

## MINUTES

St. Louis Site Remediation Task Force  
Priorities Working Group

September 27, 1995 Meeting

Berkeley City Hall  
Berkeley, MissouriParticipants Attending

Lori Batton, City of Berkeley  
Tom Binz, Laclede Gas  
Jim Carter, Lambert Airport  
Kay Drey  
Norm Erickson  
Jack Fraunhoffer, Mallinckrodt Chemical  
Jean Montgomery, City of Berkeley

Support

Jim Dwyer, Facilitator  
Sarah Snyder, FUSRAP

Agenda ItemMinutesDetermination*Call to Order*

Jim Dwyer called the meeting to order at 9:45 a.m.

He introduced Jim Carter from Lambert Airport, who attended the meeting for Jan Titus, and Norm Erickson, a resident of Berkeley, who attended the meeting at the request of Jean Montgomery.

Mr. Erickson said he represents several firms that provide equipment and services at various DOE sites including Hanford, Rocky Flats, Fernald, Mound, Los Alamos, and Idaho National Engineering Laboratory (INEL). He said his company provides containers and liners, among other specialty products, for waste handling and transportation.

*Approval of  
Minutes*

Mr. Dwyer then asked for comments on the draft minutes from the September 6, 1995 meeting.

Mr. Carter said Jan Titus requested that she be added to the list of attendees.

Jack Fraenhoffer said the statement about the sum-of-the-ratios values should read " $2 \pm$  (i.e., two times permissible levels)" instead of " $\pm 2$ ." The working group agreed.

Kay Drey said the heading "Sanitary Landfills" should read "Sanitary Waste Landfills." She also noted that the word "values" on page 3 should be "value." The working group agreed with the changes.

Ms. Drey also questioned a statement attributed to Mr. Dwyer in the minutes concerning her recommendation that DOE establish a fully staffed field office for the St. Louis Site. She said she did not recall hearing the reply in the minutes. Mr. Dwyer said he would rework the language and distribute revised draft minutes to the working group for its review.

Ms. Drey also said she still finds the explanation about the sum-of-the-ratios confusing. She said it seems that DOE only calculates two isotopes, instead of all, in the sum-of-the-ratios formula. Mr. Dwyer said the working group would ask Dave Miller for an explanation about what isotopes are used in the calculations.

*Status of Ballfields  
Subcommittee*

Mr. Dwyer noted Josh Richardson's absence and asked whether Lori Batton or Jean Montgomery could speak on the status of the ballfields subcommittee. Ms. Montgomery said Mr. Richardson had been very busy and that there hasn't been a

subcommittee meeting yet.

Mr. Dwyer reminded the working group of the subcommittee's importance and encouraged prompt action to move this effort forward.

Ms. Drey said she received from Jan Titus two contour maps indicating noise levels around the airport. She noted that the 1994 noise exposure contour map shows noise levels at 70 decibels around the ballfields. The 1999 noise contour map shows noise levels projected to be 65 decibels. Mr. Dwyer said the group needs to address the issue of acceptable noise levels for recreational use in discussing the ballfields proposal. He also said the subcommittee needs to discuss whether there are any alternative sites available for consideration.

Ms. Drey said the airport is not planning to release any land it purchased for noise abatement until at least 1997. These tracts are not presently available for development and may never be, she added.

*Coldwater Creek  
Panel*

Ms. Drey noted for the record that the working group did not have an opportunity to review the questions posed to the Coldwater Creek Panel. Mr. Dwyer indicated that a copy of the three questions developed by the working group and framed by Dave Miller (SAIC) will be forwarded to working group participants.

Tom Binz, Ms. Drey, and Mr. Dwyer reported on the September 15 meeting of the Coldwater Creek Panel. They all agreed that Dave Miller did an outstanding job presenting the information about the site to the panel.

Mr. Frauenhoffer asked if the panel received information about the models calculating the flow and transport of contaminants. Mr. Binz said Mr. Miller's presentation covered that.

Ms. Drey distributed the written testimony she submitted to the Coldwater Creek Panel. (ATTACHMENT A)

Mr. Dwyer said the second meeting of the panel is scheduled for October 5 at the Stouffer Concourse Hotel. He said he would provide an agenda when he received one from the panel's chair.

