Releases:
Final Community Relations Plan - December 1998
Winter Newsletter - February 1999

Upcoming Meetings:
Oversight Committee Meeting, FUSRAP Project Offices - December 11, 1998 at 11:30 a.m.

Oversight Committee Meeting, FUSRAP Project Offices - January 08, 1999 at 11:30 a.m.

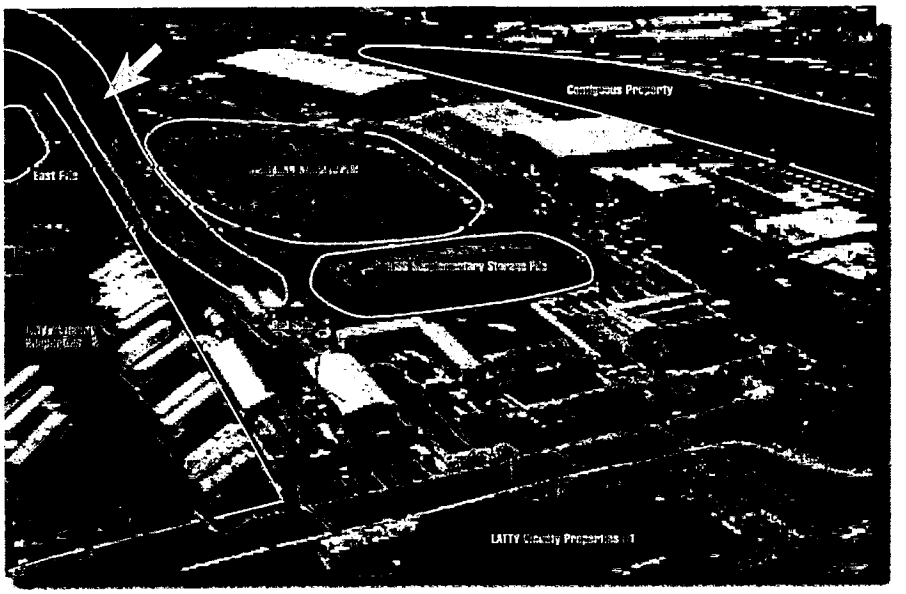
Oversight Committee Meeting, FUSRAP Project Offices - February 22, 1999 at 11:30 a.m.

An emergency overflow channel prevents the west section of SLAPS from being damaged by high, infrequent flows caused by a 25-year storm. If the sed basin fills with water too quickly to be released through the pipe, water will be released into the creek via the emergency overflow channel. In any such emergency, equipment is in place to measure the overflow. Regular sampling will be performed by USACE in the sedimentation basin and in any instances in which the water may be released via the regular outfall to the creek.

In contrast, a sedimentation trap has been constructed for the ditches north of McDonnell Boulevard while remediation efforts for this particular area are underway. The sedimentation trap is designed to function much like the sedimentation basin. Rather than releasing runoff through a pipe at the bottom of the trap, water collects until it can evaporate or infiltrate the trap's soils. If the sedimentation trap becomes too full, the system pumps water into Coldwater Creek after treatment to sedimentation standards that allow for release.

To prevent SLAPS storm water run-off from entering the ballfields, a plug has been placed in the culverts running between these two areas. Although hard to see, dikes are also around the North Ditch Area. These dikes are in place to prevent contamination from migrating

(continued on page 4)



The HISS rail-loading facility is scheduled for completion and full operation in 1999.

(continued from page 3)

westward and re-contaminating cleaned areas when workers remove contaminated material between the dike and the sedimentation trap. After the North Ditches are verified to be clean workers will excavate the sedimentation trap down to clean material and then fill in with clean backfill. These dikes will remain in place until the USACE is certain that cleaned areas no longer risk further contamination.

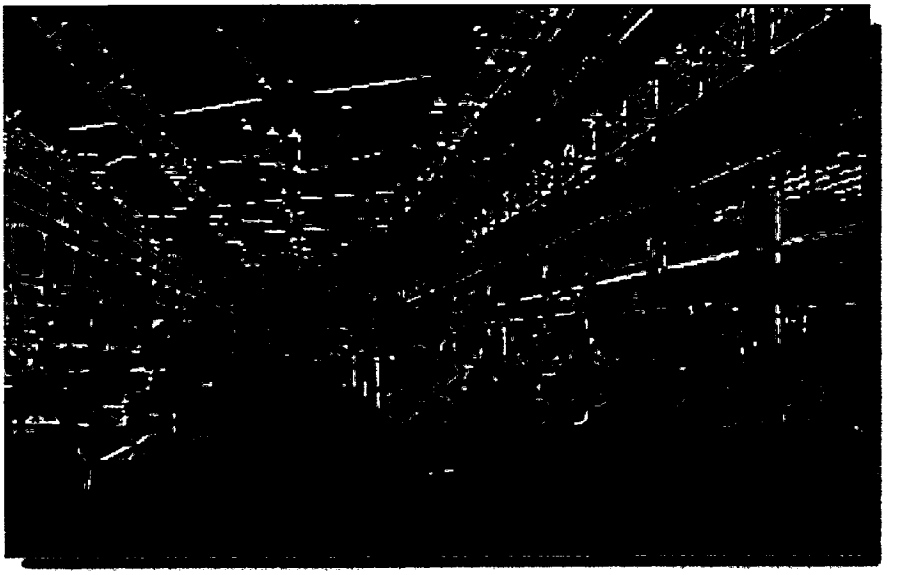
HISS Railspur under Construction

The Hazelwood community and other stakeholders will soon be able to witness implementation of the first phase of the Hazelwood Interim Storage Site (HISS) Engineering Evaluation/ Cost Analysis (EE/CA). In March 1998, a Draft HISS EE/CA, which evaluated three alternatives for site cleanup, was issued to the public for review and comment. The U.S. Army Corps of Engineers (USACE) then selected the third alternative, which called for the on-site construction of a rail loading facility, the removal of the three storage piles, and the removal of accessible contaminated soils on two Latty Avenue properties.

This summer, the USACE signed an action memorandum describing the selected alternative for cleanup activities at the HISS and Latty Avenue Vicinity Properties. The memorandum is a legal document that outlines the Corps' path forward. It serves as the approval document for interim removal actions to be undertaken at the property while a separate ROD is developed to identify the final remedy.

Construction of the rail loading facility began in late October. It is expected to be fully operational in the second quarter of fiscal year 1999. As this first phase of the EE/CA is implemented, contractors working under the supervision of the USACE will construct the rail from the existing rail line to the HISS piles. Ultimately, this rail

(continued on page 5)



The Madison Site consists of two large, interconnected buildings of similar design and shape.

(continued from page 4)

spur will allow the USACE to ship directly from the site rather than truck material across heavily trafficked roads to the EVA spur.

SLAPS Vicinity Property 56 Cleaned

As a result of additional funding received from District Headquarters in August, the St. Louis District, U. S. Army Corps of Engineers (USACE) added another vicinity property in North County to its list of cleaned properties. Workers removed approximately 1,050 cubic yards of contaminated soils from Vicinity Property 56, which is located along Pershall Boulevard. These soils were loaded into trucks and sent to a licensed out-of-state disposal facility. Restoration activities for the site were completed in mid-November.

USACE Supports St. Denis Bridge Updates

Recently the St. Louis District USACE assisted the City of Florissant during their construction efforts to replace the St. Denis Bridge over Coldwater Creek. While contractors for the City of Florissant worked to demolish and then replace the existing structure, a separate contractor under USACE supervision worked in support of the city to remove radioactive contamination along the banks of Coldwater Creek and ensure the safety of the workers.

Erosion controls were used at VP 56 to prevent offsite flow of contaminated materials.

Approximately 450 cubic yards of soil and concrete debris were removed from the creek. Restoration was completed in late November.

Keeping in Touch

Our office welcomes the opportunity to speak to the community and to hear from our neighbors. We try to provide different ways to keep you informed. Try any of our resources, as desired, including our homepage on the Web.

Mailing Lists - To receive newsletters and other printed communications, sign up for our mailing list anytime, 24 hours a day.

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Public Speaking - If your group, school, or association would like to hear from one of our experts, give us a call. We can speak on a variety of fields, including engineering, the environment, and geology.

Homepage - We've gone online with hundreds of pages of documents, digital photographs, maps, and other resources. Updates are posted regularly. An e-mail link is also available. To reach our site, set your browser to www.mvs.usace.army.mil and click on the FUSRAP icon.

If you have any suggestions, questions, or comments, contact our office anytime.

Community Safety Concerns

Protection of human health, wildlife, and the environment is the number one consideration when the USACE conducts its cleanup efforts. For example, orange safety fencing is placed around open excavation areas to restrict access by unauthorized

(continued on page 6)

The St. Louis Downtown Site ROD has been issued. To view this or any document, feel free to visit either of our Administrative Record locations.

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individuals. The air and groundwater are continuously monitored at excavation sites and perimeters for possible remedial radiological contaminants. In areas being remediated, workers will dress in coveralls and other protective equipment for added safety, dependent on the level of contamination. The USACE also uses a variety of engineering controls and measures, such as spraying water to keep down dust generated by excavation activities.

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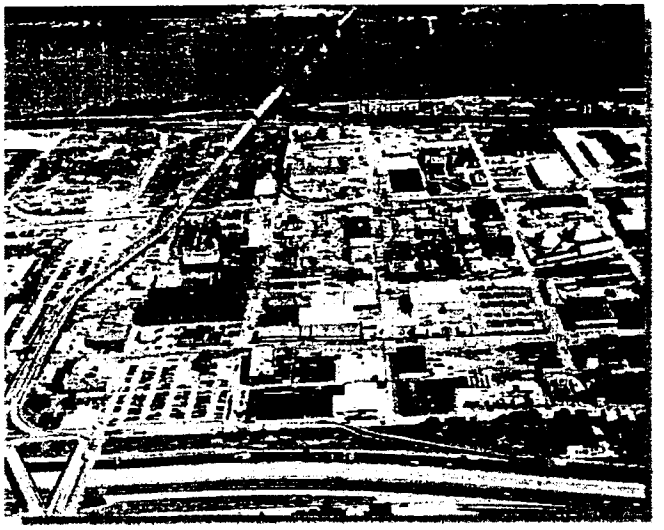

Aerial layout of the St. Louis Downtown Site (SLDS).

ST. LOUIS DOWNTOWN SITE (SLDS)

Plant 2 Remedial Action Underway

The U. S. Army Corps of Engineers (USACE) has completed the remedial design plan for final cleanup activities within the Mallinckrodt Plant 2 area. The plan was developed according to the criteria established in the approved St. Louis Downtown Site (SLDS) Record of Decision (ROD).

Plant 2 is located in the middle of Mallinckrodt as indicated in the map above. This area was selected for remediation to minimize disruption to current business operations and permit Mallinckrodt to utilize the site in accordance with their strategic development plan.

The remediation of Plant 2 began with the removal of the concrete slab in January. In preparation for this action, the area was surveyed and staked to mark the limits of excavation. The asphalt was then removed and sheet piling placed to support the foundations of structures close to the excavation area and to prevent cave-ins. A backhoe and excavator will be used to remove contaminated material from under the slab and load it into the onsite railcars for disposal.

The USACE contractor is currently preparing to excavate the subsurface of Plant 2. Once crews complete the excavation, the floor will be surveyed and sampled to confirm that the radiological contamination, as defined in the SLDS ROD, has been removed to the approved criteria. Upon receiving confirmation from a final site survey that the site has been remediated, the site will be restored to grade.

The USACE currently anticipates Plant 2 remediation will be finished in July 1999. Approximately 8,500 cubic yards of contaminated material will be removed from this area.

City Properties Completed

The St. Louis City Properties remediation is nearing completion. These properties are located between the Mississippi River, the Mallinckrodt plant, and the McKinley Bridge. Sampling has verified that above-criteria radiological contamination was successfully removed from the property. Approximately 4,390 cubic yards of contaminated material were removed. The restoration of the site is scheduled for completion in late February, assuming no further weather delays are encountered. Once the restoration is completed, the properties will be released for use to the City of St. Louis.

What's Next?

While the Plant 2 remediation is underway, remedial design work will begin on Plant 1. The USACE anticipates issuing the Plant 1 design in June 1999. The USACE and Mallinckrodt will also begin developing the remedial stragedy and design plans for Plants 6 and 7.

Upcoming Events

Information Releases:
Spring Newsletter – May 1999

Upcoming Meetings:
St. Louis Downtown Site (SLDS) Open House, Henry Clay Elementary School Gymnasium, February 25, 1999 from 4:30 p.m. to 8:30 p.m.

Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on March 12, April 9, and May 14, 1999.

US Army Corps of Engineers
St. Louis District

ST. LOUIS AIRPORT SITE (SLAPS)

SLAPS East End Removal Underway

In October 1998 under the authority of the St. Louis Airport Site (SLAPS) Engineering Evaluation/Cost Analysis (EE/CA), March 1998, the USACE began a two-phase removal action on the East End of SLAPS as part of the site stabilization effort.

The Phase 1-East End work is currently being performed in the wedge between McDonnell Boulevard and Banshee Road. Previously, the area sloped to the northeast sending surface runoff to the McDonnell Boulevard drainage ditches just outside the existing fenceline. The surface water runoff will be collected in the Sedimentation Trap for sampling and, if necessary, treated and released. As part of the site stabilization effort, this removal action will minimize further contamination release into nearby Coldwater Creek through the removal of the source material. Before completion in late-April, approximately 40,000 cubic yards of contaminated soils will be removed from SLAPS.

Phase 2 work will begin in mid-May. Approximately 20,000 cubic yards (including a portion of the Radium Pits) will be moved this year.

Each month, the USACE presents a monthly progress report on the St. Louis Sites to the Oversight Committee. These meetings are open to the public. Exact dates and times are published each quarter in this newsletter.

Radium Pits Removal Design Underway

Under the authority of the previously mentioned EE/CA, the USACE is finalizing a design and planning to remove contamination from an area of SLAPS showing elevated radiological activity. The targeted area, referred to as the "Radium Pits," was used by the Atomic Energy Commission/ Manhattan Engineer District (AEC/MED) as a storage area for residues removed from the manufacturing operations at the St. Louis Downtown Site (SLDS). An estimated 40,000 cubic yards of contaminated soils will be removed during this cleanup action, which is scheduled to begin in June. The final design document will be completed in April 1999.

St. Louis Airport Site (SLAPS) east end during excavation and construction.

What's Next?

While contamination is being removed from the radium pits, the USACE is finalizing its strategy to stabilize the remainder of the site.

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If you have any suggestions, questions, or comments, contact our office anytime.

HAZELWOOD INTERIM STORAGE SITE (HISS)

Railspur Construction Underway

In October 1998, the USACE began construction of a rail loading facility for the Hazelwood Interim Storage Site (HISS) under the authority of the HISS EE/CA. Recently, crews began clearing and grubbing activities near the existing rail line to prepare the area for the installation of the HISS railspur. During the railspur design process, engineers became aware of a sewer line near the proposed construction site. According to railroad requirements, underground utility lines within

Crews begin clearing activities for the HISS railspur construction and sewerline encasement.

twenty-five feet of a proposed rail line must be moved or encased to prevent damage and provide access for utility workers. The USACE has finished encasing the sewerline and is progressing with railspur construction.

As construction crews grade the soil for the rail spur, excess soil is temporarily being stockpiled between the main and supplementary storage piles. This temporary pile, which will contain approximately 2,000 cubic yards, is covered with a heavy liner to ensure that soil or dust particles do not move from the site. Air and water resources near the construction area are constantly monitored for the release of contamination from the site.

What's Next?

Upon completion of the railspur construction, a small, woman-owned business will begin removing the Eastern Pile (approximately 5,000 cubic yards) this summer. The removal will be completed in late 1999.

MADISON SITE

Characterization Report Released

In February 1999, the USACE presented the Draft Final Characterization Report for the Madison Site to the property owner and regulators. Last summer and fall, the USACE took samples to validate existing site data. The report defines the site contamination and updates the risk associated with it. Using this document, the USACE will develop a Feasibility Study/Proposed Plan (FS/PP) presenting a range of alternatives for the final action to be taken at the site.

You're Invited!

You are invited to attend the St. Louis Downtown Site (SLDS) Open House on Thursday, February 25, 1999 from 4:30 pm to 8:30 pm at the Henry Clay Elementary School Gymnaisum. The USACE will provide information explaining the Remedial Design for the Mallinckrodt Plant 2 area. The Remedial Design is the actual plan that implements the approved cleanup method established in the SLDS Record of Decision.

What's Next?

The USACE will meet with regulators to determine the next step in developing a ROD for the site.

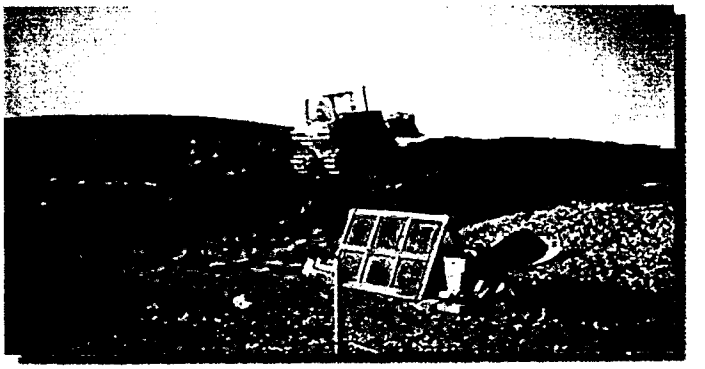
NORTH COUNTY

Document Development Underway for ROD

The St. Louis District recently briefed the regulators and Oversight Committee on the Potential Contaminants of Concern Assessment Memorandum (PAM), which updates the Baseline Risk Assessment. As defined by FUSRAP, the USACE is authorized to remove site contaminants associated with MED/AEC activities of the '40s and '50s. The PAM defines the contaminant levels and associated risks. This information will be used to assist in developing a ROD for the final cleanup of North County sites.

