086138

DOE/OR/23701-02.3

Responsiveness Summary for the Engineering Evaluation/Cost Analysis for Decontamination at the St. Louis Downtown Site, St. Louis, Missouri

December 1991

U.S. Department of Energy
Oak Ridge Field Office
Formerly Utilized Sites Remedial Action Program

086138

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Responsiveness Summary for the Engineering Evaluation/Cost Analysis for Decontamination at the St. Louis Downtown Site, St. Louis, Missouri

December 1991

prepared by

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prepared for

U.S. Department of Energy, Oak Ridge Field Office, Formerly Utilized Sites Remedial Action Program under Contract W-31-109-Eng-38

CONTENTS

NOTATION

The following is a list of the acronyms, initialisms, and abbreviations (including units of measure) used in this document.

ACRONYMS, INITIALISMS, AND ABBREVIATIONS

ALARA	as low as reasonably achievable
BEIR	Committee on the Biological Effects of Ionizing Radiations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended
DOE	U.S. Department of Energy
EE/CA	engineering evaluation/cost analysis
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FUSRAP	Formerly Utilized Sites Remedial Action Program
HISS	Hazelwood Interim Storage Site
NEPA	National Environmental Protection Agency
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
RCRA	Resource Conservation and Recovery Act of 1976, as amended
RI/FS-EIS	remedial investigation/feasibility study — environmental impact statement
ROD	record of decision
SLAPS	St. Louis Airport Site
SLDS	St. Louis Downtown Site

UNITS OF MEASURE

d	day(s)
ft	foot (feet)
ft^3	cubic foot (feet)
gal	gallon(s)
g	gram(s)
h	hour(s)
m^3	cubic meter(s)
mrem	millirem(s)
pCi	picocurie(s)
rad	radiation absorbed dose
rem	roentgen equivalent man
yd^3	cubic yard(s)
yr	year(s)

INTRODUCTION

The U.S. Department of Energy (DOE) is responsible for conducting remedial actions at the Mallinckrodt Chemical Plant, also referred to as the St. Louis Downtown Site (SLDS), located in the city of St. Louis, Missouri. Remedial activities at the SLDS are being carried out under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) as part of the overall cleanup planned for three noncontiguous areas in St. Louis, which are collectively referred to as the St. Louis Site. These areas are (1) the SLDS and six industrial properties in the vicinity of the SLDS, (2) the St. Louis Airport Site (SLAPS) and its vicinity properties (approximately 90), and (3) the Latty Avenue Properties, which include the Hazelwood Interim Storage Site (HISS), the Futura Coatings property, and six commercial or industrial vicinity properties.

The SLDS contains radioactive residues from federal uranium-processing activities conducted during and after World War II. As part of overall remediation of the St. Louis Site, DOE is proposing to conduct interim response actions at the SLDS to support activities initiated by the plant proprietor that involve the movement and handling of radioactively contaminated material.

Potential response action alternatives for managing the contaminated material generated at the SLDS have been evaluated in accordance with U.S. Environmental Protection Agency (EPA) guidance for conducting interim actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended. An engineering evaluation/cost analysis (EE/CA) report was prepared to document this process. On the basis of the analysis presented in the EE/CA, the preferred alternative for the management of contaminated wastes generated by DOE-supported plant activities is the provision of temporary storage capacity, which can be made available by modifying an existing building (i.e., Building 116) at SLDS. This alternative would enable DOE and Mallinckrodt to coordinate efforts to prevent the uncontrolled relocation of contamination and ensure that ultimate site cleanup objectives are not complicated by plant activities implemented by Mallinckrodt.

The EE/CA, dated May 1991, was issued to the general public on June 7, 1991, and a public comment period was held from June 7 through July 10, 1991, in accordance with the public participation process identified in CERCLA. Comments on the proposed action were received in writing from the Missouri Department of Health, private citizen Kay Drey, and the EPA Region VII. This responsiveness summary has been prepared to respond to issues identified in these comment letters on the proposed action.

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2 WRITTEN COMMENTS AND RESPONSES

Three comment letters were received regarding the EE/CA. Each letter has been assigned an identification letter, and specific issues within each letter have been identified with a number. For example, issues (comments) identified within Letter A are labeled A-1, A-2, and so forth; and the respective responses to these comments are labeled Response A-1, Response A-2, and so forth.