*Sanitary Waste  
Landfills*

Ms. Drey said she didn't think the working group should use the term "sanitary waste landfills" in describing a potential local disposal option. She said she believes this is misleading and that "hazardous waste landfill" may be more appropriate.

Ms. Drey said she also believed that spending money to search for a nearby sanitary waste landfill that would take the less-contaminated St. Louis Site soils and debris would be a waste of money, energy and time. She also read an excerpt from page 3-41 of the Feasibility Study/Environmental Impact Statement for the St. Louis Site:

"Enhanced soil washing can potentially achieve the goal of fractionating contaminated soils into less contaminated and more contaminated groupings for ultimate disposal. It should be noted that, because there is no below regulatory concern level for radioactive waste, the less contaminated soils would still be radioactive waste." (emphasis added)

Mr. Frauenhoffer said even disposing of low-level materials in a hazardous waste landfill

would be less expensive than shipping to Utah. However, he said he doesn't want to limit any options that may be available, and therefore does not oppose using the term "sanitary waste landfills."

Mr. Binz said exploring a local disposal option is a major task. He said the first step is to determine what kind of waste you wish to dispose of. Then he said there is a whole chain of questions, the answers to which will determine where you may dispose of the waste materials. Right now, the known answers to questions about FUSRAP waste point only to disposal at Envirocare.

He also cautioned members of the working group that approval of a local disposal option would not be accomplished quickly, if at all.

*Miscellaneous  
Business*

Ms. Batton asked if the working group were interested in more information about Dawn Mining, the newly-permitted disposal facility in Washington state. Mr. Frauenhoffer said that while Dawn Mining's disposal fees were less than Envirocare's, the facility is not equipped to receive shipments by rail. Intermodal transportation would add to the overall cost of disposal and might exceed any savings from the lower disposal fee, he said.

Ms. Batton also asked if Donovan Larson had been named to the Task Force. Mr. Dwyer said he just received a letter with that request. He said he would talk to the County Executive about appointing Mr. Larson to the Task Force.

Ms. Drey asked that the issue of Task Force membership be put on the agenda for the working group. Mr. Frauenhoffer pointed out that the issue of membership should be taken to the full Task Force.

Ms. Batton said she would also like the Task Force to reconsider its meeting day and time. She said Ms. Montgomery could not attend Task Force meetings because of conflicting obligations with her job.

Ms. Drey said she was concerned about the lack of attendance by some Task Force members, in light of the important decisions that would soon be made by the group.

Mr. Dwyer said he would put the issue on the agenda for the October 10 Task Force meeting.

Mr. Binz asked if the schedule had been changed for the final report. Mr. Dwyer said it had and that the final report is anticipated in the spring, in order to allow time for the Coldwater Creek Panel to complete its investigation and to allow adequate time for public review and comment on the recommendations.

The next meeting of the Priorities Working Group is tentatively scheduled for October 11, 1995, at noon until 2 p.m. at Mallinckrodt Chemical, Inc., 16305 Swingley Ridge, Chesterfield. The meeting adjourned at 11:49 a.m.

Approved December 6, 1995

-- from Kay Drey, a member of the  
St. Louis Site Remedial Action  
Task Force. 9/15/95.

SOME FACTS AND QUESTIONS ABOUT THE ST. LOUIS AIRPORT SITE ---  
for the Coldwater Creek geology panel.

Background information:

On April 24, 1942, scientists and engineers at the Mallinckrodt Chemical Works, near downtown St. Louis, began to determine how to purify uranium in tonnage quantities for use in the production of the atomic bomb (as a part of the Manhattan Project). At that time only a few grams of pure uranium metal existed anywhere. Mallinckrodt achieved success in only fifty days.

All the uranium used in the Fermi pile for the world's first self-sustaining nuclear chain reaction -- below Stagg Field at the University of Chicago, in December 1942 -- was purified by Mallinckrodt.

In 1946 the Army condemned a 22-acre tract of farmland along the northern boundary of the Airport for the storage and disposal of residues and wastes from the processing of uranium. Starting at that time, radioactive materials were trucked to the site around the clock -- in such forms as sludges (raffinates), pulverized solids, liquids and scrap. A bulldozer was used to spread out and flatten the piles at night. Disposal of residues and wastes continued at SLAPS until 1957 when the Mallinckrodt Uranium Division was moved to a new facility -- at Weldon Spring in St. Charles County. (Mallinckrodt continued processing uranium and thorium for nuclear weapons at Weldon Spring for another ten years, or for a total of about 25 years).