What's Next?

A list of the preliminary applicable, relevant and appropriate requirements (ARARs), which are laws and regulations to be enforced during the remedial action, will be coordinated with the regulators. The ARARs enforced during the final cleanup will be directly related to the site's primary contaminants of concern.



Construction crews grade soil for rail spur at the HISS site. Excess soil is temporarily stockpiled between the main and supplementary storage piles.

Are you sure you're ready?

Have you ever wondered how the USACE makes sure crews are ready to perform environmental cleanup work or how the Corps ensures the work is done correctly?

Before entering the site, crews are given site-specific and refresher training for working on a radioactively contaminated site. A key component of this review is how they will comply with the USACE-approved Site Safety and Health Plan. Surrounding the site, fencing and signs are in place to prevent inadvertent and unauthorized access. If necessary, additional barriers will be temporarily installed to further restrict site access. Prior to entering the site, equipment and workers are inspected to certify operability of equipment, verify appropriate wear of Personal Protective Equipment (PPE) by workers, and assure compliance with published safety standards and plans. While work is being performed, environmental monitoring devices monitor the surrounding area to ensure no contaminants are released from the site.

The USACE construction management team is physically located on-site to monitor contractor activities and ensure they are in compliance with the contractual requirements. Contractor activities are reported in both weekly and monthly progress meetings between the resident engineer and the construction crew. Additionally, daily inspections are conducted by the Corps to ensure the correctness of work being performed. Data gathered from the environmental monitoring devices is carefully reviewed to ensure the public remains unaffected by operations. Engineering representatives of USACE also perform regular site investigations to verify that individuals' health and safety are protected and to assure contractor compliance with the published Plans and Specifications.

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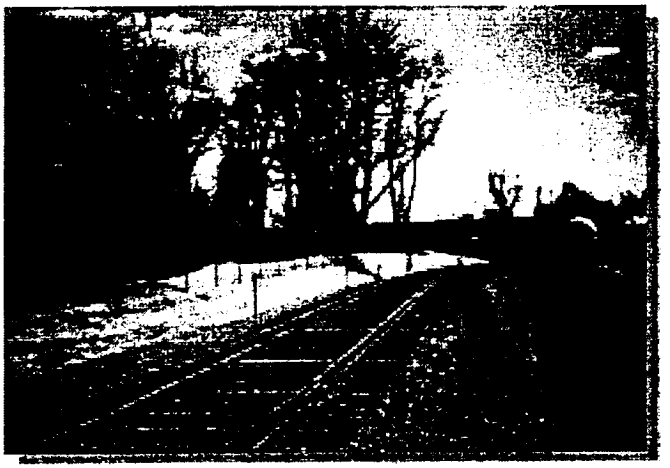

The new HISS railspur has the capability of holding nine railroad gondola cars. Workers here are inspecting the new facility to ensure it meets specifications.

Hazelwood Interim Storage Site (HISS)

Railspur Construction Complete

After six months of work, the U.S. Army Corps of Engineers (USACE) has completed construction of the Hazelwood Interim Storage Site (HISS) railspur. Nine railroad gondola cars easily fit on the new structure. The increased capacity will safely accelerate the removal of radioactive material from HISS; thus eliminating the need to ship contaminated soils by truck over local roads and public highways.

Railspur construction at HISS began in October 1998 under the authority of an Engineering Evaluation/Cost Analysis (EE/CA). As a result of the construction, approximately 5,000 cubic yards of excess soil was generated and is being temporarily stockpiled between the main and supplementary storage piles. The temporary piles are covered with a heavy liner to ensure that soil and dust particles do not move from the site. Air and water resources near the construction area continue to be monitored for release of contamination from the site.

Pile Removal Being Designed

This summer, the USACE anticipates removing the two small piles, referred to as the HISS Eastern piles, located adjacent to HISS. These piles contain approximately 8,000 cubic yards of material. The Corps will remove these piles to minimize disruption to business operations and facilitate the use of the property for the current property owner.

The USACE has completed designs for the removal of the Eastern Piles. Presently, the St. Louis District is preparing to negotiate in June with the selected small woman-owned business pursuant to Section 8(a) of the Small Business Administration Act.

What's Next?

Technical issues regarding the pile removals are being addressed through the contracting process. The small business contractor will mobilize on-site and begin removing the Eastern Piles this summer.

St. Louis Airport Site (SLAPS)

Sedimentation Basin Complete

The USACE recently completed construction of a Sedimentation Basin on the West End of the St. Louis Airport Site (SLAPS). Completion of the basin's construction marks a significant step forward in site stabilization efforts, part of the Corps's commitment to the community and stakeholders to protect human health and the environment.

The Sedimentation Basin was built to significantly reduce the migration of radioactive sediments into Coldwater Creek. It works by collecting the site's stormwater run-off. As the run-off collects in the basin, it is slowly released through pipes beneath the basin.

Upcoming Events

Information Releases:
Summer Newsletter – August 1999

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on June 11, July 9, and August 13, 1999.

The water's speed is significantly reduced as it travels toward the creek. As a result, most sediment suspended in the water will settle and accumulate in the basin rather than entering the creek.

To prevent sediment transport, the basin is lined with a geomembrane fabric and crushed stone. The fabric creates a barrier between the contaminated sediments that settle out of the stormwater run-off and the soils below the basin. The accumulated sediment, which will likely be contaminated, can be removed from the basin periodically and disposed of off-site.

For high infrequent flows such as in the case of a heavy 25-year storm, an emergency overflow channel prevents the west section of SLAPS from being damaged. If the sedimentation basin fills with water too quickly to be released through the pipe, water will be released into the creek via the emergency overflow channel. For any extreme rainfall event, a weir has been placed in the outfall to track flow volumes.

Regular sampling will be performed in the sedimentation basin to assess initial accumulated water contaminants. Following verification of the basin's decreased sediment load, discharges will be made to Coldwater Creek. Discharges are analyzed to ensure acceptable limits are met. Thereafter, monthly discharges will be analyzed at the outfall.

Contract Turnover Underway

In June 1999, a new contractor will both design and conduct removal actions in North County for the USACE. The new contractor will pick up where the current contractor leaves off. The completion of the North Ditch excavation, the East End removal action, the management of the railspurs in North County, and the management of the off-site borrow source will all be handled by the new contractor.

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If you have any suggestions, questions, or comments, contact our office anytime.

Previously, the USACE used one contractor to design and another to perform the activity. The contractor transition is taking place as originally scheduled in the overall project management plan. Transitioning to a single contractor for site work is expected to result in a more cost effective and efficient flow of work.

Efforts to stabilize the site and prevent the migration of radioactive contamination will continue through the transition under the Final St. Louis Airport Site (SLAPS) Engineering Evaluation/Cost Analysis (EE/CA), March 1999.

What's Next?

Once contamination is removed from the East End of SLAPS, the USACE will begin cleanup work on the radium pits.

To prevent sediment transport, the basin is lined with a geomembrane fabric and crushed stone. Workers are shown installing the fabric. The fabric creates a barrier between the contaminated sediments, which settle out of the storm water run-off, and the soils below the basin.

North County

Ecological Risk Being Evaluated

The USACE is evaluating the ecological risk, which is the impact of FUSRAP contamination on the environment, for the North County Sites. The scientists are reevaluating and collecting additional data to more accurately assess the ecological impact of contamination on the North County sites (particularly Coldwater Creek).

Although the ecological risk was initially addressed in the 1992 Baseline Risk Assessment, substantial changes have been made to risk assessment guidelines. Ecological risk assessment guidelines now require such evaluations be completed in tiers. The initial tier compares contaminant concentrations in soils, sediments and surface water at and near the site to protective ecological benchmarks.

Since such screening levels tend to be very conservative, additional assessments are required if concentrations exceed an ecological screening level. Comparisons are now being made for North County sites in order to determine if additional data is necessary to fully access ecological risk. At this tier, risks to certain types of species that might be present in the area would be quantified using contaminant concentration data and anticipated exposure conditions.

What's Next?

Once the ecological risks are updated and defined, the USACE will be able to develop remedial alternatives for the final cleanup of the North County sites that are fully protective of human health and the environment.

St. Louis Downtown Site (SLDS)

Plant 2 Remediation Continues

In January 1999, the USACE began final cleanup activities within the Mallinckrodt Plant 2 area. Remedial activities are being conducted using the criteria described in the approved St. Louis Downtown Site (SLDS) Record of Decision (ROD).

The remediation of Plant 2 began with the removal of the concrete slab, which had covered the footprint of a demolished building. Presently, construction crews are using backhoes and excavators to remove radioactively contaminated material and load it into railcars for offsite disposal in a licensed out-of-state facility. To date, approximately 4,000 out of an anticipated 8,500 cubic yards of contaminated material have been excavated and transported to a licensed disposal facility.

Excavators load material from the Plant 2 remediation work into trucks which transport the covered material to the SLDS railspur.

Systematic radiological surveys are also being performed in the Plant 2 area outside of the defined excavation limits to ensure that all radioactive contamination is removed as required. This action will result in the timely release of the Plant 2 area back to Mallinckrodt for its beneficial use. The USACE anticipates Plant 2 remediation will be finished this summer.

Plant 1 Design Being Developed

USACE engineers are currently developing the remedial design for Plant 1. For this design, radiological surveys are performed to better characterize the extent of contamination in the Plant 1 area. Surveys will also be performed in the area outside of the anticipated excavation limits to ensure the removal of all radioactive contamination from the area.

Although the USACE expects to remove a relatively small volume of contamination (2,800 cubic yards), the Plant 1 remediation will require very careful planning. Excavation activities will be performed in close proximity to ongoing Mallinckrodt operational facilities. The Corps anticipates issuing the design this summer.

What's Next?

Once the Plant 2 remediation is completed, construction crews will begin remediating the Plant 1 area.

Is that safe?

Q Have you ever wondered how the Corps ensures that ponded water released from its sites doesn't endanger human health or the environment?

A Occasionally, water will collect in the bottom of the excavation. This ponded water is tested for contamination and treated, as necessary, to meet the substantive requirements of the applicable regulations for each site. Technicians collect water samples in batches, label and forward them to the lab for analysis. Scientists carefully review the data collected from the water samples to determine if the water meets release standards or requires treatment. If treatment is determined to be necessary for release, the water is pumped into the water treatment plant where it undergoes a process that removes the contamination.

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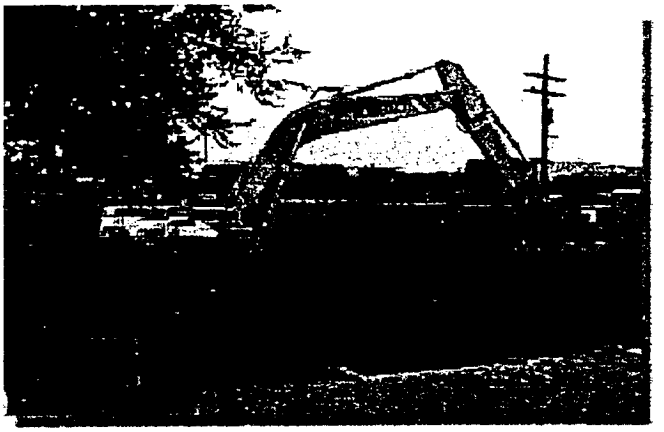


The East End removal action continued through the contractor turnover with the excavation of 5,200 cubic yards.

St. Louis Airport Site (SLAPS)

East End Excavation Resumed

In October 1998, the U. S. Army Corps of Engineers (USACE) began a two-phase removal action on the East End of the St. Louis Airport Site (SLAPS). Work began in the wedge between McDonnell Boulevard and Banshee Road as part of the site stabilization effort to prevent surface water runoff from carrying radioactive contaminants from the site.

The East End removal action was originally designed as a single activity; however, above normal winter rainfall hampered the progress of removal efforts. As a result of the moisture delay, the removal activity was split into two sections –the Northern and Southern Sections.

Under the initial contract, 9,000 cubic yards of contaminated material were excavated from the Northern Section. The new contractor will remove an additional 10,000 to 15,000 cubic yards of soil from the Southern Section and backfill the area as confirmation activities verify the removal of contaminants to established criteria has been accomplished.

Radium Pits Design Continues

The USACE is finalizing the design to remove contamination from the Radium Pits, which are located in the hump of SLAPS next to McDonnell Boulevard. Work in this section of SLAPS is proceeding under the authority of the Final SLAPS Engineering Evaluation/Cost Analysis (EE/CA) reviewed by the public in March 1998.

The Atomic Energy Commission/Manhattan Engineer District (AEC/MED) previously used the Radium Pits to store residues from manufacturing operations at the St. Louis Downtown Site (SLDS). Presently, it represents one of the most contaminated areas on the site.

Although work was originally scheduled to begin in June, the excavation has been delayed until October because of weather delays (rain and heat). An estimated 40,000 cubic yards of contamination will be removed from the Radium Pits as the USACE works its way from east to west across the site stabilizing it to limit further offsite migration of material.

Contractor Transition Complete

Work at SLAPS and its contiguous properties has been successfully transitioned to a Total Environmental Restoration Contractor (TERC). Picking up where the previous contractor left off, the TERC is drafting designs and conducting removal actions under the direction of the USACE. Using one contractor to design and excavate is expected to result in a more cost effective and efficient flow of work.

Efforts to stabilize the site and prevent the migration of radioactive contamination (such as the East End removal action work) continued through the transition. By the end of July, sixty-eight railroad gondola cars carrying approximately 5,200 cubic yards of material had been shipped to a licensed out-of-state disposal facility since the contractor transition in June.

What's Next?

Once confirmation is received that removal criteria have been met for the East End activity and the area has been backfilled, contractors will move westward toward the Radium Pits.

Upcoming Events

Information Releases:
Fall Newsletter – November 1999

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on September 10, October 8, and November 12, 1999.

US Army Corps of Engineers
St. Louis District

Hazelwood Interim Storage Site (HISS)

Spoil Piles Stabilized

The USACE recently stabilized the HISS Railspur spoil piles by spraying on ConCover®, which encapsulated them with a polymer-type coating.

In April, site inspections revealed that these temporary piles, which were stored in the available space between the main and supplementary storage piles, became geologically unstable creating a potential health and safety risk. In addition, high winds occasionally dislodged the heavy liner weighted with cinder blocks making it difficult for workers to maintain coverage.

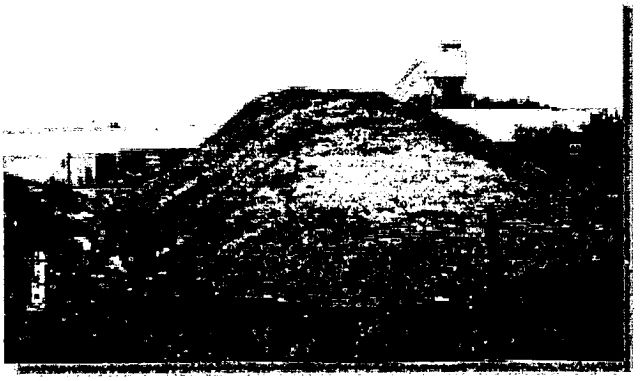
To eliminate these concerns, a temporary polymer-type coating that would last six months was applied to stabilize the piles until their scheduled removal in two months. The coating has stabilized the piles, ensuring material won't continue to slide down the slope face or risk dispersal by the wind.

Lab Relocation Started

The USACE is negotiating a lease to relocate the HISS on-site lab. Railspur construction near the lab this spring brought attention to potential production problems with analyzing samples.

Analysis of radiological samples requires a stable environment. The current location at the end of the new rail spur would not be adequate once heavy equipment began removing the nearby piles this fall.

In addition, the current facilities do not support the number of samples that need to be analyzed. As the USACE removes more contaminated material from these sites, the lab will be required to process more samples. Moving the lab to a more stable location will permit work on the rest of the project to continue as scheduled.



The spoil piles were recently sprayed with a gray polymer-type coating, which has stabilized them until their scheduled removal this fall.

What's Next?

Once the negotiations are finished, the woman-owned, small and disadvantaged business contractor will mobilize on-site to begin removing the spoil piles and Eastern Piles.

North County

Ecological Risk Under Review

In mid-July, the USACE released its Ecological Risk Assessment for the North County Sites to the Environmental Protection Agency and the Missouri Department of Natural Resources for review. These regulatory agencies are reviewing the screening evaluation presented by the USACE specifically for Coldwater Creek on FUSRAP's ecological risk (i.e. the impact of contamination on the environment).

In the document, comparisons were made to determine if additional data is necessary to more fully assess ecological risk. Based on the review of this evaluation, these agencies will determine if further sampling is required to establish ecological risk in late August.

What's Next?

While the agencies review and provide input to the assessment of ecological risk, the USACE will continue developing remedial alternatives for the final cleanup of North County Sites. These alternatives will be presented to the public in a Feasibility Study in upcoming months.

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St. Louis Downtown Site (SLDS)

Plant 2 Progress Slows

Final cleanup activities within the Mallinckrodt Plant 2 area are proceeding slowly as workers negotiate their way around utility lines. Remedial activities are being conducted using criteria in the approved St. Louis Downtown Site (SLDS) Record of Decision (ROD). Remediation of Plant 2 began in January with the removal of a concrete slab, which had covered the footprint of a demolished building.

Subterranean utilities from demolished buildings dating back to 1846 are still present in the Plant 2 area and slowing progress. While crews reviewed historical maps before excavating, they have discovered utility lines predating available maps.