The letters received and their respective identification letter are as follows:

- Letter A -- Daryl W. Roberts, Chief, Bureau of Environmental Epidemiology, Missouri Department of Health;
- Letter B -- Kay Drey, University City, Missouri; and
- Letter C -- Robert L. Morby, U.S. Environmental Protection Agency, Region VII.

A copy of each letter is reproduced in this section, and the responses to identified comments are presented on succeeding pages.

7-3-91

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MISSOURI DEPARTMENT OF HEALTH

John Ashcroft
Governor

John R. Bagby, Ph.D.
Director

P.O. Box 570, Jefferson City, MO 65102 • 314-751-6400 • FAX 314-751-6010

June 25, 1991

Mr. David Adler, Manager
SLDT site
U.S. DOE
P.O. Box 2001
Oak Ridge, Tennessee 37831

Dear Mr. Adler:

We have reviewed the EA/CA for Decontamination of the SLDS in St. Louis, Missouri, DOE/OR 23701-02.1, May 1991.

A-1 One comment pertains to the heading of table 5 on page 21. It would be helpful to put the word "Incremental" somewhere in the title.

A-2 The one question we have pertains to the storage areas. Will posting, fencing and locked doors be adequate to deter trespassers or will a security guard be necessary?

If you have any questions, please contact Dick Gnaedinger at (314) 751-6102.

Sincerely,

Kathleen McAllen for DWR

Daryl W. Roberts
Chief
Bureau of Environmental Epidemiology

DWR:RG:le

Response A-1

We agree that it would have been helpful to have the word "incremental" in the title of Table 5, as noted in this comment, but the EE/CA will not be reissued so it will not be possible to revise the title. The information in this table presents the annual incremental risks to a hypothetical remedial action worker, and this is also stated in the text supporting the table (see page 21 of the EE/CA).

Response A-2

A security guard specifically for the interim storage facility is not planned at this time. The site owner has an extensive security program to preclude site access to trespassers. The plant employees have been and will continue to be briefed on the nature of DOE activities at the site and on any potential hazards resulting from radioactive contamination. Consequently, DOE believes that these factors and other access restrictions that have been implemented -- such as fencing, hazard posting, and locking doors -- will prevent unauthorized persons from accessing the storage facility. If future conditions or events alter the effectiveness of these access control measures, DOE will reevaluate the security measures, including the possibility of posting a security guard at the interim storage building (i.e., Building 116).

079442

Mrs. Lee Dray
Redacted - Privacy Act

July 12, 1991

Mr. David G. Adler, Site Manager
Former Sites Restoration Division
U.S. Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831-8723

Re: Engineering Evaluation/Cost Analysis [EE/CA] for Decontamination at the ST. LOUIS DOWNTOWN SITE. DOE/OR/23701-02.2; May 1991.

Dear Mr. Adler:

B-1 At the start I would like to point out that it should not be surprising if this comment letter is the only one you receive from a member of the St. Louis public regarding the Department of Energy's proposal to use "prepared buildings or engineered exterior piles" for "interim" storage of radioactive waste at the 45-acre Mallinckrodt, Inc., chemical plant located only two miles north of Downtown St. Louis.

Although I realize the DOE sent a news release to the major St. Louis print and electronic media about the proposal and the July 10 deadline for public response, that information was not made public. I also do not know of any effort on the part of the Missouri Department of Natural Resources, the Metropolitan Sewer District, or any elected official to spread the word, either.

That is, I hope you will not interpret the silence of the public as indifference. It merely indicates that the potentially most affected people have not heard the news -- the plant's 14,872 immediate neighbors who live in St. Louis's 2nd Aldermanic Ward, the 110,000 people who work in Downtown St. Louis, and the rest of us here in Metropolitan St. Louis who share the plant's airshed and therefore its radioactive radon and dust.

Whereas I imagine that few Americans back in the 1940s would have questioned our government's decision to develop the atomic bomb, many people since World War II have been urging our national leaders to extricate the United States from the arms race. Particularly now that the Cold War is over, and that our nation has already stockpiled more than enough nuclear weapons, a halt to the fabrication, testing and deployment of nuclear weapons is appropriate, achievable and timely.