A primary source of the uranium processed at the St. Louis Downtown Site was Belgian Congo (Zaire) pitchblende. Whereas the U.S. Atomic Energy Commission was willing to purchase any ore containing at least one-tenth of one percent uranium, the Belgian Congo ore was 60-65% pure. Uranium-235 is found in nature at only 0.7%, compared with uranium-238's natural abundance of 99%. Therefore, because of the high quality of the ore processed in St. Louis, daughter products of uranium-235, which are not detected elsewhere in the United States in natural soils, are found in the St. Louis Site wastes (such as actinium-227 and protactinium-231, two particularly radiotoxic substances. Another U-235 daughter, radon-219, is also found here.)

Radium residues, relatively a small percent of the volume that was trucked to the site, were kept isolated in an open concrete storage pit at the Airport Site for eventual shipment to Belgium. They were ultimately shipped instead to the Fernald uranium feed materials plant near Cincinnati; some went to an abandoned ordnance works at Niagara Falls. (The Belgian firm no longer owns the

residues. Incidentally, they are the hottest wastes at Fernald!)

Some other Airport Site materials were sent elsewhere. For example, for five months, starting in late 1966, some of the materials were dug up and trucked about one-half mile to Latty Avenue in Hazelwood. Most of those materials were kiln-dried there and then sent by train to the Cotter Corporation (a Commonwealth Edison mining subsidiary) in Canon City, Colorado, for the retrieval of potentially usable materials. (In 1973 some of the remaining Latty Avenue materials were trucked to the West Lake Landfill in Bridgeton, next to Earth City, and were illegally dumped there.)

While some of the Airport Site materials were dispersed to other locations, a large but unknown volume of uncontained radioactive waste remains on site -- a mixture of liquids, fine sand, greasy mud, and solid wastes, according to one of the six truck drivers who transported the materials from the Downtown Site to the Airport, around the clock, over a twelve-year period (1946-1958).

Radioactive contamination associated with spillage over the years from dump trucks and rail cars has been discovered in St. Louis City and County along all corridors surveyed to date.

#### The Airport Site's impact on the human environment:

A. Evidence that radioactive materials remain on site includes air, water, and soil radiological surveillance data.

1. Re air: "Based on our review, eight representative [Formerly Utilized Sites Remedial Action Program] sites were selected for further study including the St. Louis Storage Site which appears to have the greatest emissions of radionuclides to air. . . . The radiological survey of the site identified significant surface and subsurface contamination both on- and off-site." (from Radionuclides -- Background Information Document, Final Rules, National Emission Standards for Hazardous Air Pollutants, EPA 520/1-84-0222-2, Oct.1984, Vol.II, p.B-14.

#### 2. Re water:

a. Uranium-238 has been found in groundwater monitoring wells in concentrations as high as 8671 picocuries per liter (SLAPS Annual Site Environmental Report: Calendar Year 1986, p.22). In comparison, uranium is reported to occur naturally in Missouri groundwater in levels from 0.71 to 3 picocuries per liter. (Oak Ridge National Laboratory: "Uranium in U.S. Surface, Ground, and Domestic Waters," Vol. 1, April 1981, p. 116, and DOE/Bechtel SLAPS Annual Site Env.Report: 1990, p.47, respectively.)

b. "For thorium-230, annual averages [in groundwater] range from ... 0.1 to 52 pCi/L." (Remedial Investigation Report, Jan.1994, p.3-41.) "Thorium-230 concentrations were only slightly above background levels except for those in well M11-21, which were



elevated. Well M11-21 is located in an area of known contamination, which might explain elevated levels of thorium-230." (SLAPS Annual Site ER: 1990, p.18. Well M11-21 is located in the center of the site, near Banshee Rd.)

### 3. Re soil:

a. High levels of thorium-230, the primary contaminant of concern at the St. Louis Site, have been found in the soil. Reported average background concentrations in St. Louis soil of thorium-230 range from 0.2 picocuries per gram to 1.2 pCi/g, according to the Radiological and Limited Chemical Characterization Report, St. Louis Airport Site, Bechtel Natl., Inc., August 1987, p.25; and Radiological Characterization Report for FUSRAP Properties in St. Louis, Bechtel Natl., Inc., August 1990, p.2-16, respectively.