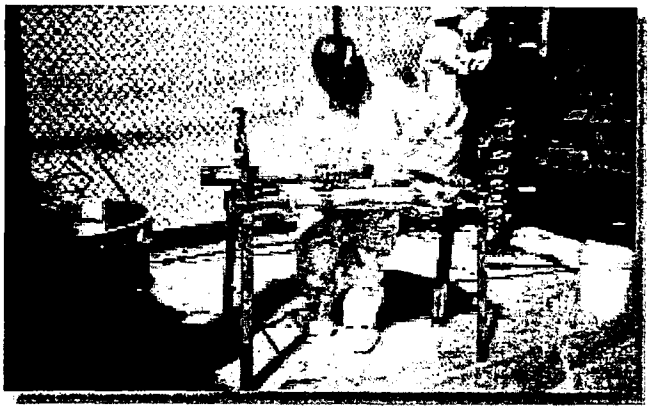
Since construction crews continue to encounter utility lines during the remediation, they are proceeding cautiously. As these outdated lines are found, they are shutoff and/or moved before proceeding with the excavation.

To date, approximately 5,000 out of an anticipated 8,500 cubic yards have been excavated from Plant 2 for disposal in a licensed out-of-state facility. The USACE anticipates Plant 2 remediation will be completed in November pending confirmation that contractors have successfully removed contamination to the criteria established in the SLDS ROD.

Plant 1 and 6 Sampled

The USACE is systematically surveying Plants 1 and 6 to further define the excavation limits to ensure above criteria contaminants are removed as outlined in the SLDS ROD. The data from this sampling effort will establish excavation volumes for the final remedial design for Plants 1 and 6.

Workers cautiously excavate Plant 2 as they continue to encounter outdated utility lines.



Systematically sampling Plants 1 and 6 will establish the excavation area and remediation volumes. The laborer shown here is working with a recently drilled soil sample.

Crews will excavate Plant 1 before starting Plant 6 work. Although a relatively small volume of contamination is anticipated from Plant 1 remediation efforts, it will require very careful planning. Work will be performed in close proximity to ongoing Mallinckrodt operational facilities beginning in October 1999.

What's Next?

Using the final remedial design, crews will begin remediating Plant 1 once Plant 2 has been finished. Engineers will also finalize the Plant 6 Remedial Design plans.

Madison

RI/FS/PP Under Development

With the Final Characterization Report for the Madison Site finished, the USACE is now developing a Remedial Investigation/Feasibility Study/Proposed Plan (RI/FS/PP). The Characterization Report identified uranium contamination in two buildings owned by a manufacturer in Madison, Illinois. The Characterization Report confirmed the presence of contamination in dust on overhead surfaces, while the floors and equipment were below criteria.

Now that the extent of contamination has been determined, the USACE is developing a plan to address the site. This strategy will be presented to the public for review and comment in the RI/FS/PP scheduled for release late this year.

What's Next?

The USACE will present the RI/FS/PP to the public for review and comment this fall to determine the final disposition of the site.

What is Radioactivity?

Q Admittedly this question seems pretty elementary until you stop and think about it. If you were trying to explain what radioactivity was to a ten-year-old child, what would you say? Radioactivity is not detectable with five senses. You cannot see, hear, smell, taste, or feel it. Seems a bit harder to answer the question now doesn't it?

A *In its simplest explanation, radioactivity is a type of energy. Furthermore, radioactivity refers to a specific type of energy produced when an unstable atom tries to stabilize itself by "decaying" or releasing particles. As these particles are released, energy is created.*

Radiation may take one of two forms: ionizing or nonionizing. Ionizing radiation consists of high-energy particles capable of creating an electrical charge in substances they pass through. Nonionizing radiation cannot create a charge as it passes through material.

Nonionizing radiation may be found in common household products such as lights, microwaves or televisions. Ionizing radiation can be found in everything in nature in trace amounts – including people. It can be found in carbon and potassium, as well as elements such as uranium and thorium. But if radiation is so natural, why are we spending so much to clean it up? Just like sunlight (another radiation source), radiation poses little harm until you've been exposed to too much of it. The Corps is working on the FUSRAP Sites in order to limit the amount of radiation to which we are exposed.

Naturally occurring ionizing radiation may be one of three types (alpha, beta, or gamma). Alpha particles can only travel approximately one to two inches in air and can be blocked by a sheet of paper. Beta particles can travel 6 – 10 feet in air but can be blocked with Plexiglas® or glass. Gamma particles can travel the farthest but may be stopped with lead.

Many people believe radioactivity is a compound that can be treated by finding the right chemical mixture to neutralize it or "make it go away". Unfortunately, since radioactivity is energy produced by elements, which are already in their simplest form, it cannot be neutralized. We can only control the locations of radioactive material and wait until nature takes its course.

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Workers, dressed in the appropriate level of personal protective clothing and respiratory equipment, collected samples from the Radium Pits to verify contaminant information.

North County

Feasibility Study Being Developed

The USACE is currently developing the North County Feasibility Study/Proposed Plan (FS/PP), which will describe remedial alternatives to address contamination on the sites. The North County FS/PP will address contamination at the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (VPs) and Coldwater Creek.

By working with the Missouri Department of Natural Resources and the U. S. Environmental Protection Agency, the USACE hopes to resolve outstanding issues prior to releasing the document to the public for review. The agencies are working together to determine which federal and state regulations apply to these sites and to resolve issues regarding potential contaminants of concern.

In the comming months, the FS/PP will be presented to the public for review and comment. After the review period is over, the final remedial alternative will be selected and identified in the Record of Decision.

One more way to keep in touch:

MDNR FUSRAP Field Oversight Office
917 N. Highway 67, Suite 104
Florissant, MO 63031
phone (314) 877-3250

St. Louis Airport Site (SLAPS)

Radium Pits Tested

In September, the USACE dug test pits in an area of the St. Louis Airport Site (SLAPS), commonly referred to as the Radium Pits, which are located in the curve of the site next to McDonnell Boulevard. The test pits were dug to better characterize the extent of contamination and to develop a geological profile for this portion of the site.

The Atomic Energy Commission/Manhattan Engineer District (AEC/MED) previously used the Radium Pits to store residues from manufacturing operations at the St. Louis Downtown Site (SLDS).

By investigating the Radium Pits, the USACE gathered valuable radiological and geotechnical data for developing plans, which accurately address the Radium Pit's conditions. While significantly less radium than expected was found, the results of this activity showed that higher levels of thorium exist in this location.

The USACE was concerned that radon, which is a byproduct produced by the decay of radium, would be a problem given the original data that calculations were based on. However, since the actual radium levels were low, radon levels were not an issue.

The USACE, in conjunction with state and federal agencies, is currently developing the Plans and Specifications for this removal action. It is anticipated work will begin this spring in the Radium Pits. An estimated 26,000-28,000 cubic yards of contaminated soils are scheduled for removal.

Upcoming Events

Information Releases:
Winter Newsletter – February 2000

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on December 10, January 14, and February 11.

US Army Corps of Engineers
St. Louis District

The workers shown here are in the process of surveying an area to determine if further excavation is required. Once surveys confirm the contamination has been removed, the Corps can direct its contractors to begin backfilling the excavated area with clean material.

East End Excavation Continues

Site stabilization work is continuing at the East End of SLAPS in the wedge between McDonnell Boulevard and Banshee Road. Confirmation surveys have verified that the contamination has been removed from the eastern most survey unit. Under the USACE's direction, contractors have begun backfilling the cleaned areas.

Removal work on SLAPS will progress in a continuous path of excavation from east to west across the site. This progression will stabilize the site and prevent storm-water run-off from re-contaminating cleaned areas as work moves from higher to lower elevations. To date, the contractor has excavated 16,500 cubic yards of contamination from the East End.

What's Next?

Once the confirmation surveys and the backfill of the remainder of the East End are completed, the SLAPS Construction Support Area will be moved to the East End and thus allow excavation activities to continue across the site.

Hazelwood Interim Storage Site (HISS)

Lab Relocation Nearly Completed

The USACE has procured a new site lab to replace the current facility. Production requirements and the HISS Railspur construction this spring brought attention to potential production problems with analyzing samples at the lab's original location.

The analysis of radiological samples requires a stable environment. Once heavy equipment begins removing the nearby piles, the lab's original location at the end of a railspur will no longer suffice.

The relocated facility will better support the number of samples that need to be analyzed. As the USACE removes more contaminated material from the St. Louis sites, the increased capability will enable the lab to process these samples without impacting the schedule of work on the rest of the project. The new lab should be fully operational by mid-December 1999.

Pile Removal Design Continues

In September, the USACE completed technical negotiations regarding the removal of the HISS Eastern Pile and the Spoil Piles from the railspur construction with a selected small, woman-owned business. Together these piles contain approximately 12,000 cubic yards of material. The Corps will remove these piles to minimize disruption to business operations and facilitate the current owner's use of the property.

The contractor has submitted the project plans to the USACE for approval. These plans describe how the contractor will implement the design plans during the actual pile removal. Once the plans are approved, the contractor will mobilize its personnel and equipment on-site, receive site-specific training to ensure personnel are familiar with the site, and begin removing the piles using the new railspur.

What's Next?

Once these preparatory activities have been completed, the piles will be removed under the approved 1998 HISS Engineering Evaluation /Cost Analysis (EE/CA). Until a Record of Decision (ROD) describing the final cleanup method is approved, no subsurface contamination at HISS can be removed.

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Excavation in Plant 2's main remediation area will continue once unexploded ordnance plans, which address the presence of the Civil War Ordnance, are approved.

St. Louis Downtown Site (SLDS)

Plant 2 Progress on Hold

Remediation work in Plant 2 stopped when unexploded Civil War ordnance was found during site excavation in late August.

Historians suspect the ordnance originated from a prior land owner (Buck's Stove & Range Company), which manufactured cast iron stoves. After the Civil War, many weapons were decommissioned and sold as scrap iron. Authorities speculate that Buck's Stove & Range Company, which was using the iron from the rounds for manufacturing stoves, discovered the live rounds and buried the rounds rather than disarming them.

Years later, in 1935, Mallinckrodt purchased and demolished the foundry. They discovered and disposed of hundreds of cannonballs left over from the Civil War, unaware of the buried rounds. By 1941 Mallinckrodt erected buildings on that same site to support Manhattan Engineer District / Atomic Energy Commission (MED/AEC) activities during World War II. Now more than sixty years after the demolition of the foundry, the buried rounds have been discovered.

While the USACE will not continue remediation in the main area of excavation until an Unexploded Ordnance (UXO) plan is approved, four small adjacent areas of elevated radiological activity are being remediated. These four areas total approximately 120 cubic yards.

This twelve pound cannon ball made of iron was one of the pieces of ordnance found during the Plant 2 remediation. Originally, the hole in the cannon ball would have been plugged. The ball was filled with black powder.

UXO Plan Under Review

Ordnance experts are working with physicists to finalize a plan that addresses the possibility of encountering more ordnance in the radiologically contaminated soils of the main excavation area in Plant 2. The plan will enable the USACE to backfill the open excavation.

Magnetometers, which can detect buried metal objects four feet below the surface of the soil, will be used to verify the work area is clear of all metal objects. If the magnetometer detects a metal object beneath the surface, a team of UXO specialists will dig up the object by hand. If it is identified as ordnance, it will be turned over to the St. Louis Bomb Squad for disposal. Once the work area is cleared using the magnetometer, an excavator will remove the top 10- to 15-inches of soil for disposal.

This process would be repeated for each layer of soil until the remaining 5,000 cubic yards of contamination in Plant 2 has been removed as described in the SLDS Record of Decision. The USACE hopes that the remedial work in Plant 2 can be completed by February assuming inclement weather does not further hamper remediation efforts.

Plant 1 Remediation Starting

Concurrent with the Plant 2 work, contractors are focusing their efforts on Plant 1. Remediation activities in Plant 1 will begin with the removal of the asphalt and concrete, which presently cover the contaminated soils around the footprint of the demolished Building K.

To prepare the site, crews will survey and stake the excavation area so that it may be fenced off to prevent inadvertent access. Electric, water and sewer lines will be routed away from the area. Due to an elevation difference between the Building K pad and the street, a temporary ramp will be constructed to assist the trucks in transporting material from Plant 1 to the loading facility.

Pre-design characterization data indicate Plant 1 contains approximately 1,500 cubic yards of contaminated material in the main excavation area. Another 500 cubic yards divided between an additional eight areas of elevated radiological activity in Plant 1 will also be remediated.

What's Next?

Once the UXO plan is finalized, remedial work in the main excavation area of Plant 2 will resume while regular construction crews remediate Plant 1.

Why Don't You Just Start Digging?

If you know the contamination is there, why don't you just start digging it up and hauling it away? Once all of the contamination is removed, the problem is resolved and everyone goes home. Why do you keep writing documents?

Although an environmental cleanup project seems very simple, numerous activities must take place before contaminants can be removed. No one wants to go into a contaminated area without knowing what pollutants are there. Unless you know what contaminants are present, it is difficult to protect yourself against its health risks.

In 1980, Congress pessed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). FUSRAP is conducted according to the processes described in CERCLA.

The first step in the CERCLA process is to conduct a Preliminary Assessment (PA). Historical background information is collected to determine the likely locations of hazardous materials and to determine the initial extent of site contamination. Next, a Site Inspection (SI) is performed to verify historical information through limited soil and water sampling. If substantial amounts of contamination are confirmed present on the site, further study and analysis are needed. The Remedial Investigation (RI) further identifies the types of contaminants present at or near the site, the degree and extent of contamination, and potential risks to the public health and environment. Information gathered during the RI will assist in developing cleanup alternatives, which will be identified in the Feasibility Study (FS). Once the remedial alternatives are identified, the Proposed Plan (PP) is written. The PP compares the alternatives presented in the FS and identifies a recommended cleanup remedy for a site. When the draft FS/PP is completed, the documents are presented to the public for review and a 30-day public comment period begins. While the public can submit comments at any time during this review period, a public meeting is also held to provide an opportunity to discuss the alternatives. After the 30-day comment period has ended, a specific long-term remedial action or cleanup technology is selected.

The selected cleanup alternative is identified in the Record of Decision (ROD), which is the final document in the CERCLA process. The ROD will substantiate the need for a remedial action, describe the proposed action and justify the removal action selected. Public comments, the Corps' replies, and any new information are detailed in a section of the ROD known as the Responsiveness Summary.

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The selected remedy addressing uranium-contaminated dust, found on overhead eaves in Buildings 4 and 6, will be identified in the Record of Decision for the Madison Site.

Madison Site

Record of Decision (ROD) Coming Soon

Comments received from the public on the Remedial Investigation/Feasibility Study (RI/FS) are assisting the U. S. Army Corps of Engineers (USACE) in developing a final plan to address the Madison Site.

Four remedial alternatives were developed to address the presence of uranium-contaminated dust on overhead steel beams at the Madison Site. These were presented to the public for review and comment in the Feasibility Study.

The USACE developed remedial alternatives to address uranium-contaminated dust based on detailed site-specific characterization data presented in the Remedial Investigation. The alternatives presented at the public meeting included No Action (for baseline comparison), Institutional Controls, Containment, and Decontamination of Accessible Surfaces. The USACE identified its recommended alternative, Decontamination of Accessible Surfaces, in the Proposed Plan.

The Madison Site RI/FS and Proposed Plan were presented to the public at the Madison City Hall in February. Comments received during the public comment period on these documents are being carefully weighed and considered as the USACE develops the final Record of Decision (ROD), which identifies the approved selected alternative for addressing site contamination.

What's Next?

The USACE will respond to comments received during the public review of the Madison Site RI/FS and Proposed Plan. The approved Madison Site Record of Decision (ROD) is expected in May 2000.

North County

Feasibility Study Nears Release

The USACE has been busy developing a North County Feasibility Study and Proposed Plan (FS/PP) for presentation to the public. These documents will address the presence of low-level, radioactive contamination at the Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (SLAPS VPs) and Coldwater Creek.

Alternatives for remediating the North County Sites will be described in detail in the Feasibility Study, while the Proposed Plan will identify the recommended alternative to address contamination at the sites.

Over the past several months, the USACE has been carefully reviewing draft documents to ensure they adequately address contamination in the North County area prior to releasing the document to the public for review.

What's Next?

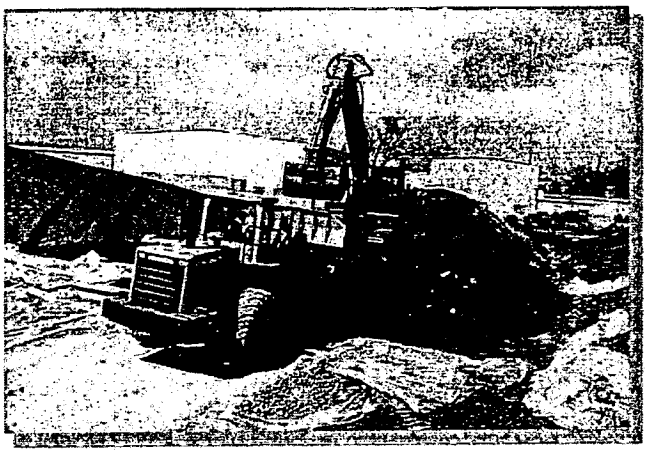
The FS/PP will be presented to the public for review and comment this summer. After the public review, the USACE will consider comments on the FS/PP and select the final remedial alternative, which will be identified in a North County Record of Decision.

Upcoming Events

Information Releases:
Summer Newsletter – July 2000

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on May 12, June 9, and July 14. (The public is welcome to attend.)

US Army Corps of Engineers
St. Louis District



The first significant removal action at HISS began with the disposal of 5,900 cubic yards of excess soils generated by the construction of the railspur.

Hazelwood Interim Storage Site (HISS)

Pile Removal Underway

The first significant removal action at the Hazelwood Interim Storage Site (HISS) is underway. The contractor, a woman-owned small business, mobilized its crew to the site in February.