B-2 Brilliant scientists carried us into the Atomic Age. For example, in a period of only fifty days, starting on April 24, 1942, Mallinckrodt Chemical Works chemists and engineers "accomplished the 'remarkable achievement' of producing highly purified uranium oxide on a tonnage scale" (quoted from a June 1962 Mallinckrodt publication). And Mallinckrodt refined all the uranium used in the world's first self-sustaining nuclear reaction, in Chicago in December 1942. Brilliant scientists are now needed to try to carry us out of the Atomic Age.

And nowhere is this more obvious than here in St. Louis, the home of the oldest radioactive waste of the Atomic Age. For 25 years Mallinckrodt

Response B-1

The DOE issued a press release to the local media on June 14, 1991, which described the proposed action and requested public comments. The press release was sent to six newspapers, four radio stations, and six television stations. The decision on whether to include a story related to a press release rests with the newspapers, radio stations, and television stations. In addition to the press release, DOE secured a display advertisement that announced the proposed action and invited public comments in the June 7, 1991, issue of the St. Louis Post-Dispatch (page 5D). The DOE also sent a letter and a copy of the EE/CA report to each of 22 individuals who had previously indicated an interest in receiving information about DOE's activities at the SLDS. Copies of the EE/CA report were placed in the SLDS administrative record located at the St. Louis Public Library (Government Information Section), the St. Louis County Library-Prairie Commons Branch, and the DOE Public Information Office at 9200 Latty Avenue.

Response B-2

The Mallinckrodt plant was used for Manhattan Engineer District/Atomic Energy Commission operations. Because preliminary surveys have indicated that areas within the plant contain residual radioactive contamination above DOE guidelines, these areas would require remediation before they could be released for use without radiological restrictions. Under it's Formerly Utilized Remedial Action Program (FUSRAP), DOE is in the process of evaluating alternatives for the overall cleanup of the Mallinckrodt plant and several other properties located in the vicinity of the plant. The DOE is currently preparing a remedial investigation/feasibility study-environmental impact statement (RI/FS-EIS) to evaluate alternatives and identify the most appropriate remedy for these properties.

B-2 provided uranium and thorium feed materials for weapons from its Downtown plant and later from its Weldon Spring plant in nearby St. Charles County. The most recent estimate of the resulting radioactive waste in Metropolitan St. Louis is about 2 1/2 million cubic yards -- and as I've often said, no one knows where to put the first cupful.

After having read the EE/CA and related documents, I have the following questions and comments:

B-3 1. LOCATION: It is obviously essential for the federal government to act to isolate these wastes as expeditiously and safely as possible. However, would an "interim" radioactive waste storage facility in the midst of Missouri's largest population center truly provide the requisite isolation? Is it reasonable to excavate an estimated 300,000 cubic yards of radioactive dirt, plus parts or the entirety of more than 20 contaminated buildings, and transport the resulting hazardous mess from one part of an urban industrial factory site to another?

B-4 Or should the DOE commence a search instead for a permanent location which is not contiguous to Downtown St. Louis and to the Mississippi River? Has the DOE explored the possibility of sending the wastes to the 540-acre Envirocare radioactive/mixed waste disposal site in Clive, Tooele County, Utah? Or has the DOE considered negotiating with Union Electric, here in St. Louis, regarding its 6500 surplus acres next to the Callaway nuclear power plant site for the disposal of the Downtown wastes?

B-5 2. WORKER RADIATION DOSE: It is understandable that the DOE would be reluctant even to suggest requiring the temporary shutdown of production activities at Mallinckrodt, Inc., during a plantwide decontamination. However, since this is not economically or politically feasible, what requirements instead will be placed on the company with respect to its current 900 employees and 200 subcontracting construction workers during the decontamination? Will all these employees be provided comprehensive radiological training? Will protective clothing, masks and dosimeters be required for any workers who are not directly participating in the cleanup?