(1) According to Bechtel's Radiological and Limited Chemical Characterization Report for the St. Louis Airport Site, August 1987: "Concentrations of thorium-230 ranged from 0.6 to 2600 pCi/g . . . ." (p.21)

(2) According to Rust Federal Services, Clemson Technical Center, a sample of Airport soil measured 22,410 picocuries of Th-230 per gram. (DOE FUSRAP - St. Louis Site Treatability Study: Interim Characterization Report. Jan. 16, 1995. Figure 27.)

b. Gamma radiation: The average background gamma radiation exposure rate for St. Louis is usually listed as 8 or 10 microrads per hour (or sometimes, from 42 to 100 millirads per year).

"Gamma radiation exposure rates [at SLAPS] ranged from 9 to 261 microrads per hour. The average . . . was 84 microrads per hour." (BNI: Rad. and Limited Chem. Char. Report, Aug. 1987, p. 20) Gamma levels at a site near the north fence line reached 2128 millirads per year in 1988 -- or 2.1 rads. (SLAPS Annual ER - 1990, p.32)

B. A portion of SLAPS lies in the floodplain of Coldwater Creek which flows along the western boundary of the site, and according to all documents I have seen, the groundwater from the upper aquifer at the Site flows into the creek. For example:

1. "Groundwater flow directions in the upper aquifer are to the north-northwest and north-northeast towards Coldwater Creek. . . . Recharge to the upper groundwater system occurs from precipitation, offsite inflow of groundwater, vertical flow from the underlying system where an upward potential exists, and creek bed infiltration during high creek stage. Discharge occurs by seepage into Coldwater Creek during low creek stage, and vertical seepage into the underlying groundwater system." (Feasibility Study/EIS for the St. Louis Site, April 1994; pp. 2-32, 2-34. See also: Remedial Investigation Report for the St. Louis Site, January 1994; by Bechtel

National, Inc. [BNI] for DOE; p.3-52)

2. Of related interest: "Hydrogeologic investigations indicate that two groundwater systems exist in the unconsolidated deposits at the properties. The upper groundwater system is contained in ... (loess and lacustrine deposits). The lower groundwater system is present in ... (lacustrine and glacial deposits). The two groundwater systems are separated by an aquitard composed of ... (lacustrine deposits). However, in the eastern portion of the properties, the aquitard is absent and the upper and lower systems become a single groundwater system." (emphasis added; RI Report, 1/94, p. 3-48)

3. And finally: "Composite water level data collected over a six-month period show wide fluctuations in the position of the shallow groundwater table (units 2, 3, and 4) in response to unusually heavy precipitation. Depth to the zone of saturation in the central portion of the site has been less than 3 feet." (Roy F. Weston, Inc., for Union Carbide/BNI: FUSRAP - SLAPSS. Technical Series, Vol. 2, No. 1 - Conceptual Design for In Situ Stabilization of Low Level Radioactive Residues., Jan.1982. pp. 2-25, 3-7.)

Some questions of concern to area residents:

Information about the following questions is needed to help determine if the wastes buried at the Airport Site should be excavated -- or if they can remain there to serve as the base of a disposal bunker in which the dispersed St. Louis City and County radioactive weapons wastes could be consolidated (that is, wastes from the Downtown Site, Latty Avenue, West Lake Landfill, haul roads, Coldwater Creek sediment, and vicinity properties):

1. To what extent are the radioactive wastes at the Airport Site in contact with the groundwater? If in contact, to what extent are they impacting upon the groundwater, and in turn, to what extent, if any, is the groundwater impacting upon Coldwater Creek?

2. To what extent, if any, are surface water runoff and eroding soil contaminating Coldwater Creek -- including both the amount washing into the creek out of the ditches along the north and south boundaries, and that percolating through the gabion wall along the site's western boundary?

Or as a combined question: If the wastes stay buried at the Airport Site, will contaminated groundwater and runoff surface water continue to impact significantly upon Coldwater Creek?

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Formerly Utilized Sites Remedial Action Program (FUSRAP)

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# ADMINISTRATIVE RECORD

for the St. Louis Site, Missouri

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U.S. Department of Energy