Removal work began in March with the construction of a haul road alongside the HISS railspur. In the first 20 days, 5,900 cubic yards of excess soil generated last year during the railspur construction was removed from the site. After the excess soils stored between the main and supplementary storage piles were removed, the contractor began to focus on the removal of the Eastern Piles.

The Eastern Piles contain approximately 8,000 cubic yards of material. The Corps is removing these piles under the 1998 Engineering Evaluation/Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site.

What's Next?

The USACE is reviewing characterization data and developing designs for the removal of the Supplemental (or Front) Pile immediately behind the Project Offices.

St. Louis Airport Site (SLAPS)

Radium Pits Removal Underway

The removal of low-level, radioactive contamination from an area of the St. Louis Airport Site (SLAPS) commonly referred to as the Radium Pits is underway. In September 1999, the Corps sampled the area to better define geological, chemical and safety issues specific to the Radium Pits.

While historical records indicated that the USACE could reasonably anticipate encountering elevated levels of radium and thorium in the Radium Pits area, data collected from this sampling effort found significantly lower radium levels than expected. The decreased concentrations somewhat eased concerns over exposure to radon, which is a daughter product of the decay of radium. In contrast, sample results found higher levels of thorium than anticipated.

To maintain site safety during this removal action, air monitors are operating continuously in and around the excavated area. Crews regularly spray the area with water to prevent soils from drying and becoming airborne. New fencing and barriers were installed around the perimeter of SLAPS to prevent inadvertent access. Berms and sumps are located around and within the Radium Pits to ensure the water that falls on contaminated soil is collected, sampled and, if necessary, treated prior to release.

Approximately 29,000 cubic yards of contaminated material are scheduled for removal from the Radium Pits to a permitted, out-of-state disposal facility by July 3, 2000.

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What's Next?

The USACE hopes to complete the Radium Pits removal action in July 2000. Once the bulk of the excavation is complete, crews can begin surveying the area to verify that it meets the cleanup criteria set forth in the 1998 SLAPS Engineering Evaluation/Cost Analysis (EE/CA).

East End Removal Complete

Site stabilization work on the SLAPS East End resulted in the removal of approximately 27,000 cubic yards of contaminated soil. Removal work, which began on the East End to create a continuous path of excavation from east to west across the site, concluded in February.

Once radiological surveys confirmed the removal of the contamination, the area was partially backfilled with clean soil. Final backfilling and grading activities will occur after the USACE develops its final site grading plan.

What's Next?

Removal work will continue to move westward across the site from areas of higher to lower elevations in order to stabilize the site and prevent storm-water runoff from transporting contaminated sediments into clean areas.

St. Louis Downtown Site (SLDS)

Plant 2 Excavation Complete

The excavation of the Mallinckrodt Plant 2 footprint was concluded in April 2000 with the removal of approximately 10,200 cubic yards of material. Remedial work was delayed temporarily in late August when unexploded Civil War ordnance was discovered during excavation activities.

Ordnance experts developed a plan to address the possibility of encountering more ordnance in Plant 2. The plan enabled the USACE to continue remediation of the site in accordance with the approved St. Louis Downtown Site (SLDS) Record of Decision while minimizing safety risks for plant personnel and remedial workers.

Magnetometers, which can detect buried metal objects four feet below the surface of the soil, were used to verify the work area was clear of all metal objects. Once a work area was cleared, excavators removed the top 10- to 15-inches of soil for disposal. Roughly 5,000 cubic yards of contaminated soils were removed this way and resulted in the discovery of additional Civil War ordnance in December and March.

Excavation of Plant 2 concluded in April with the removal of approximately 10,200 cubic yards of material.

What's Next?

The USACE anticipates completing backfill activities in the Plant 2 area in May.

Plant 1 Work Underway

SLDS Plant 1 site preparatory work began in March with the staking of the excavation footprint. Electric, water and sewer lines will be routed away from the area to minimize safety risks to personnel.

Since the Plant 1 remediation area is adjacent to currently operated buildings without the cushioning barrier of a street or walkway, a great deal of care and coordination will be required to protect plant workers. The USACE is working closely with Mallinckrodt personnel to coordinate remedial activities and minimize the impact on daily business operations as much as possible.

Pre-design characterization data indicates that Plant 1 contains approximately 1,500 cubic yards of contaminated material in the main area of excavation. Another 500 cubic yards, divided between an additional eleven nearby areas of elevated radiological activity, will also be remediated.

What's Next?

Sheet piling, which are steel sheets used to reinforce and protect the foundations of nearby buildings during remediation of the Plant 1 area, will be driven into the ground. Once this is complete, the excavation of radiological contamination in Plant 1 will begin.

Am I Protected?

Q: As I pass by your sites, I see workers dressed in moon suits and white garments? Am I protected from the radiation at your site?

A: Radiation presents a hazard if taken into the body. Radioactive particles can be taken into the body through inhalation or ingestion (eating or drinking). Three factors can be used to protect the body from external radiation–distance, time and shielding. Individuals are better protected the farther from the source of radiation, the shorter the time of exposure, or the thicker the shielding.

As you pass by one of the St. Louis Sites, you are protected from its radioactive materials by a variety of protective measures taken by the Corps. First, a fence around contaminated areas reduces the potential for inadvertent entry and distances you from the radiation. Second, water sprayed on the site prevents dust from becoming airborne (or inhaled) as crews excavate contaminated soils. Third, continuously operating air monitors positioned around the excavated area, assess the effectiveness of these protective measures by monitoring the levels of airborne particles present.

Because they may work directly with materials for long periods of time, workers are exposed to the greatest risks posed by FUSRAP contamination. Depending on the levels of radiation and their proximity to the material, workers are dressed in varying degrees of protective clothing. As you pass by one of the FUSRAP sites, you will see workers dressed in varying levels of protective gear.

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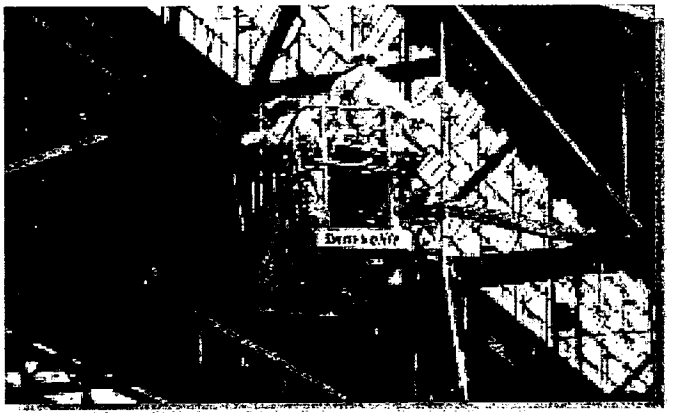

Uranium-contaminated dust at the Madison Site was vacuumed and scraped from overhead structures.

MADISON SITE

Madison ROD Signed

In May 2000, the St. Louis District, U. S. Army Corps of Engineers (USACE) released the signed Final Record of Decision (ROD) for the Madison Site in Madison, Illinois. In response to the potential risk of exposure to radioactive dust, the USACE selected a final remedy for the site entailing a cleanup that is protective of human health and the environment.

During the late 1950s and early 1960s, the site was used to perform extrusions of uranium metal and straightening of extruded uranium rods for the U. S. Atomic Energy Commission (AEC). In 1999, the USACE identified uranium contamination in two buildings operated by a manufacturer in Madison, Illinois. The contamination was limited to dust on overhead surfaces.

In February 2000, four remedial alternatives were identified to address the contamination at the Madison Site. These alternatives were presented to the public for review and comment in a Remedial Investigation/ Feasibility Study (RI/FS) and Proposed Plan. Based on comments received from the general public and regulatory agencies, the USACE selected Alternative 4, decontamination of accessible surfaces.

Alternative 4 is identified as the final remedy for the Madison Site in the Record of Decision (ROD). The ROD incorporates public comments received on the Feasibility Study and outlines the final cleanup method selected to address the contamination. The Madison ROD was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Madison Site Administrative Record, on which the final decision was based, was completed and released in May with the signing of the ROD.

Madison Decontamination Complete

Under the Final Record of Decision (ROD), decontamination activities at the Madison Site began in June. The USACE designed the cleanup activities so that the site would meet the specific cleanup levels established to protect human health and identified in the Madison Site ROD.

The small business contractor mobilized its decontamination teams to the site with protective clothing, scaffolding and equipment. Uranium-contaminated dust was vacuumed from overhead structures over a 12-day period. By mid-July, independent surveys confirmed that the USACE had successfully decontaminated Buildings 6 and 4 ahead of schedule and under budget. Forty cubic yards of contaminated dust and materials were sent to a licensed, out-of-state facility for disposal.

The current condition of the site will be documented in a Post Remedial Action Report for the Madison Site. This report will document how the current condition of the decontaminated areas meet the criteria established in the Madison Site Record of Decision.

What's Next?

After the Post Remedial Action Report is complete, the site will be removed from the list of active FUSRAP sites.

Upcoming Events

Information Releases:
Fall Newsletter – November 2000

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on September 8, October 13, and November 10. (The public is welcome to attend.)

US Army Corps of Engineers
St. Louis District

A slide-rail shoring system (shown above) prevents the walls of the excavation from caving in during the Plant 1 remediation.

ST. LOUIS DOWNTOWN SITE (SLDS)

Plant 2 Remediation Complete

Asphalt now covers Plant 2, which is the first area within the Mallinckrodt facility successfully remediated under the St. Louis Downtown Site (SLDS) Record of Decision.

Remediation of the SLDS Plant 2 area began last year with the excavation and removal of contaminated material covering the area. By May, construction crews encountered 19th century utility lines predating available maps. Utility lines had to be temporarily relocated and/or shutoff before the excavation could proceed.

Remedial activities were temporarily delayed again in August 1999 when Civil War ordnance was discovered in the excavation. The USACE paused to develop a plan for the remediation of the remainder of the Plant 2 area in accordance with the SLDS Record of Decision while minimizing safety risks for plant personnel and remediation workers.

Over the next seven months, contaminated soils were removed in 10- to 15-inch thick layers after being scanned for the presence of metal objects. Law enforcement authorities received thirty pieces of ordnance for disposal recovered from the Plant 2 excavation.

The USACE removed approximately 10,600 cubic yards of contaminated material from Plant 2. A Post Remedial Action Report, which documents the condition of the site after remedial activities have taken place, is being prepared. This document will confirm how the current condition of the site meets the criteria established in the SLDS Record of Decision and will be released in October.

Plant 1 Excavation Begins

Now that the remediation of Plant 2 is complete, the USACE has shifted its focus to Plant 1 where Mallinckrodt's Building K once stood.

Plant 1 site preparatory work began this spring within the anticipated excavation footprint. Crews installed fencing around the excavation area to prevent inadvertent entry. Electric, water and sewer lines continue to be routed around the area to minimize the safety risk to personnel. A temporary ramp was also built to provide access to the remediation area for transporting material to the loading facility.

For Plant 1, a steel, slide-rail shoring system will be used to provide additional support to the walls during remedial activities. The Plant 1 excavation will be completed in three separate strips reaching 12 feet in depth. The main area (or the area where Building K once stood) will be remediated using open excavation techniques expected to reach depths of up to 16 feet.

The USACE anticipates completing the 1,500 cubic yard excavation and backfill of Plant 1 by the end of this year. However, site restoration, which consists of restoring utility connections, grading and paving the area, will continue into next year.

What's Next?

Plant 1 will be backfilled and restored once survey data confirms that the remediation criteria established in the SLDS Record of Decision have been met.

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Public Speaking - If your group, school, or association would like to hear from one of our experts, give us a call. We can speak on a variety of fields, including engineering, the environment, and geology.

Homepage - To reach our site, set your browser to www.mvs.usace.army.mil and click on the FUSRAP icon.

If you have any suggestions, questions, or comments, contact our office anytime.

NORTH COUNTY

FS/PP Nears Release

The selection of the final remedy for the North County sites is on the horizon. The USACE has been busy developing the North County Feasibility Study and Proposed Plan (FS/PP) for presentation to the public. These documents will address the presence of Manhattan Engineer District/Atomic Energy Commission-related contamination at the Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (SLAPS VPs) and Coldwater Creek.

Alternatives for remediating the North County Sites will be described in detail in the Feasibility Study, while the Proposed Plan will identify the USACE recommended alternative to address contamination at the sites.

Over the past several months, the USACE has been carefully reviewing draft documents to ensure they adequately address contamination in the North County area. Currently, the U. S. Environmental Protection Agency and the State of Missouri are reviewing draft copies of these documents to ensure they fully consider all applicable, relevant and appropriate requirements. Once the regulator's comments have been addressed and incorporated into the documents, the public will be given the opportunity review and comment on the North County FS/PP.

What's Next?

This winter the USACE will present the FS/PP to the public for review and comment to determine the final remedy for the site. A public meeting will be held approximately two weeks after the release of the documents to the public to gather comments.

ST. LOUIS AIRPORT SITE (SLAPS)

Radium Pits Excavation Continues

Excavation activities at the St. Louis Airport Site (SLAPS) have left a large, 2-acre hole where a contaminated area known as the Radium Pits was once located.

The gross excavation of contaminated soils in the Radium Pits, which began in May 2000, is complete. While the bulk of the excavation is complete, surveys are being performed to identify the locations of residual radiological contamination for removal. To date, over 525 railcars containing 37,800 cubic yards of material have been shipped from the site to a licensed, out-of-state disposal facility. Backfill of the Radium Pits with clean soils is expected to begin in October.

What's Next?

Once confirmation is received that removal criteria have been met for the Radium Pits activity, the area will be backfilled and grass seed will be placed to prevent erosion.

HAZELWOOD INTERIM STORAGE SITE (HISS)

Supplemental Pile Removal

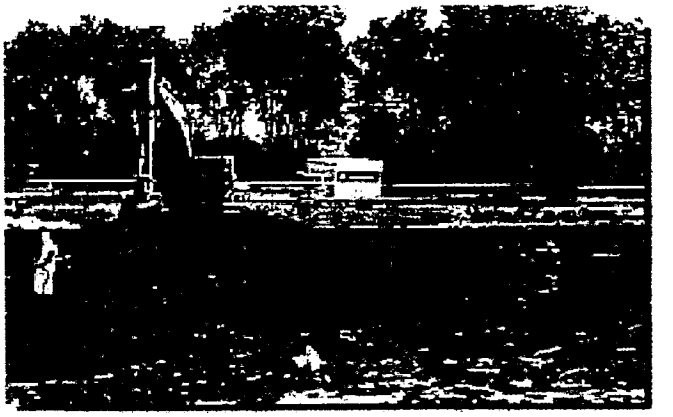
Fourteen years after its creation, the HISS Supplemental Pile, which can be seen from Latty Avenue, is being removed. This material is being removed under the 1998 Engineering Evaluation/Cost Analysis (EE/CA) for the Latty Avenue/ Hazelwood Interim Storage Site. The Supplemental Pile contains 5,500 cubic yards of material that resulted from drainage and improvement project performed by the Cities of Berkeley and Hazelwood in 1986.

The USACE completed negotiations with a woman-owned, small business contractor for the removal of the HISS Supplemental Pile in August. Since then, the contractor has submitted the project plans to the USACE for approval. The project plans describe how the contractor will carry out the pile removal. Once the plans are approved, the contractor will mobilize its crew to the site and begin removing the pile.

Beginning in September 2000, the Supplemental Pile soils will be loaded into railcars at the HISS railspur, which was built in 1999. The soils will then be shipped to a licensed, out-of-state facility for disposal. The USACE has implemented additional protective measures to protect human health and the environment. Crews will spray the area with water regularly to prevent soils from drying and becoming airborne. Permanent air sampling stations have been installed around the perimeter of the site that will operate continuously to help assure soil or dust particles do not migrate from the site.

What's Next?

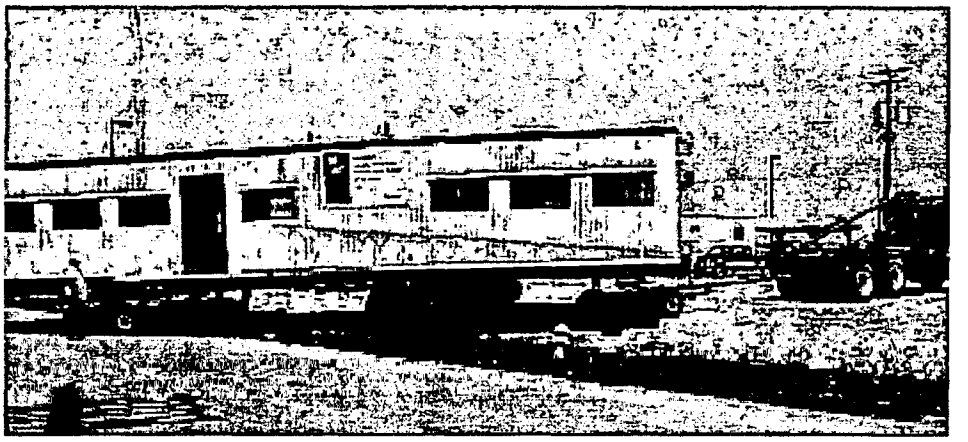
During the removal of the Supplemental Pile, the USACE will design the removal of the first half of the HISS Main Pile.



While the bulk of the Radium Pits excavation in complete, walkover surveys help identify the locations of residual radiological contamination for removal

We've Moved!

If you came by the Project Office lately, you would notice some pretty big changes have taken place. Throughout the month of July, we have been busy moving the trailers from 9170 Latty Avenue to 8945 Latty Avenue (just up the street). By moving the trailers off the site, heavy construction equipment will have more room in which to operate and begin removing the piles at the Hazelwood Interim Storage Site (HISS).