B-6 3. IMPACTS ON HEALTH AND THE ENVIRONMENT: The enclosed excerpt from an International Atomic Energy Agency publication lists those 31 radionuclides, out of a total of 236 analyzed, which were ranked most highly radiotoxic when inhaled. Eleven of those 31 are present at the St. Louis Downtown Site -- including protactinium-231 (Pa-231), the nuclide ranked most likely "to produce injury, by virtue of its emitted radiations, when incorporated in a body." (from "A Basic Toxicity Classification of Radionuclides," Technical Reports Series No.15; Vienna: 1963; pp. 10, 12, 32, 33). Protactinium-231 has a half-life of 32,500 years -- that is, it will remain hazardous for at least ten times that long.

B-7 a. As noted in the June 14, 1991, Department of Energy news release regarding the proposed Downtown Site interim storage facilities, the generation of dust during ongoing excavation and renovation activities is of concern. How will the water used for dust control be contained and treated before it is released into the sewer system? Which radiation standards will be used? Will additional groundwater monitoring wells be installed? (I understand the water table is only five feet from the surface.) What monitoring equipment is to be provided for radon and dust in the air, and for beta-gamma levels on site?

B-8 b. On the basis of what studies did the DOE determine a "target limit" of 50 picocuries per gram of the alpha-emitter, uranium-238, as the

Response B-3

The DOE's proposed interim management plan for contaminated waste offers a protective, safe, and practical solution because this plan would ensure that the waste would be monitored and would not be spread inadvertently. In addition, the proposed response action at the SLDS would not bias the remedy selection process for the ultimate cleanup of all the properties constituting the St. Louis Site. The objective of the proposed action is to enable DOE to support and participate in Mallinckrodt-initiated plant activities involving the movement and handling of radioactively contaminated material. Consequently, the intended scope of the proposed action is limited and would not result in overall cleanup of all contaminated areas within the plant; that is, the proposed action is intended to manage only a small fraction of the estimated 300,000 yd^3 of contaminated material identified at the SLDS.

Response B-4

The DOE is currently preparing an RI/FS-EIS to evaluate remedial action alternatives for the FUSRAP properties in the St. Louis, Missouri, area, which include the SLDS and are collectively referred to as the St. Louis Site. Off-site permanent disposal of site waste is an alternative that will be addressed in the FS. In the interim, it is necessary for DOE to manage the radioactive waste generated as a result of Mallinckrodt activities so as to prevent inadvertent spreading of the radioactively contaminated material.

The Envirocare facility in Clive, Utah, does not currently hold a license to receive waste classified as 11e(2) by-product material as defined in the Atomic Energy Act of 1954, as amended by the Uranium Mill Tailings Radiation Control Act of 1978. The waste from the St. Louis Site (which includes waste from the Mallinckrodt plant) is classified as 11e(2) by-product material. The Callaway Nuclear Power Plant site managed by Union Electric does not have appropriate facilities to receive Mallinckrodt or St. Louis Site waste. Furthermore, in order to effectively manage the waste generated at the Mallinckrodt plant prior to implementation of the final remedial action, DOE needs a practicable and readily available nearby facility, especially because the waste-generating activities would be occurring intermittently rather than as a one-time event.

Response B-5

The intended scope of the EE/CA is limited to cleaning up isolated areas within the plant; plantwide decontamination has not been planned at this time. Thus, DOE has considered it unnecessary to suggest a shutdown of production activities at the Mallinckrodt plant during any proposed interim decontamination. Protecting the health of plant workers and the environment would be addressed through protective measures implemented during decontamination activities, i.e., monitoring the perimeter of the area where decontamination is taking place, wetting surfaces, and implementing access restrictions such as barricading. Furthermore, DOE would coordinate with the Mallinckrodt proprietors regarding the possible

need to temporarily relocate employees, as appropriate. Also, as part of their protection and training, Mallinckrodt plant employees have been briefed about DOE activities within the plant and will continue to be informed of ongoing activities. Protective gear would not be required for plant employees who are not directly involved in the decontamination activities. Protective mitigative measures identified in the EE/CA, including those enumerated above, would be implemented to ensure adequate protection of human health and the environment.

Response B-6

The radionuclides listed in the comment are considered toxic constituents via the inhalation route. Potential exposures through the inhalation pathway during the action period were estimated and documented in the EE/CA; the assessment included all radionuclides present at the site. The doses associated with the shorter-lived radionuclides (i.e., having half-lives of less than 1 year) are included in the dose conversion factors used for the longer-lived radionuclides (i.e., having half-lives in excess of 1 year). Therefore, potential impacts from all site radionuclides of concern (including those from protactinium-231) have been included in the EE/CA.

Response B-7

The objective of dust-control measures is to keep materials sufficiently moist to prevent suspension of particulates. This is best accomplished by misting work surfaces/areas with a quantity of water that is absorbed readily without resulting in runoff or percolation. Consequently, water used for controlling dust would not have to be contained, treated, or released to the municipal sewer system. At present, DOE is confident that the nine groundwater monitoring wells installed at the site are sufficient to assess groundwater quality. If future conditions or events significantly altered the current situation, DOE would reevaluate the need for additional groundwater monitoring.

Radon monitoring would be accomplished via track etch detectors, which are widely used and accepted in the industry for measuring radon. During removal actions, air would be sampled via high-volume samplers located immediately adjacent to the work area, and breathing zone samplers would be worn by remedial action workers. Beta-gamma dosimeters would be worn by workers, and monitoring stations and radon track etch detectors would be located adjacent to work areas.

Response B-8

It should be noted that the uranium guideline used to guide cleanup activities for this removal action is preliminary and will be addressed in more detail as part of the ongoing RI/FS-EIS process. Should a lower value be selected as a result of the RI/FS-EIS, the need for additional remedial action will be assessed for areas cleaned up as a result of this removal action. This more detailed assessment will incorporate the results of the BEIR IV and BEIR V studies, as appropriate.

The residual limit for uranium is higher than that for thorium and radium in soil, consistent with the relative hazards of these radionuclides. The major radioactive hazards associated with radium are not from radium itself (which is an alpha-emitting radionuclide) but rather from its short-lived radioactive decay products (some of which are gamma-emitting radionuclides) and radon gas. The soil concentration limit for radium was largely based on protecting individuals from the hazards associated with these decay products. The soil limit for thorium was set equal to that of radium to ensure protection of individuals from exposure associated with radium ingrowth, which could occur in the future. These considerations do not apply to uranium. No significant short-lived gamma-emitting radionuclides are associated with uranium-238, and significant ingrowth of thorium-230 would not occur in the foreseeable future. It would take more than 10,000 years for significant ingrowth of thorium-230 to occur, because the half-life of thorium-230 is 77,000 years. The residual limit of 50 pCi/g for uranium-238 should provide protection for human health and the environment under credible future scenarios.

B-8 permissible on-site contamination level after cleanup? (EE/CA, p.12) Were the recent epidemiological data on the hazards of alpha-emitters included in the calculations -- e.g., those cited in the National Research Council's BEIR IV and V reports on radon and ionizing radiation? Since the DOE's cleanup guidelines for thorium and radium, also alpha-emitters, limit the top 6-inch layer of soil to 5 pCi/g, and 15 pCi/g for any 6-inch soil layer below that -- and since uranium-238 in nature averages only one pCi per gram of soil -- I find this 50 pCi site-specific level surprisingly high.

B-9 c. Would leachate collection systems, runoff diversion channels and other structures be required if "interim engineered storage piles" were authorized? Would an NPDES permit be required? What type of cover would be constructed? Because of the major destruction during a windstorm earlier this year (March 27) of a large area of the synthetic fabric covering one of the DOE's Latty Avenue "interim" waste piles, St. Louisans have the right to be skeptical of such solutions.

4. FEDERAL TAX DOLLARS: According to the EE/CA, page 14, approximately $460,000 in federal funding is being expended on the excavation of the initial 500 (out of 300,000) cubic yards of contaminated dirt and on utility and roofing repairs, plus approximately $295,000 for the preparation of the first storage building and its maintenance for one year -- or a total of $755,000. (Additional operation and maintenance costs, including monitoring, "are expected to be be minimal.")

B-10 In a December 1989 DOE document, the "Site Plan for St. Louis Downtown Site," prepared by Bechtel National, Inc., the estimated cleanup and "interim" storage costs for the first year were $764 million, plus $4.41 million for the subsequent five fiscal years (including surveillance and maintenance) -- or a total through the first six fiscal years of $5.174 million.