Feel free to visit us at our new location - 8945 Latty Avenue! Or call us at our new number, (314) 260-3905, if you have any questions about the program!

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FUSRAP Project Office
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Clean soil and rock are being used to backfill the 2-acre hole left behind by the cleanup of the Radium Pits. Restoration of this area will be completed by the end of this year.

North County

FS/PP Release Scheduled

The U.S. Army Corps of Engineers (USACE) continues work with its Headquarters, Environmental Protection Agency and State agencies to finish the North County Feasibility Study/Proposed Plan (FS/PP). These documents will present remedial alternatives to address contamination present at the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), the SLAPS Vicinity Properties (VPs) and Coldwater Creek. The purpose of these alternatives is to address the presence of Manhattan Engineer District/Atomic Energy Commission-related contamination at the sites.

Alternatives for remediating the North County sites will be described in detail in the Feasibility Study and presented to the public for review and comment. The Proposed Plan will identify the alternative recommended by the USACE to address contamination at the sites.

In August, draft copies of the North County FS/PP were provided to the U. S. Environmental Protection Agency and the State of Missouri for review and comment. The USACE is currently working to address the comments received from these agencies in late-October. Once these comments are addressed, the USACE will present the North County FS/PP to the public for review and comment over a 30-day period.

The final remedy for the North County sites will be selected based on the written comments received during the 30-day public comment period. The final remedy may not necessarily be the alternative identified as the preferred alternative by the USACE in the Proposed Plan.

What's Next?

The North County FS/PP is currently scheduled to be released to the public for review and comment in January 2001, after responses to the EPA and State comments have been addressed. Copies will be made available for public review at the Project Office and at the Local Information Repository

St. Louis Airport Site (SLAPS)

Radium Pits Excavation Complete

In November, the USACE successfully and safely completed the removal of the most contaminated material encountered to date in the St. Louis FUSRAP project. Approximately 49,800 cubic yards of radiologically contaminated soils were removed from the St. Louis Airport Site (SLAPS) Radium Pits area.

The USACE took every precaution to prevent any release of the material from the site. Air monitors operated continuously in and around the excavation area. Crews regularly sprayed the work area with water to prevent the soils from drying and becoming airborne. New fencing and barriers were installed around the perimeter of the site to prevent inadvertent access. Berms and sumps were located around and within the Radium Pits to ensure the water that fell on contaminated soils was collected, sampled and, if necessary, treated prior to release.

Upcoming Events

Information Releases:
Winter Newsletter – February 2001

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on December 8th, January 12th, and February 9th. (The public is welcome to attend.)

US Army Corps of Engineers
St. Louis District

The excavator (shown above) is moving material from the HISS Supplemental Pile into a front end loader, which takes the material directly to the railcars.

Rock and clean soil are being used to backfill the 2-acre hole left from this removal action. The restoration of the area will be completed in December with the exception of a small section at the southwestern corner of the Radium Pits, which will serve as a sump during the next phase of cleanup at SLAPS.

East End Extension Removal Underway

With the completion of excavation activities in the Radium Pits, the USACE is shifting its focus to the removal of the SLAPS East End Extension. The East End Extension contains approximately 46,000 cubic yards of contaminated soils. It includes the region of contaminated soil between the Radium Pits and the East End, and in the drainage ditch immediately south of McDonnell Boulevard.

Removal activities have been designed to limit the total area open at any given time and to prevent cross-contamination. The East End Extension removal action is proceeding in three general phases: work in the drainage ditch from the eastern tip of SLAPS to the edge of the East End; work in the main body of the East End Extension; and work in the drainage ditch from the western edge of the Radium Pits eastward.

In November, the USACE began the first phase of the East End Extension removal action by beginning work in the drainage ditch south of McDonnell Boulevard. Removing contamination from the East End Extension and the drainage ditch will create a continuous area of clean soils in the northeast portion of SLAPS.

What's next?

Once the first phase of the East End Extension removal action is complete, work within the main body will begin.

Hazelwood Interim Storage Site (HISS)

Pile Removals Continue

In October, the USACE removed approximately 7,100 cubic yards of material from the Hazelwood Interim Storage Site (HISS) using a small business contractor. The removal of the Supplemental Storage Pile under the 1998 HISS Engineering Evaluation/Cost Analysis (EE/CA) was completed in four weeks.

The Supplemental Pile, which was the result of a drainage and utility improvement project performed by the Cities of Berkeley and Hazelwood in 1986, could be seen behind the project trailers from Latty Avenue. Only the footprint where that pile once stood remains.

The USACE has begun the removal of the Main Pile, the final pile left at HISS. Approximately 12,500 cubic yards of material contained in the Main Pile will be removed under the next contract. The USACE began removing approximately 5,000 cubic yards of soil from the North Half of the Main Pile in November, under an existing contract.

What's Next?

The USACE will continue removing the Main Pile through the end of the year using a small business contractor.

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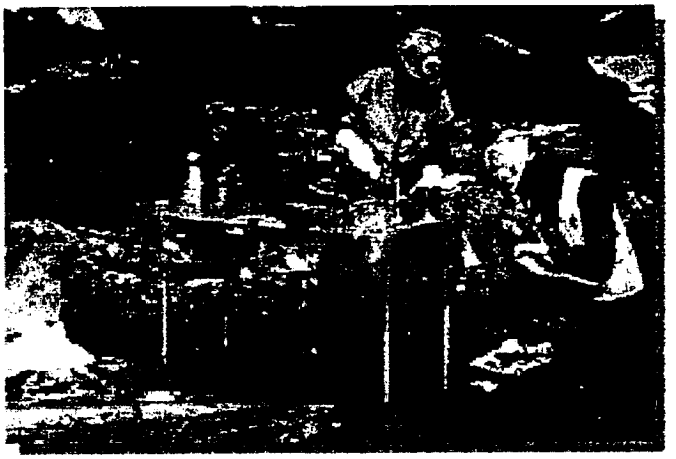

Characterization data obtained from the soil samples will be used to develop remedial designs for the cleanup of the vicinity properties at SLDS.

St. Louis Downtown Site (SLDS)

Plant 1 Remediation Continues

The remediation of Plant 1 at the Mallinckrodt facility is continuing forward on schedule. Cleanup activities in Plant 1 are continuing as two simultaneous remediation efforts - the main excavation area and the eleven isolated areas.

Under the St. Louis Downtown Site (SLDS) Record of Decision (ROD), remediation activities in the main excavation area will result in the removal of approximately 1,500 cubic yards of contaminated soil next to building foundations and roadways. To protect these structures during excavation activities, a steel slide-rail shoring system is being used. This system allows shoring and excavation to be accomplished simultaneously, whereas the installation of traditional sheet piling would have delayed excavation activities 30 days. Removal activities are being accomplished in a series of strips using the slide-rail system.

The eleven isolated areas of elevated radiological activity require remediation to depths of three feet or less. Remedial activities in these areas are expected to produce an additional 400 cubic yards of material for disposal.

Roughly 1,600 cubic yards of material have been removed from Plant 1 to date (including material from four of the isolated areas). The USACE anticipates completing the 1,900 cubic yard excavation and backfill by the end of this year. Restoration of the remediated areas in Plant 1, however, will not be completed until early 2001.

Plant 6 East Half Begins

Preparatory work for the Plant 6 East Half remediation began in November. Since Mallinckrodt uses Plant 6 East Half for current shipping and receiving operations, the USACE plans to phase remedial work to minimize the impact of the cleanup on current business operations.

Workers prepared the site by surveying and staking the excavation area for the first phase of work. Fencing was then installed around the perimeter of the work area to prevent inadvertent access. Electric, water and sewer lines are currently being routed away from the area to minimize safety risks to personnel.

Pre-design characterization data indicates that the Plant 6 East Half contains approximately 3,800 cubic yards of material. Remedial work in this area will begin early in 2001 with the removal of the concrete pad that covers the footprint of the demolished Buildings 116 and 117.

SLDS Vicinity Properties Sampled

The USACE has been busy over the last several months systematically collecting soil samples to characterize contamination on properties surrounding the Mallinckrodt facility. These properties are known as the SLDS Vicinity Properties. They are primarily operating industrial facilities.

Areas of potential contamination were identified in a limited soil sampling event over ten years ago. The current sampling event is necessary to better define the depth and extent of contamination on these properties and to verify that Manhattan Engineer District/Atomic Energy Commission (MED/AEC) contamination is not present in other areas. Several rounds of sampling are typically necessary to fully determine the extent of contamination.

Information obtained from these sampling events will be used to develop work plans and designs for remedial activities at the vicinity properties. The USACE plans to begin remediating the SLDS Vicinity Properties in 2001.

What's Next?

The USACE will begin excavation activities in Plant 6 East Half once the remediation of Plant 1 is finished. In the meantime, data from the sampling of the SLDS vicinity properties will be compiled and analyzed to develop work plans and designs.

Why Don't You Just Start Digging?

If you know where the contamination is, why don't you just start digging it up and hauling it away? Once all of the contamination is removed, the problem is resolved and everyone can go home. Why do you keep writing documents?

Although an environmental cleanup project seems very simple, numerous documents must be written before the contamination can be removed. No one wants to go into a contaminated area without being certain they know what pollutants are present. Unless you know what contaminants are present, it is difficult to protect yourself or others against its health risks or to protect the environment from additional harm.

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA dictates several activities must be conducted before a final remedy can be selected for a site. (FUSRAP is conducted according to CERCLA.)

The first activity in the CERCLA process is to conduct a **Preliminary Assessment (PA)**. During the PA, historical background information is collected to determine the likely locations of hazardous materials and to determine the initial extent of site contamination. Next, a **Site Inspection (SI)** is performed to verify this information by collecting limited soil and water samples. If substantial amounts of contamination are confirmed to be present on the site, further study and analysis are needed.

The **Remedial Investigation (RI)** further identifies the types of contaminants present at or near the site, the degree and extent of contamination, and potential risks to public health and the environment. Information gathered during this phase will assist in developing cleanup alternatives to address the contamination, which will be identified in the **Feasibility Study (FS)**. Once the remedial alternatives are identified, the **Proposed Plan (PP)** is written. The PP summarizes the alternatives presented in the FS and identifies a recommended cleanup remedy for a site.

Upon completion of these documents, the FS/PP is presented to the public for review and comment over a 30-day period. While the public can submit comments at any time during this review period, a public meeting is also held to provide an opportunity to discuss the alternatives. After the 30-day comment period has ended, a specific long-term remedial action or cleanup technology can be selected. The selected cleanup alternative is identified in the **Record of Decision (ROD)**, which is the final document in the CERCLA process. The ROD will substantiate the need for a remedial action, describe the proposed action and justify the removal action selected. Public comments, the Corps's replies to public comments, and any new information are addressed in the Responsiveness Summary of the ROD.

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F U S R A P U P D A T E

The St. Louis Sites

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Foreword

It's no secret that bad weather heavily impacts the progress of outdoor work. Remedial activities at the FUSRAP project are no exception. Excavation activities at the St. Louis FUSRAP Sites slowed considerably after the sites were hit with not only the second coldest December on record but also with heavy snowfall-nearly 14 inches in two weeks. Soils at the sites were effectively frozen in place by the sudden cold snap.

With this temporary delay, we thought this was a good time to consider how far work has come on the project. The U. S. Army Corps of Engineers (USACE), St. Louis District assumed responsibility for completing the cleanup of FUSRAP sites in the St. Louis area nearly three and one-half years ago. In addition to the current activity update normally presented in this newsletter, we have added a brief description of achievements since the Corps assumed responsibility for FUSRAP. We hope you find this review as encouraging as we did.

North County

Project Review

When USACE took over in 1997, the DOE had just begun removing contamination from the West End of the St. Louis Airport Site (SLAPS) under a 1997 Engineering Evaluation/Cost Analysis (EE/CA). Since then, the USACE-St. Louis District has successfully accelerated work and made substantial progress toward the final cleanup of SLAPS and the Hazelwood Interim Storage Site (HISS) in North County.

Upcoming Events

Information Releases:
Spring Newsletter – May 2001

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on April 13th, May 11th, and June 11th. (Please feel free to attend if you are available!)

St Louis Earth Day Celebration - April 22nd in Forest Park (Please stop by and see us!)

Since October 1997, the USACE has removed 112,600 cubic yards of contaminated material from SLAPS.

Under separate EE/CAs, the FUSRAP team obtained public approval to conduct specific actions at the SLAPS and HISS sites. The USACE constructed railspurs at HISS and SLAPS to safely increase shipping and disposal capacity.

Upon completing the West End removal action at SLAPS, site stabilization efforts began. A sedimentation basin was constructed to limit the migration of contamination offsite via stormwater runoff. The Radium Pits, believed to contain the most contaminated soils at the site, were safely removed. Approximately 112,600 cubic yards of material have been removed by USACE from the SLAPS East End, Radium Pits and adjacent ditches to date.

Perhaps the most dramatic change since 1997 has been the removal of the piles that stood at HISS for nearly twenty years. Roughly 28,400 cubic yards of soils from the railspur construction piles, two Eastern Piles, the HISS Supplemental (or Front) Storage Pile, and part of the HISS Main Pile have been removed. Today, only a portion of the Main Pile remains at HISS.

FS/PP Release Scheduled

The North County Feasibility Study and Proposed Plan (FS/PP) will be issued this summer for public review and comment over a 30-day period. These documents will address the presence of contamination related to the activities of the Manhattan Engineer District / Atomic Energy Commission in North St. Louis County.

Six alternatives have been developed to address contamination at the North County Site, which includes the Latty Avenue/Hazelwood Interim Storage Site (HISS), the St. Louis Airport Site (SLAPS), and the SLAPS Vicinity Properties (VPs), and Coldwater Creek.

US Army Corps of Engineers
St. Louis District

While the Feasibility Study (FS) describes each alternative in detail, the Proposed Plan identifies the alternative recommended by the USACE. Once these documents are ready, the public will be given 30 days to review the documents and provide comments to the USACE on the alternatives. In addition, the USACE will host a public meeting to explain the alternatives presented in the documents and accept comments from interested citizens.

The USACE will review all of the comments received and select a final remedy for the North County Sites. The final selected remedy will be based on the comments received during the 30-day comment period and may not necessarily be the alternative identified as the preferred alternative by the USACE in the Proposed Plan.

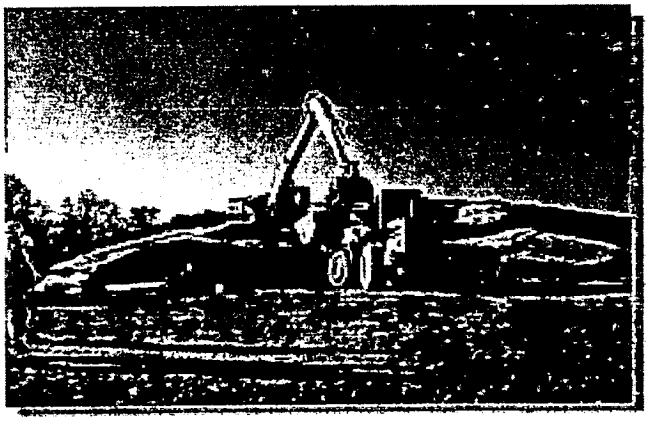
What's Next?

The North County FS/PP will be released to the public for review and comment once the USACE, EPA and State agencies put the finishing touches on it. Copies of FS/PP will be available for public review at the Project Office and at the local information repositories.

SLAPS Vicinity Properties (VPs)

Letters to Property Owners

SLAPS Vicinity Property owners will soon be receiving letters from the USACE regarding FUSRAP contamination on their property. Although owners are aware of the presence of the contamination on their property, the USACE is concerned that not everyone may understand how to request assistance with managing contamination on their properties.



Twenty years after its initial creation, the removal of the Main Pile from HISS has begun. The pile contains approximately 25,000 cubic yards of soil.

Keeping in Touch

Mailing Lists - To receive regular updates on the project, sign up for our mailing list anytime.

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Public Speaking - If your group, school, or association would like a presentation on our work, give us a call. We would love to talk to you!

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If you have any suggestions, questions, or comments, contact our office anytime.

Owners may wish to make property improvements before a final remedy is selected for the North County Site. They are encouraged to contact the FUSRAP Project Office to allow the USACE to verify the presence of radiological contamination in the impacted area and advise owners of the potential impacts it may have on their work. By working with the property owners, the USACE can minimize the adverse effects of contamination.

What's Next?

Once the final cleanup alternative is selected, the USACE will begin developing plans for the design and cleanup of the site. Progress will be based on the level of funding received from Congress.

Hazelwood Interim Storage Site (HISS)

Main Pile Removal Underway

Twenty years after its initial creation, the removal of the Main Pile from the Hazelwood Interim Storage Site (HISS) has begun. This final pile will be removed under the approved 1998 Engineering Evaluation / Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site (HISS).

The Main Pile contains an estimated 25,000 cubic yards of soil and debris from two property development / improvement projects on Latty Avenue. The USACE completed removal of a portion of the northeastern corner of the Main Pile in November using a small business contractor. Crews will continue removing the Main Pile this spring by working in a clockwise pattern. Approximately, 4,400 cubic yards have been removed to date.

What's Next?

Using a small business contractor, the USACE anticipates completing the removal of half of the Main Pile this summer if funding is available. Removal activities will continue through the end of October.

St. Louis Airport Site (SLAPS)

East End Extension Removal

In November, the USACE began excavating contaminated soils from areas adjacent to the recently decontaminated East End of the St. Louis Airport Site (SLAPS). The removal action, referred to as the East End Extension, is progressing in two general areas: work in the drainage ditch along McDonnell Boulevard, and work between the Radium Pits and East End.

The USACE designed the work to progress from east to west across the site to create a continuous decontaminated area and further stabilize the site. Under the approved 1998 SLAPS Engineering Evaluation/Cost Analysis, approximately 46,000 cubic yards of soil will be removed during the East End Extension removal action. The USACE anticipates completing this effort sometime late this year. Nearly 4,000 cubic yards of soil have been removed to date.

What's Next?

The USACE will continue removing contamination from the East End Extension through the end of this summer. In the meantime, the USACE is completing the design for the next phase of work at SLAPS.

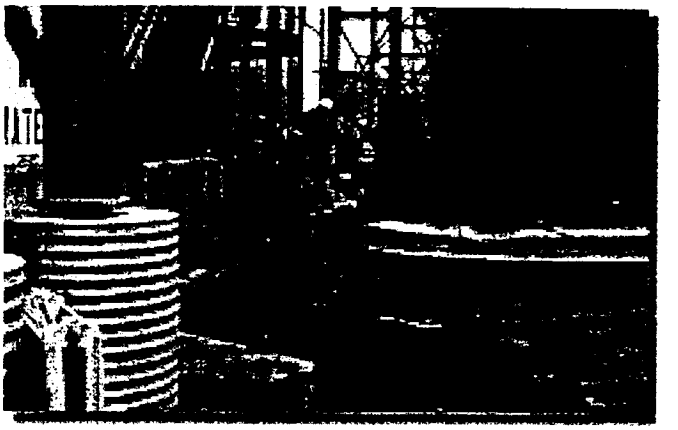
St. Louis Downtown Site (SLDS)

Project Review

In 1997, the Department of Energy (DOE) was in the process of completing its building demolition activities in the Mallinckrodt facility at the St. Louis Downtown Site (SLDS). Contaminated soils along the Mississippi River had been removed to support the construction of the Riverfront Trail.

In October 1997, Congress transferred responsibility for FUSRAP from the DOE to the USACE. Within six months, the USACE presented cleanup alternatives for the final cleanup of SLDS to the public. By October 1998, the final SLDS Record of Decision (ROD) identifying the selected site cleanup alternative for accessible soils was issued.

Nearly 18,000 cubic yards of contaminated material have been removed under this ROD. This material has been removed from the remainder of the property bordering the Mississippi River, the Mallinckrodt Plant 2 area, and portions of Plant 1 and Plant 6 East Half.



Once the small, isolated areas of contamination are removed, permanent supports (called pylons) and piping are being constructed by the owner to support business operation.

Plant 1 Remediation Progressing

Remedial activities in Plant 1 began late last summer when the concrete pad covering the former Building K foundation was demolished. Work continues as the USACE focuses its efforts in two separate areas of the plant - the main excavation area located beneath the Building K pad, and the small, isolated areas of radiological contamination scattered about the remainder of the plant.

Work in the isolated areas is progressing slower than originally anticipated as the USACE attempts to accommodate the owner's need to meet regulatory requirements for current operations. The owner is installing temporary overhead piping to carry wastewater from on-going business operations. After the USACE completes removal of the small, isolated areas of contamination, the owner's construction crews erect permanent supports (pylons) and piping. Since these areas are only large enough for one crew, backfill activities must be delayed as the pylon bridge is constructed.

The remediation area in Plant 1 contains 2,400 cubic yards of accessible contamination within a 6.5-acre area. Approximately 2,100 cubic yards of contaminated material have been removed from Plant 1 to date.

What's Next?

Although the remediation of the Main Area of the Plant 1 cleanup will be complete this spring, work in the isolated areas will continue through the end of this summer. As work winds down in Plant 1, the USACE will intensify efforts to cleanup Plant 6 East Half.

Do I Count?

Q. You often mention a "30-day public review period". What does the public review of a document have to do with cleaning up waste? Even if I review your documents and turn in comments, will my opinions really make a difference?

A. Congress believed that most citizens want to be aware of and participate in decision-making processes that affect their communities. When it created CERCLA (Comprehensive Environmental Response and Compensation Liability Act) in 1980, Congress required agencies to encourage community involvement in the cleanup of hazardous waste sites, especially during the selection of the final remedy. Upon completion of the Feasibility Study (FS), 30 days are set aside for interested citizens to review alternatives presented in the document and provide comments to the issuing agency. However, recognizing that lengthy technical documents can be intimidating, agencies also host a public meeting during the 30-day comment period to provide an understandable explanation of the proposed alternatives and accept comments on the alternatives.

Based on the comments received during the 30-day period, a specific long-term remedy is selected and identified in the Record of Decision (ROD). As the primary decision document, the ROD will substantiate the need for a remedial action, describe the proposed action and justify the action selected. Public comments, responses to those comments and any new information provided during the public review period are detailed in the Responsiveness Summary, a section of the ROD.

If you review the FS and provide written comments to the agency, you could influence the final remedy selected for a site. Although the issuing agency will identify its preferred alternative in the Proposed Plan, the final remedy for a site may be different from the alternative preferred by the agency. So yes, your comments really do make a difference.

U.S. Army Corps of Engineers - St. Louis District
FUSRAP Project Office
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F U S R A P U P D A T E

The St. Louis Sites

Formerly Utilized Sites Remedial Action Program • Summer 2001

(314) 260-3905 www.mvs.usace.army.mil

St. Louis Downtown Site (SLDS)

Plant 6 East Half Progressing

Remedial activities are progressing in the east half of Plant 6 at the St. Louis Downtown Site (SLDS). Under the 1998 SLDS Record of Decision, preparatory work within the designed excavation outline began last fall. Crews installed fencing around the cleanup area and temporarily relocated utility lines to minimize safety risks. By January, the U. S. Army Corps of Engineers (USACE) began removing contaminated soil from the area.

The bulk of the contaminated material was contained beneath the concrete pad, which once covered the footprint of the demolished Buildings 116 and 117. As the removal of this material progressed, additional soil contamination was discovered beneath a layer of clean clay during a routine walkover survey, which is performed to ensure the area meets the 1998 SLDS Record of Decision cleanup criteria.

During the 1800s, landowners in St. Louis typically filled in swampy areas with a mix of readily available waste (cinder and ash) material. A layer of clay was then dumped on top of the waste material. This allowed landowners to temporarily fill the low area and reclaim the land for productive use. As these layers settled, a bowl-like impression formed and more material was added to the area.

Such activities might have occurred at Plant 6, which is located within 1,000 feet of the Mississippi River. Clay does not readily absorb water, which can transport soluble radionuclides. However, the porous, mixed-cinder material may allow water to transport radionuclides to the cinder layer. While the cinder layer beneath may have been contaminated, the layer of clay above appeared to be clean in soil sample data.

Routine walkover surveys (shown here) assist excavation crews with ensuring the cleanup criteria specified in the approved environmental documents are met.

Additional soil borings for the remainder of the plant have been collected for further analysis to ensure the cleanup meets the requirements outlined in the SLDS ROD. Although most of the work has reached no deeper than eight feet below the surface, a remedial activity in one area has reached depths of twenty-two feet. Approximately 7,700 of the estimated 15,500 cubic yards have been removed to date from the 4.5-acre area of Plant 6 East Half.

Plant 1 Nearly Finished

In June, the USACE successfully completed the remediation of all except 10 cubic yards of contaminated material in Plant 1 at SLDS. Over 2,500 cubic yards of material were removed from the Plant 1 area, which was the center of Manhattan Engineer District/Atomic Energy Commission activities during the 1940s and 50s.

Progress in the isolated areas slowed through the winter months when the USACE accommodated the property owner's need to meet regulatory requirements for current operations. The owner is installing temporary overhead piping to carry wastewater from on-going business operations. Since the isolated areas are only large enough to accommodate one construction crew, cleanup activities have to be carefully coordinated.

The remaining isolated area, which contains 10 cubic yards of contaminated material, is the final area in Plant 1 impacted by the property owner's project. Cleanup of this final isolated area of contamination, which is located

Upcoming Events

Information Releases:
Fall Newsletter - September 2001

Upcoming Meetings:
St. Louis Oversight Committee Meeting at the FUSRAP Project Office at 11:30 a.m. on July 13th, August 10th, and September 14th. (Please come if you are available!)

US Army Corps of Engineers
St. Louis District

within one of two entrances to a building essential to current business operations, will be delayed until construction activities in the other entrance are complete.

What's Next?

Once the remaining accessible contamination in Plant 1 is successfully remediated, the USACE will return the plant to Mallinckrodt. In the meantime, crews will continue cleanup activities in Plant 6 East Half and begin work at the SLDS Vicinity Properties.

St. Louis Airport Site (SLAPS)

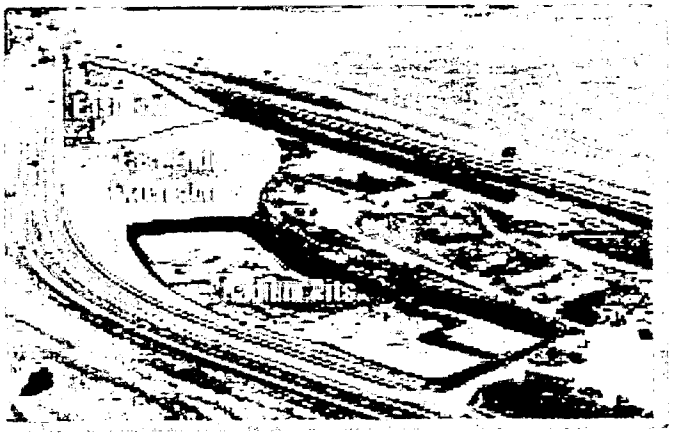
Removal Action Continues

Under the approved 1998 Engineering Evaluation/Cost Analysis for the site, removal activities in the East End Extension are well underway at the St. Louis Airport Site (SLAPS). Over 33,000 cubic yards of contaminated soil have been removed during this phase and another 18,000 cubic yards are anticipated.

The East End Extension consists of a five-acre wedge of contaminated soils nestled between the Radium Pits and East End (see photo below), which the USACE has already cleaned up. It also includes a large portion of the drainage ditch that borders the northern boundary of the site.

Although the majority of the contamination in this work area is within five to nine feet of the surface, some areas require excavation to depths of 15 feet. The USACE anticipates encountering ground-water five feet below the original surface.

Crews completed removal of the upper four feet of contaminated soil from the East End Extension this spring. The remainder of the cleanup in the East End Extension has been divided into smaller sections to enable the USACE to better manage drainage water during the excavation. Black tarps weighted with sandbags cover sections awaiting cleanup and prevent contaminated soils and water from migrating offsite. The tarps also aid in segregating clean rain water from other contaminated water in an effort to minimize water management costs.



Removing contaminated material from the SLAPS East End Extension will help ensure contamination does not migrate to recently cleaned areas such as the East End or the Radium Pits.

By removing contaminated soils from the East End Extension, the USACE can continue to minimize the potential migration of contamination from the site. Excavation activities in this area are expected to continue through the end of this summer.

Modular Building Installed

Personnel at the St. Louis Airport Site (SLAPS) have new offices. The USACE recently completed the installation of a 9,600 square foot modular office building, which was transferred to the USACE when the building was listed as excess government property.

The availability of the building is a result of cleanup work at the Weldon Spring Site Remedial Action Project in St. Charles County nearing completion. The Department of Energy used the building as an office to accommodate its workforce at its site. Authorities verified the structure was free of contamination and it became available for use by another federal agency.

The USACE immediately began negotiations to provide a government-owned building for site personnel rather than leasing office space. By February, pieces of the structure began arriving on site.

Positioned in the recently cleaned Radium Pits area of SLAPS, the building is now occupied by the USACE contractor and onsite USACE oversight personnel. The

Keeping in Touch

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Mail: 8945 Latty Avenue
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Public Speaking - If your group, school, or association would like a presentation on our work, give us a call. We would love to talk to you!

Homepage - To reach our site, set your browser to www.mvs.usace.army.mil/engr/fusrap/home2.htm

If you have any suggestions, questions, or comments, contact our office anytime.

USACE will remove many, but not all, of the previously occupied on-site support trailers. By removing these trailers, other portions of the site will be more readily available for investigation, design and remediation activities.

What's Next?

The USACE will analyze soil samples from the McDonnell Boulevard right-of-way borings and calculate the extent of contamination beneath the road.

Hazelwood Interim Storage Site (HISS)

Pile Removals Near Completion

Under the authority of the 1998 Engineering Evaluation/ Cost Analysis (EE/CA) for the Latty Avenue/Hazelwood Interim Storage Site (HISS), removal of the final stockpile of soil is nearly complete.

The final stockpile is known as the HISS Main Pile due to its size. It once contained an estimated 25,000 cubic yards of soil and debris from property development and improvement projects along Latty Avenue twenty years ago.

Last fall, the USACE successfully removed 4,400 cubic yards of material from the northeastern corner of the pile using a small business contractor. As removal activities continued clockwise around the pile this spring, another 15,800 cubic yards were shipped to an out-of-state licensed disposal facility.

Approximately 4,800 cubic yards of the Main Pile's material remain to be loaded into gondola rail cars and shipped for disposal. Until funding becomes available to finish the process, activities at HISS will be postponed. Currently, the USACE anticipates the removal activities will resume next fiscal year, which begins in October.

What's Next?

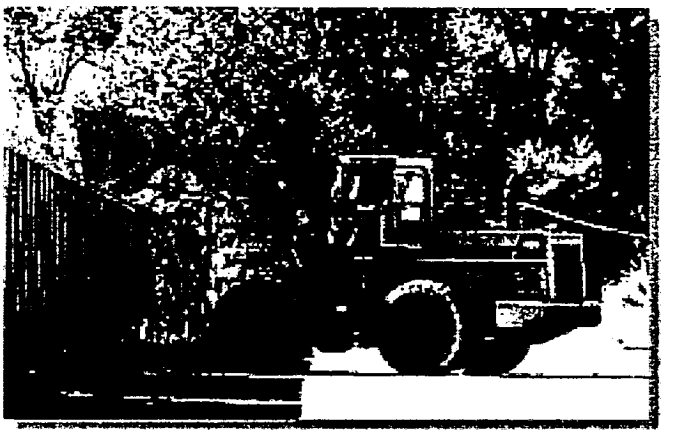
The completion of the Main Pile removal action will be completed when funding becomes available.

North County

FS/PP Costs Re-Evaluated

The public will soon be able to review and submit comments on six alternatives designed to address the presence of Manhattan Engineer District/Atomic Energy Commission-related contamination in northern St. Louis County.

The Feasibility Study and Proposed Plan (FS/PP) for the North County Sites will present remedial alternatives to address contamination present at the following sites: Latty Avenue/Hazelwood Interim Storage Site (HISS); St. Louis Airport Site (SLAPS); the SLAPS Vicinity Properties (VPs); and, Coldwater Creek.



Removal of the final stockpile at HISS is nearly complete. Of the estimated 25,000 cubic yards comprising the Main Pile, roughly 20,200 cubic yards have been removed.

While the Feasibility Study describes each alternative in detail, the Proposed Plan will identify the alternative recommended by the USACE. The final remedy for the North County sites will be selected based on the written comments received during the 30-day public comment period. The final remedy may not be the alternative identified by the USACE as the preferred alternative in the Proposed Plan.

The USACE began incorporating the changes into the FS/ PP based on the formal comments received from the U.S. Environmental Protection Agency and the Missouri Department of Natural Resources on draft copies of the documents last fall. Some of these changes altered the basis for the cost of each alternative. To ensure the accuracy of information presented to the public, the USACE elected to perform a comprehensive review of the reported cost for each alternative.

Once the cost information is reviewed internally, draft copies of the documents will be provided to the U. S. Environmental Protection Agency and the State of Missouri for final review and comment. Once these comments are addressed, the USACE will present the North County FS/PP to the public for review and comment over a 30-day period.

What's Next?

The North County FS/PP will be released to the public for review and comment. Copies of these documents will be available for public review at the FUSRAP Project Office and at select local libraries.

Won't radiological contamination be left behind?

Q *The St. Louis area landscape has changed dramatically since the early days of the Manhattan Project. Developments now cover what was once empty countryside. Will contamination remain after the rest of FUSRAP is finished because of these improvements? What will protect the public then?*

A The St. Louis area has changed. Since the time when St. Louis played a major role in the nation's early nuclear weapons program, structures such as buildings, roadways, bridges and railroads cover what was once only farmland. This statement remains true at the FUSRAP sites.

When structures such as these are present on a FUSRAP site, the USACE evaluates its usage and the potential for contamination beneath the structure. If the structure's current construction is protective of the public's health and safety, residual contamination may remain undisturbed until a capital improvement project (such as a road repair or building demolition) provides the government access to the contamination. Then the contaminated material will be removed.

To develop a process to manage this type of residual contamination, the USACE is working with landowners; railroads; utility companies; and representatives from federal, state and local government agencies to develop a long-term stewardship plan. The goal of this plan is to establish controls needed to ensure the protection of the public and the environment after the cleanup of the FUSRAP contamination is considered complete. These controls will be designed to ensure assistance with obtaining information and/or managing the potential risks attributable to the contamination is readily available. By involving these potentially affected groups early in the development process, the USACE can design a collaborative plan that satisfies their needs.

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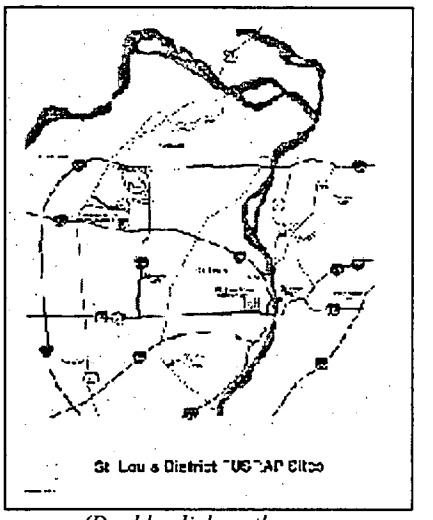
St. Louis FUSRAP Sites

- St. Louis Airport Site (SLAPS)
- Vicinity Properties (VPs)
- Hazelwood Interim Storage Site (HISS)
- St. Louis Downtown Site (SLDS)
- Madison Site



(Double click on the map above to zoom in.)