B-11 a. Has any estimate been made of the cost of removing the Downtown wastes to an alternative, permanent, non-urban location?

B-12 b. How much federal funding has been expended thus far at the Downtown Site -- such as, for the removal and disposal (?) of the radioactively contaminated roofing from Building 51, and for the excavation and piling up of the contaminated sewer and related piping near Building 80 (where the stone lintel above the 3440 N. Broadway entrance still identifies this historic building as the St. Louis Sash & Door Works)?

B-13 5. ENVIRONMENTAL IMPACT STATEMENT: At what point does the Department of Energy expect to prepare an environmental assessment and then, I would imagine, a full EIS on this project? Or, even though the Downtown Site is not included in the EPA's Superfund National Priority List, is the DOE planning instead to follow the Superfund chronology and format, including public hearings and interagency review? And if so, when? Before or after the various piles and truck-sized dumpsters full of radioactive debris are moved into Building 116 and/or Building 117?

I appreciate this opportunity to submit the above comments and questions.

Sincerely,

Kay Drey

Response B-9

For the short term, all radioactively contaminated waste resulting from remedial activities at the site would be placed in interim storage in Building 116; other buildings would also be identified if the capacity of Building 116 became exhausted. If further need arose and use of an exterior interim engineered storage pile became necessary, the storage pile would be designed to comply to the extent possible with the latest revisions of local, state, and federal regulations. The design, including cover material, would be reviewed by the Missouri Department of Natural Resources and the EPA Region VII, and it would include appropriate features to ensure that it would not be damaged (e.g., in a windstorm) to the extent that off-site releases of airborne particulates could occur. Runoff from an exterior interim storage facility could be regulated under the plant proprietor's NPDES permit or under a separate NPDES permit obtained by DOE exclusively for this purpose. In the event that an exterior storage pile were needed, the discharge permit issue would be negotiated with the plant proprietor.

Response B-10

The cost given in the site plan is $764 thousand, not $764 million, for the first year plus $4.4 million for the subsequent five fiscal years. The $4.4 million figure includes costs associated with additional cleanup, storage, and documentation, as well as surveillance and maintenance for each of the next 5 years. The site plan is currently being updated to include the latest information.

Response B-11

To date, no estimate has been made for the cost of removing the SLDS wastes to an alternative, permanent, nonurban location. Such an estimate will be made as part of the RI/FS-EIS being prepared for the St. Louis Site.

Response B-12

The total cost expended for interim remedial measures at the St. Louis Site is $5.7 million through August 1991.

Response B-13

The DOE is currently preparing an RI/FS-EIS, as required under CERCLA and NEPA, to evaluate alternatives for remedial actions at all FUSRAP properties located in the St. Louis, Missouri, area. The Mallinckrodt plant (i.e., SLDS) is a major component of the St. Louis Site. The RI/FS-EIS is being conducted according to the Federal Facility Agreement for the St. Louis Site; therefore, development and implementation of the proposed action, as well as the overall site remedial action, have been, and would continue to be, coordinated with the EPA Region VII and the state of Missouri. Documents will be made available to the public as they are developed. The primary RI/FS-EIS documents (i.e., remedial investigation, baseline risk assessment, feasibility study, and proposed plan) will be used to develop the record of decision (ROD) for cleanup of the St. Louis Site. The DOE expects to propose its strategy for sitewide cleanup in calendar year 1994. In the meantime, DOE needs to implement this proposed interim action so that contaminated material in identified areas within the Mallinckrodt plant is removed and stored, as necessary, to prevent uncontrolled relocation of contamination and to ensure that ultimate site cleanup objectives are not complicated by interim maintenance and construction activities implemented by Mallinckrodt.