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[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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Technical point of contact for this page:
Ms. Jacqueline Mattingly, CEMVS-PM-R
Jacqueline.Mattingly@mvs02.usace.army.mil
(314) 260-3924 or (314) 260-3905.

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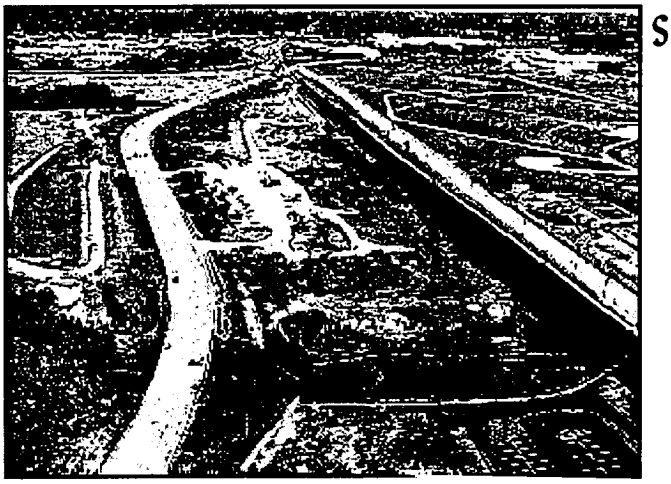

St. Louis Airport Site (SLAPS)

Site Location

SLAPS is a 21.7-acre property in St. Louis County, approximately 15 miles from downtown St. Louis. SLAPS is immediately north of the Lambert-St. Louis International Airport and is bounded by the Norfolk and Western Railroad and Banshee Road on the south, Coldwater Creek on the west, and McDonnell Boulevard and adjacent recreational fields on the north and east.

Land use adjacent to the property is varied. More than two-thirds of the land within a half mile of the property is used for transportation-related purposes (primarily the airport). Land adjacent to the property is generally used for transportation and commercial functions.

Site History

In 1946, the Manhattan Engineer District (MED) acquired the 21.7-acre tract of land now known as SLAPS to store residues from uranium processing at the Mallinckrodt facility in St. Louis.

The uranium processing, conducted under a contract with MED/AEC (Atomic Energy Commission), continued through 1957; the resulting radioactive residues accumulated at SLAPS. These materials included pitchblende raffinate residues, radium-bearing residues, barium sulfate cake, Colorado raffinate residues, and contaminated scrap. Most of the residues were stored in bulk on open ground. Some contaminated materials and scrap iron were buried at the western end and in other parts of the property. To limit direct radiation exposure of the public, the property was fenced to prevent casual entry.

In 1966 and 1967, most of the stored residues were sold and removed from SLAPS. Onsite structures were razed, buried on the property, and covered with 1 to 3 feet of clean fill material. Although these activities reduced the surface dose rate to acceptable levels, buried deposits of uranium-238, radium-226, and thorium-230 remained on the property.

In 1973, the tract was transferred from AEC to the City of St. Louis by quitclaim deed. The 1984 Energy and Water Development Appropriations Act (Public Law 98-3060) authorized the DOE to reacquire the property from the city for use as a permanent disposal site for the wastes already on the property, contaminated soil in the surrounding ditches, and the waste from the nearby Hazelwood Interim Storage Site (HISS). In 1990, the

City of St. Louis offered to transfer the SLAPS property back to the DOE under the condition that a permanent disposal cell for radioactive wastes would not be constructed on the site.

From 1976 through 1978, Oak Ridge National Lab (ORNL) conducted a radiological investigation of SLAPS. This survey indicated elevated concentrations of uranium-238 and radium-226 in drainage ditches north and south of McDonnell Boulevard. In 1981, the drainage ditches were designated for remedial action under FUSRAP. In October 1989, the EPA placed SLAPS on the National Priorities List (NPL), thus requiring the cleanup to proceed under the guidelines of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

In 1990, the St. Louis Board of Aldermen adopted a plan to transfer the SLAPS property to DOE. DOE had previously stated that the property would be used as a storage site for contaminated soil from the cleanup of the St. Louis Sites. After the site was placed on the NPL, DOE worked closely with EPA to determine how the site would be cleaned up and where the contaminated soil would be stored. In July 1990, DOE and EPA signed an agreement that established an environmental review process and schedule for the remediation of SLAPS, SLDS, and the Latty Avenue properties. The process required DOE to evaluate alternatives for waste management, one of which was storage at SLAPS. DOE declined acceptance of the SLAPS property from the city until the environmental review process was conducted.

Until 1997, DOE was the lead agency responsible for the cleanup of SLAPS. In October 1997, FUSRAP was transferred from the DOE to the U.S. Army Corps of Engineers (USACE) by Congress through the Energy and Water Development Appropriations Act. Since that transition was effected, SLAPS has fallen under the responsibility of the St. Louis District USACE.

Site Progress

The U.S. Army Corps of Engineers (USACE) has accomplished a great deal at the St. Louis Airport Site (SLAPS) since the October 1997 transition of the program. Our primary goal for SLAPS is to restrict the release of contaminated materials and minimize their potential impact on human health, wildlife, and the environment. To accomplish this goal, the USACE invited the public to participate in setting the interim cleanup standards for the site. A draft Engineering Evaluation/Cost Analysis (EE/CA) for the site was presented for public review and comment in March 1998. At a public meeting later that month, local citizens supported removing the radioactively contaminated material from the site.

With the public's approval, the USACE set out to achieve this goal. By the end of Fiscal Year 1998 (FY98), a 1,200-foot railspur was successfully constructed at SLAPS to safely increase shipping and disposal capacity. Approximately 3,000 cubic yards of soil were also removed from the site for disposal at an out-of-state facility.

Upon completing the railspur construction, site stabilization efforts began. In FY99, the USACE removed 34,000 cubic yards of material from the East End, the Sedimentation Basin, and adjacent site ditches to an out-of-state disposal facility. Aanother 50,000 cubic yards from the Radium Pits (believed to contain the most contaminated material onsite), and the East End (continued from FY99) were removed in FY00. Combined with the 60,000 cubic yards excavated from the East End Extension and the Radium Pits in FY01, the USACE has removed approximately 144,000 cubic yards from the site as of September 2001.

Fiscal Year 2002 (FY02) Goals

In FY02 the USACE plans to remove 50,000 cubic yards from the midsection of the site. While not exclusively related to SLAPS, the Feasibility Study/Proposed Plan, which identifies alternatives to address contamination at the North County sites (i.e. SLAPS, Hazelwood Interim Storage Site-HISS, and the SLAPS Vicinity Properties), will be released to the public as part of the CERCLA process. The North County Record of Decision (ROD) will identify the final cleanup remedy for these sites. The project completion date is being determined and will depend in part on completing the North County Record of Decision.

For information about the progress of cleanup at these sites, please use the link below to visit our "Newsletters" page. If you don't already have Adobe Acrobat Reader loaded on your computer, you will want to visit the "Links" page first where you can download free software to view documents posted on this web site in Portable Document Format (.pdf). Helpful background information for understanding the low-level radiological cleanup process is available through our "Background" page.

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Jacqueline.Mattingly@mvs02.usace.army.mil
(314) 260-3924 or (314) 260-3905.

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St. Louis Airport Site Vicinity Properties (SLAPS VPs)

Site Location

The SLAPS VPs are located in the cities of Hazelwood and Berkeley, Missouri. These properties (totaling approximately 80 vicinity properties) include Coldwater Creek and its vicinity properties to the west; adjacent ball fields to the north and east; Norfolk and Western Railroad properties adjacent to Coldwater Creek; Banshee Road to the south; ditches to the north and south; and St. Louis Airport Authority property to the south. Also included are the transportation routes (haul roads) at the following locations: Latty Avenue, McDonnell Boulevard, Pershall Road, Hazelwood Avenue, Eva Avenue, Frost Avenue, and other miscellaneous vicinity properties.

Site History

Low-level radioactive contamination at the SLAPS VPs is linked to both the St. Louis Airport Site and the Latty Avenue Properties. In 1966, Continental Mining and Milling Company of Chicago purchased uranium-bearing residues from MED and removed them from SLAPS. The company placed the residues in storage at Latty Avenue under an Atomic Energy Commission license. Over time, residues migrated from other sites or were deposited as the residues were hauled along transportation routes, contaminating the soils and sediments of the vicinity properties. In 1996 the volume of impacted soils, which are owned by commercial enterprises, private residences, or local governments, was estimated at 195,000 cubic yards. Of the 78 properties comprising the St. Louis Airport Site Vicinity Properties (SLAPS VPs), cleanup activities have been completed or substantially completed on nearly half of the properties.

Site Progress

In FY98, the U. S. Army Corps of Engineers (USACE) removed and backfilled 450 cubic yards of contaminated soil and concrete to support of the City of Florissant as it upgraded the St. Denis Bridge. Our support enabled the municipality contractor to complete the upgrade of the bridge over Coldwater Creek.

The USACE also substantially completed the removal, disposal and backfill of 550 cubic yards of soil in FY99 for Vicinity Property 56. The St. Louis Utility Response Plan was also renegotiated with all utilities affected by

the footprint Manhattan Engineer District/Atomic Energy Commission (MED/AEC) contamination. All affected utility companies were also trained and supported.

Contaminated soils were removed from a portion of Vicinity Property 38 in FY00. Removing this soil permitted the USACE to relocate the Project Offices from the Hazelwood Interim Storage Site (HISS).

In FY01, the USACE evaluated 30 of the North County vicinity properties remediated by the Department of Energy to determine whether or not further action would be warranted on these properties. This document is currently being reviewed by representatives of the Environmental Protection Agency and Missouri Department of Natural Resources.

Fiscal Year (FY) 2002 Goals

While not exclusively related to the Vicinity Properties, the Feasibility Study/Proposed Plan, which identifies alternatives to address contamination at the North County sites (i.e. St. Louis Airport Site, Hazelwood Interim Storage Site, St. Louis Airport Site Vicinity Properties), will be released to the public in FY02 as part of the CERCLA process. The North County Record of Decision (ROD) will identify the final cleanup remedy for these sites.

Successful completion of the North County ROD will enable us to complete characterization, design, cleanup activities on four vicinity properties containing 2,500 cubic yards of contaminated material. Support will continue to be provided to utilities per the St. Louis Utility Response Plan. The project completion date is being determined and will depend in part on completing the North County Record of Decision.

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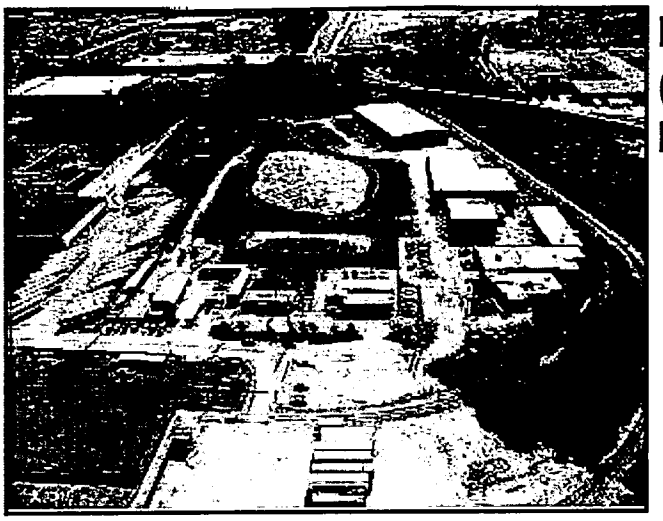

Hazelwood Interim Storage Site (HISS)/Latty Avenue Vicinity Properties (Latty VPs)

Site Location

The Hazelwood Interim Storage Site (HISS) and Latty Avenue Vicinity Properties (Latty VPs) are in northern St. Louis County within the city limits of Hazelwood. HISS is located at 9170 Latty Avenue, 3.2 miles northeast of the control tower of the Lambert-St. Louis International Airport and approximately a half mile northeast of SLAPS. A chain link fence surrounds the site, which is privately owned. Six VPs are adjacent to Latty Avenue between Coldwater Creek and Hazelwood Avenue; some are within the corporate limits of the City of Berkeley. Land use near the properties is primarily industrial; other uses are transportation-related, commercial, and residential. The residential areas nearest the property are approximately 0.3 mile to the east in Hazelwood. The residences in Berkeley are southeast of the properties.

Site History

In early 1966, ore residues and uranium- and radium-bearing process wastes that had been stored at SLAPS were purchased by the Continental Mining and Milling Company and moved to a storage site on Latty Avenue. These wastes had been generated at the Mallinckrodt plant in St. Louis from 1942 through the late 1950s under contracts with MED/AEC. Residues on the property at that time included 74,000 tons of Belgian Congo pitchblende raffinate containing approximately 13 tons of uranium; 32,500 tons of Colorado raffinate containing roughly 48 tons of uranium; and 8,700 tons of leached barium sulfate containing about 7 tons of uranium. The Commercial Discount Corporation of Chicago, Illinois, purchased the residues in January 1967. Much of the material was then dried and shipped to Canon City, Colorado. The material remaining at the Latty Avenue storage site was sold to Cotter Corporation in December 1969. From August through November 1970, Cotter Corporation dried some of the remaining residues and shipped them to its mill in Canon City. In December 1970, an estimated 10,000 tons of Colorado raffinate and 8,700 tons of leached barium sulfate remained at the Latty Avenue properties.

In April 1974, the Nuclear Regulatory Commission (NRC) was informed by Cotter Corporation that the remaining Colorado raffinate had been shipped in mid-1973 to Canon City without drying and that the leached barium sulfate had been diluted with 12 to18 inches of soil and transported to a landfill in St. Louis County.

Before the present owner occupied the property, Oak Ridge National Labs (ORNL) performed a radiological characterization. Thorium and radium contamination in excess of federal guidelines was found in and around

the buildings and in the soil to depths of 18 inches. Subsequently, in preparing the property for use, the owner demolished one building, excavated portions of the western half of the property, paved certain areas, and erected several new buildings. Material excavated during these activities (approximately 13,000 cubic yards) was piled on the eastern portion of the property.

An additional 14,000 cubic yards of contaminated soil, from cleanup along Latty Avenue in 1984 and 1985 and from an area used for office trailers and a decontamination pad, was added to the pile. Approximately 4,600 cubic yards of contaminated soil was stored adjacent to the existing pile; the soil had been excavated during road and drainage improvements along Latty Avenue in support of a municipal storm sewer project. A total of approximately 32,000 cubic yards of contaminated soil is stored at the property.

In 1981, Oak Ridge Associated Universities conducted a radiological characterization of the pile and surveyed portions of the northern and eastern vicinity properties for radioactivity. Levels of contamination (principally thorium-230) similar to those on the pile were found in both areas. As a follow-up to this survey, ORNL conducted a detailed radiological survey of the northern and southern shoulders of Latty Avenue in January and February 1984; results indicated that contamination in excess of federal guidelines was present along the road beyond Hazelwood Avenue. Properties adjacent to HISS were also found to be contaminated in excess of guidelines.

A decontamination research and development project was conducted, under the authority of the 1984 Energy and Water Appropriations Act (Public Law 98-360), at our sites throughout the nation, including 9200 Latty Avenue and properties in its vicinity. Subsequently, Congress added the Latty Avenue properties to FUSRAP in order to expedite decontamination.

In October 1989, the Environmental Protection Agency (EPA) placed the HISS properties on the National Priorities List (NPL). This list required the cleanup to proceed under the guidelines of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA).

In July 1990, the Department of Energy (DOE) and EPA Region VII signed a Federal Facilities Agreement that established a procedure and schedule for remediation of the Latty Avenue properties.

In 1994, two citizen committees were established for the purpose of working closely with FUSRAP representatives and serving as a voice of the people. These organizations are the St. Louis Radioactive and Hazardous Waste Oversight Committee and the City of St. Louis Mayor's Advisory Task Force on Radioactive Waste. In 1994, the St. Louis Sites Remediation Task Force (SLSRTF) was made up of members from the above two groups plus other community stakeholders. In 1996, the SLSRTF issued a report detailing the community's recommendations for cleanup and removal of contaminants in St. Louis under FUSRAP. Eventually, in 1997, the St. Louis Oversight Committee was formed. These organizations have developed strong working relationships with FUSRAP and have been active participants in the decision-making process.

In 1996, the owner of 9150 Latty Avenue, located to the east of HISS, expanded the facility and stockpiled about 8,000 cubic yards of contaminated soil. This stockpile, known as the Eastern Pile, is located on the southwestern corner of the property.

Until 1997, DOE was the lead agency responsible for the cleanup of HISS/Latty Avenue VPs. In October 1997, FUSRAP was transferred from the DOE to the U. S. Army Corps of Engineers (USACE) by Congress through the Energy and Water Development Appropriation Act. Since that transition was effected, SLAPS has fallen under the responsibility of the St. Louis District USACE.

Site Progress

Since the transition of the program in Fiscal Year 1998 (FY98), the U.S. Army Corps of Engineers (USACE) has made significant progress at the Hazelwood Interim Storage Site (HISS). Our primary goal for HISS is to restrict the release of contaminated materials and minimize their potential impact on human health, wildlife, and the environment. A draft Engineering Evaluation/Cost Analysis (EE/CA) for the site was presented for public review and comment in March 1998. At a public meeting later that month, local citizens supported three specific actions at HISS: 1) to increase shipping capabilities for the North County area, 2) to remove the site storage piles, and 3) to remove accessible contaminated soils on two Latty Avenue properties.

By March 1999, the USACE successfully completed construction of the HISS/Latty Avenue railspur. The new railspur is capable of holding eleven railcars or 770 cubic yards of material. It has enabled us to double our

shipping capacity and has eliminated the need to transport contaminated soil from the site by truck across heavily trafficked roads in St. Louis County.

Using an 8(a) Woman-Owned Small Business, the USACE successfully removed 19,400 cubic yards of soils and debris from the site in FY00. Removal of this material resulted in the successful disposal of the two East Piles, a portion of the HISS Supplemental Pile, and the spoil piles from the railspur construction. In FY01, another 26,500 cubic yards were removed from the remainder of the Supplemental Pile and a portion of the Main Pile and sent to an out-of-state disposal facility.

Fiscal Year 2002 (FY02) Goals

In FY02 the USACE anticipates removing the remainder of the HISS Main Pile (9,500 cubic yards) and completing subsurface characterization of the site. Air and water resources discharged from the site will be continuously monitored and managed to ensure our operations are protective to human health and the environment. Finally, while not exclusively related to HISS, the Feasibility Study/Proposed Plan identifying alternatives for the final cleanup of North County sites (HISS, St. Louis Airport Site-SLAPS, and the SLAPS Vicinity Properties) will be released to the public as part of the CERCLA process. The North County ROD will identify the final cleanup remedy for these sites. The project completion date is being determined.

For information about the progress of cleanup at these sites, please use the link below to visit our "Newsletters" page. If you don't already have Adobe Acrobat Reader loaded on your computer, you will want to visit the "Links" page first where you can download free software to view documents posted on this web site in Portable Document Format (.pdf). Helpful background information for understanding the low-level radiological cleanup process is available through our "Background" page.

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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Ms. Jacqueline Mattingly, CEMVS-PM-R
Jacqueline.Mattingly@mvs02.usace.army.mil
(314) 260-3924 or (314) 260-3905.

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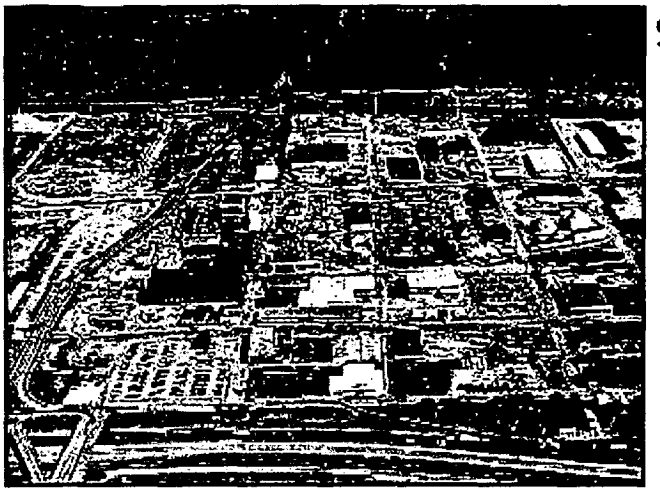

St. Louis Downtown Site (SLDS)

Site Location

The St. Louis Downtown Site (SLDS) is located in an industrial area on the eastern border of St. Louis, approximately 300 feet west of the Mississippi River. The property is about 11 miles southeast of the St. Louis Airport Site and the Lambert-St. Louis International Airport. SLDS encompasses nearly 45 acres and is presently owned and operated by Mallinckrodt Inc. (formerly Mallinckrodt Chemical Works). The property includes many buildings and other facilities involved in chemical production.

Site History

From 1942 to 1957, under contracts with the Manhattan Engineer District (MED) and the Atomic Energy Commission (AEC), the site was used for processing various forms of uranium compounds, for machining and for recovery of uranium metal. In 1946 the manufacture of uranium dioxide from pitchblende ore began at a newly constructed plant. The pitchblende ore was acquired from the African Metals Company. Because this company retained ownership of the radium content of the ore, it was required that radium-226 and its daughter products be extracted along with the lead content. The radium and lead were precipitated, and the precipitate was sent to the Lake Ontario Ordnance Works in Lewiston, New York and to the Feed Material Production Center in Fernald, Ohio for storage.

Decontamination was performed at two plants from 1948 through 1950. In 1951, the plants were released to Mallinckrodt for use with no radiological restrictions. From 1950 to 1951, an onsite plant was modified and subsequently used as a metallurgical pilot plant for uranium metal operation until it was closed in 1956. This plant was released to Mallinckrodt in 1962 after decontamination work was conducted.

The buildings formerly used under the AEC contract are currently owned by Mallinckrodt. At the time of the MED/AEC operations, the plants were owned by Mallinckrodt and/or leased by AEC. Certain buildings in those plants were also constructed for and owned by AEC. From 1942 through 1945, uranium processing was conducted at Plants 1, 2, and 4. In 1945 operations at Plant 2 were terminated. Some uranium metallurgical research continued at Plant 4 through 1956. From 1945 to 1957, uranium concentrate or ore was processed in buildings at Destrehan Street (Plants 6, 6E, and 7). All uranium extraction operations at the Destrehan Street location ceased in 1957.

When the St. Louis MED/AEC operations were terminated, buildings owned by the government were either demolished or transferred to Mallinckrodt as part of the settlement. Several plants within the Mallinckrodt facility, containing about 60 buildings, were involved; fewer than 20 of these buildings remain. A number of new buildings have been constructed on the property; since 1962, they have been used for the commercial production of chemicals.

In 1994, two committees were established for the purpose of working closely with FUSRAP representatives and serving as a voice of the people. These organizations are the St. Louis Radioactive and Hazardous Waste Oversight Committee and the City of St. Louis Mayor's Advisory Task Force on Radioactive Waste. In 1994, the St. Louis Sites Remediation Task Force was made up of members from the above two groups plus other community stakeholders. In 1996, the St. Louis Site Task Force issued a report detailing the community's recommendations for cleanup and removal of contaminants in St. Louis under FUSRAP. Eventually, in 1997, the St. Louis Oversight Committee was formed from members of these organizations. These organizations have developed strong working relationships with FUSRAP and have been active participants in the decision-making process.

Until 1997, the U.S. Department of Energy (DOE) led the cleanup of the SLDS as part of its responsibility for the cleanup of FUSRAP sites. In October 1997, Congress through the Energy and Water Development Appropriations Act transferred FUSRAP from the DOE to the U. S. Army Corps of Engineers (USACE). Since that transition was effected, SLDS has fallen under the responsibility of the St. Louis District USACE.

Site Progress

The U. S. Army Corps of Engineers (USACE) has made remarkable progress since the transfer of the program under the 1997 Energy and Water Development Appropriations Act. Within six months, alternatives for the final cleanup of the St. Louis Downtown Site (SLDS) were presented to the public. By October 1998, the USACE issued the final SLDS Record of Decision (ROD) identifying the selected cleanup alternative for accessible soils on the site.

Remedial work began in FY99 with two primary objectives: to develop the site's cleanup plan, and to minimize the impact of cleanup efforts on the daily business operations of local businesses. Under the SLDS ROD, the USACE successfully completed the cleanup of an area known as the City Properties, which are located just east of Mallinckrodt along the Riverfront Trail under the SLDS ROD. Over 4,500 cubic yards of contaminated soil were removed from the City Properties and shipped out-of-state to a licensed disposal facility.

The first significant subsurface remedial action at Mallinckrodt began in Plant 2 in FY99. Using pre-design characterization sampling and precision excavation methods, the USACE was able to better define the volume of contaminated material, which resulted in cost avoidance savings. Remedial work stopped, however, when unexploded Civil War ordnance was found during excavation activities in August.

Historians believe the ordnance originated from a foundry established in 1846. Buck's Stove & Range Company, which manufactured cast iron stoves, was originally located on the Plant 2 site. After the Civil War, many weapons were decommissioned and sold as scrap iron. Authorities speculate the foundry, which would have used the iron in the rounds for manufacturing stoves, discovered the live rounds and buried them rather than disarming them. In 1935 Mallinckrodt purchased and demolished the foundry and disposed of hundreds of cannonballs left over from the civil war, unaware of the buried rounds. By 1941 buildings were erected on that same site to support MED/AEC activities during World War II. The rounds resurfaced more than sixty years after the demolition of the foundry.

Once safety and health plans were in place, remedial activities continued and Plant 2 cleanup activities were completed in FY00. Approximately 6,000 cubic yards were removed in FY00 from Mallinckrodt's Plant 1 and 2. In FY01, nearly double that amount was removed from Plant 1, Plant 6 East and one vicinity property. As of September 2001, roughly 29,000 cubic yards of contaminated material have been removed from SLDS.

Fiscal Year 2002 (FY02) Goals

In FY02 the USACE anticipates completing remedial designs for and removing approximately 10,000 cubic yards from Mallinckrodt West, Plants 6 East and 7, and four vicinity properties. Under the SLDS Record of Decision, the final cleanup of accessible soils is expected to be completed in FY06. In the meantime, work has begun to develop a Feasibility Study/Proposed Plan for inaccessible soils beneath structures such as railways, roadbeds and production buildings on the site.

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[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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Jacqueline.Mattingly@mvs02.usace.army.mil
(314) 260-3924 or (314) 260-3905.

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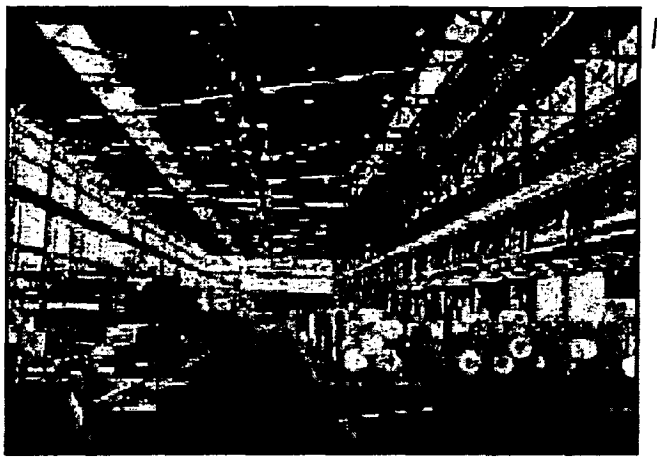

Madison Site

Site Location

The Madison Site is located within an active industrial site across the Mississippi River from SLDS in Illinois. The site is located at College and Weaver Streets in Madison. It consists of two buildings owned by a component manufacturer in Madison, Illinois.

Site History

The Madison Site was part of an operating facility formerly known as Dow Chemical Company, a division of Dow Metal Products. The firm worked with Mallinckrodt Chemical to support Atomic Energy Commission needs during the late 1950s and early 1960s. A uranium extrusion and rod-straightening facility was operated at the site. A 1989 survey indicated Building 6 contained low-level radioactive contamination in dust located on overhead surfaces. About two cubic yards of contaminated uranium/thorium dust exceeding guidelines was identified from MED/ AEC operations on roof beams at the facility. In 1992, the Madison Site was added to the FUSRAP list of sites slated for cleanup. The FUSRAP site is located within a limited area of an active facility. The plant is in heavy production use, extruding aluminum and magnesium metal. As cleanup is ultimately necessary, the operator is working with USACE to identify an available time frame for cleanup. It is the intent of the facility owner and USACE that production operations will not be disrupted during cleanup, and that the safety of maintenance and production personnel continues to be protected.

Site Progress

With a $500,000 budget for Fiscal Year (FY) 1999, the U. S. Army Corps of Engineers (USACE) developed a Characterization Report for the Madison Site. Samples were taken to validate existing site data, define site contamination and update the risk associated with it. The Characterization Report confirmed the presence of contamination associated with MED/AEC activities in dust on overhead surfaces in two buildings, while the floors and equipment were below criteria.

In February 2000, four remedial alternatives were identified to address the contamination on overhead surfaces at the Madison Site. These alternatives were presented to the public for review and comment in a Remedial

Investigation / Feasibility Study (RI / FS) and Proposed Plan. Based on the comments received from the general public and regulatory agencies, the USACE selected "Decontamination of Accessible Surfaces" (Alternative 4) as the final remedy for the site.

The Madison Site Record of Decision (ROD) outlined the final cleanup method selected to address contamination at the site. Comments received from the public on the Feasibility Study and the USACE's responses to those comments were incorporated into a section of the the Madison Site ROD title the Responsiveness Summary. Upon approval of the Madison Site ROD, the USACE began decontamination activities in June 2000.

Uranium-contaminated dust was vacuumed from overhead structrues over a 12-day period. By mid-July, independent surveys confirmed that the USACE had successfully decontaminated the Madison Site. Forty cubic yards of contaminated dust and materials were sent to a licensed, out-of-state facility for disposal.

The current condition of the site is documented in the Madison Site Post Remedial Action Report, which is awaiting final approval. This report documents how the current condition of the decontaminated areas meet the criteria established in the Madison Site ROD. Once the Madison Site Post Remedial Action Report and the declaration of remedial action completion is approved, it will be removed from the list of active FUSRAP sites.

Fiscal Year 2002 (FY02) Goals

In FY02, Madison will be removed from the list of active FUSRAP sites.

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[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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Jacqueline.Mattingly@mvs02.usace.army.mil
(314) 260-3924 or (314) 260-3905.

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Links to Other Websites

To link into a site, click on the red button to the left of your selection.

FUSRAP

The national webpage for the Formerly Utilized Sites Remedial Action Program (FUSRAP).

ADOBE

Many of the documents posted on this FUSRAP public information webpage are in Portable Document Format (.pdf), developed by Adobe Systems Incorporated. In order to read and print these documents, you must download the free Adobe Acrobat Reader from this link.

MDNR

The Missouri Department of Natural Resources (MDNR) is the designated state agency whose responsibilities are to evaluate proposals, recommendations, and plans submitted by USACE in accordance with state or federal laws, regulations, policies, and guidance. MDNR is also providing independent field oversight of remedial activities carried out at Missouri FUSRAP sites.

EPA

The Environmental Protection Agency (EPA) is involved in the initiation, development, selection, and implementation of the remedial actions taken at FUSRAP. Under a Federal Facilities Agreement (FFA) negotiated with EPA Region 7, the St. Louis District has been designated the lead agency for the four Missouri FUSRAP Sites. Work on the Madison Site is being accomplished with the oversight of EPA Region 5. The EPA provides project oversight to ensure compliance requirements are met, schedules are achieved and remedial actions are of a high quality standard.

IDNS

The St. Louis District is working with the Illinois Department of Nuclear Safety (IDNS) on the Madison Site. Similar to the EPA's role in this FUSRAP Site, the IDNS is involved in a consultative role in the initiation, development, selection, and implementation of the remedial response to be undertaken at the Madison Site. IDNS is responsible for reviewing all available data and for ensuring state regulations are integrated into the remedial action process.

For information about the progress of cleanup at the FUSRAP St. Louis sites, please use the link below to visit our "Newsletters" page. Helpful background information for understanding the low-level radiological cleanup process is available through our "Background" page.

[Background] [Contents] [Sites] [Newsletters] [Links] [Home]

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St. Louis Oversight Committee

Who are they and what do they do?

The St. Louis Oversight Committee is a group of community leaders which serve in consultative and participatory roles with the cleanup of the St. Loius FUSRAP Sites. As a consultant, the Committee provides comments, recommendations, and constructive criticism for the U.S. Army Corps of Engineers (USACE) in its efforts to clean up the these sites. As participants, members of the Committee are actively involved in their neighborhoods, businesses, and governmental units. They assist the USACE by clarifying community concerns and conveying information to other members of the community to assure that residents are fully informed about cleanup activities. The Oversight Committee ensures that residents' questions are answered to the fullest extent possible.

The USACE values the assistance that this group provides in facilitating communication with the public (local residents, government officials and interest groups). Recognizing that only through understanding and knowledge of FUSRAP activities can rumors and misinformation be minimized, the USACE hosts monthly meetings, which are open to everyone, at the FUSRAP Project Office to discuss progress at the sites. The presentation and minutes from these meetings are updated each month and posted below.

Individuals interested in contacting the Oversight Committee may do so by calling the chairman, Mr. Richard Cavanagh at (314) 615-1635.

Members of the St. Louis Oversight Committee (in no particular order) are: Mr. Richard Cavanagh, Ms. Jan Titus, Ms. Sally Price, Mr. Tom Binz, Mr. John Langerak, Mr. Tom Manning, Mr. James Grant, Ms. Anna Ginsburg, Mr. Bill Brandes, and Ms. Nancy Lubiewski.

Presentation of Recent Activities & Chairman's Notes

- August 2001 Presentation
- August 2001 Chairman's Notes (.pdf file)

Upcoming Meetings!

Upcoming meetings are currently scheduled for September 14th, October 12th and November 9th. Meetings start at 11:30 a.m. and usually continue until 12:30 p.m. Please join us at the FUSRAP Project Office on 8945 Latty Avenue to find out what's happening on the project!

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Last modified: 09/07/2001 14:16:17

FUSRAP Document Management System

Year 00 **ID** 2843

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Operating Unit St. Louis Sites **Site** **Area** **MARKS Number** FN:1110-1-8100g

Primary Document Type Public Affairs/Community Relation **Secondary Document Type** Fact Sheets/Newsletters

Subject or Title
FUSRAP St. Louis Sites Web Pages last modified 9/10/01

Author/Originator Jacqueline Mattingly **Company** PM-R **Date** 9/10/2001

Recipient (s) CEMVS Internet Pages **Company (-ies)** **Version** Final

Original's Location Central Files **Document Format** Paper **Confidential File?** ☐

Include in which AR(s)?

☒ North County
☐ Madison
☐ Downtown
☐ Iowa

Comments

SAIC number

Bechtel ID

ETL 8.11

Filed in Volume 8