TABLE IV

RADIONUCLIDES CLASSIFIED ACCORDING TO THEIR RADIOTOXICITY

Radionuclides (in alphabetical order)	Number * indicating rank of radionuclides in the Table	Radionuclides arranged according to their relative radiotoxicity	Number * indicating rank of radionuclides in the Table
Ac^{227}	2	Pa^{231} →	1
As^{238}	50	Cf^{249}	2
Ag^{105}	91	Pu^{240})	3
Ag^{110m}	41	Pu^{239}) **	4
Ag^{111}	140	Pu^{242})	5
Am^{241}	14	Pu^{238}	6
Am^{243}	11	Ac^{227}) ** →	7
At^{17}	136	Th^{230}) →	8
At^{41}	115	Np^{237}	9
At^{73}	101	Th^{228} →	10
At^{74}	102	Cf^{252}	11
At^{76}	90	Cf^{250}	12
At^{77}	151	Cm^{242}	13
At^{211}	37	Am^{241} **	14
Au^{198}	116	Cm^{246}	15
Au^{199}	120	Am^{243}	16
Ba^{131}	131	Cm^{245}	17
Ba^{140}	61	Cm^{246}	18
Be^{7}	109	U^{232}	19
Bi^{206}	117	Sr^{320}) ** →	20
Bi^{207}	48	Ra^{226}) →	21
Bi^{210}	38	Pa^{233}	22
Bi^{212}	65	U^{230})	23
Bk^{249}	35	Cm^{242}) **	24
Br^{82}	122	Pb^{210}) →	25

HIGH TOXICITY

* This number only serves as an indication of where to find the radionuclide (rank) and has no numerical significance beyond that.

** This bracket indicates that these radionuclides have the same value for MPI expressed in μc and they are arranged according to the MPI expressed in μg in increasing order.

TABLE IV (continued)

Radionuclides (in alphabetical order)	Number * indicating rank of radionuclides in the Table	Radionuclides arranged according to their relative radiotoxicity	Number * indicating rank of radionuclides in the Table
C^{14}	103	U^{233})	26
Ca^{45}	68	U^{231}) ** →	27
Ca^{47}	126	Th^{227} →	28
Cd^{109}	83	Po^{210} →	29
Cd^{115m}	63	Ra^{223} →	30
Cd^{115}	127	Sr^{90} →	31
Ce^{141}	118	U^{236}	32
Ce^{143}	132	Pa^{228}	33
Ce^{144}	60	Pu^{238})	34
Cf^{249}	2	Bk^{249}) **	35
Cl^{250}	12	Ba^{134}	36
Cf^{252}	10	At^{211})	37
Cl^{36}	56	Bi^{210})	38
Cl^{38}	133	Ra^{226}) **	39
Cm^{242}	24	Ce^{144})	40
Cm^{243}	13	I^{131})	41
Cm^{244}	18	I^{126})	42
Cm^{245}	17	Ba^{72}) **	43
Cm^{246}	15	Ag^{110m})	44
Co^{57}	131	Co^{58})	45
Co^{58m}	126	Cs^{131})	46
Co^{58}	78	Eu^{152y}) **	47
Co^{60}	43	Bi^{207})	48
Cr^{51}	151	Cs^{137}) **	49
Cs^{131}	202	Ac^{228})	50
Cs^{135m}	222	Pb^{212}) **	51
Cs^{137}	45	Bi^{214m})	52
Cs^{135}	214	Sb^{125}) **	53
Cs^{136}	128	Ta^{182})	54
Cs^{137}	49	S^{35}) **	55
Cu^{64}	130	Cl^{36})	56

Upper A

MEDIUM TOXICITY

from; IAEA - A Basic Toxicity Classification of Radionuclides - Technical Reports Series No. 15 — Vienna 1963 (Intl. Atomic Energy Agency)

079511

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
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91 AUG -2 PM 2:12

JUL 2 1 1991

Mr. David Adler
Former Sites Restoration Division
Department of Energy
Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge, TN 37831-8723

Dear Mr. Adler:

We have reviewed the EE/CA for the St. Louis Downtown Site (SLDS), dated May 1991, which was recently submitted for public review and comment. In that document DOE proposes to use its removal response authority, delegated to DOE by Executive Order, to create an interim storage area for contaminated waste at the Mallinkrodt facility. The primary focus of our review was on the degree to which this version of the EE/CA incorporated comments made by EPA on the February 1991 version of the SLDS EE/CA. Our comments on that earlier version were submitted to you on May 16, 1991.

C-1 We are disappointed to learn that virtually none of our comments on the February 1991 draft EE/CA were incorporated into the current version. The appropriateness of the proposed removal action by DOE depends a great deal on the location of the storage area, the amount of material to be moved, the monitoring efforts to ensure that contamination is not allowed to spread as a result of the removal activities, and the precautions taken to ensure that both removal action workers and Mallinkrodt employees are protected from potential adverse health effects as a result of the removal activities. Thus far, none of these issues has been adequately addressed by DOE in the EE/CA. Following is a list of some of the more important issues raised by our review of the previous draft, and which remain inadequately addressed in the current version of the EE/CA. This list does not contain many of our earlier review comments which we still consider valid.

C-2 1. Our earlier comments stated that the focus of the EE/CA should be on the use of Building 115 as the location the interim storage pile. We also stated that the creation of

Response C-1

The DOE appreciates the comments provided by EPA Region VII on the February 1991 draft EE/CA. Many of the comments requested additional details on the proposed removal action. We were not able to provide this detail (and hence, address your comments), because discussions on the nature of the proposed removal action were taking place with the site owner (Mallinckrodt), and these details can only be provided once these negotiations are completed. The situation at the SLDS is unique in that the organization proposing the removal action (DOE) differs from the organization owning the site, and the site is an operating chemical plant. We appreciate EPA's cooperation on this proposed removal action.

It is stated in Chapter 5 of the May 1991 version of the EE/CA that Mallinckrodt has made Buildings 116 and 117 available to DOE for initial interim storage. The activities planned to prepare Building 116 as the initial storage area are also described in Chapter 5. As stated in the EE/CA, the amount of material managed under this action would depend on the activities planned by the site proprietors; however, DOE would be coordinating with the plant proprietors to ensure that the waste volume generated at any given time was consistent with handling and storage capacities available.

Monitoring and protective measures to be taken are described in the EE/CA, and DOE would ensure that these measures were adequately addressed before the proposed action was implemented. Additional details will be included in the administrative record for this proposed removal action.

Response C-2

The EE/CA addresses the use of Building 116 as the initial storage area and describes the activities necessary to prepare this building to receive contaminated material (page 16); a figure showing the proposed potential interim storage plan for the first floor of Building 116 is presented on page 17 of the EE/CA. Monitoring activities at Building 116 to ensure that storage conditions meet regulatory requirements are identified on pages 18 and 19. The EE/CA is intended to evaluate alternatives for the removal of contaminated material from various locations and consolidation of that material inside Building 116 and, if necessary, Building 117 at the Mallinckrodt plant. The DOE will provide additional documentation to supplement this EE/CA, as appropriate, if and when interim storage in exterior engineered piles is determined to be necessary.

C-2 any additional temporary storage areas should be the subject of a separate EE/CA. Rather than focus on the use of Building 116, the current version of the EE/CA has been made more ambiguous with respect to any proposed storage location.

C-3 2. The EE/CA still does not describe what transportation and monitoring procedures would be used in the removal of contaminated material to Building 116 in order to ensure that contamination is not spread by the removal activities and decontamination procedures.

C-4 3. The EE/CA does not adequately describe the storage procedures to be used within Building 116. It also does not describe what monitoring efforts would be used to ensure that contamination does not migrate from the building, nor does it identify any contingency plans in the instance that contaminant migration is identified.

C-5 4. Our earlier review expressed EPA's concern that elevated levels of radon could develop within Building 116 as a result of the storage of contaminated materials over the duration of the interim storage period. We questioned whether the exposure estimates for removal workers adequately considered this possibility, and suggested the EE/CA be revised to reflect the potential for higher worker exposure levels, and to more thoroughly discuss the types of monitoring and personnel protection procedures to be undertaken. In the current version of the EE/CA the worker dose estimate for radon is actually lowered, rather that increased to incorporate allowance for elevated radon levels in Building 116. The discussion of personnel protection procedures also remains inadequate.

C-6 5. The current version still does not consider containerization of wastes, nor does it discuss the need for segregation of wastes within the building. Segregation of wastes is necessary to allow for more efficient identification of wastes subject to RCRA at the time of disposal.

C-7 6. The EE/CA still contains no supporting documentation for the calculation of exposure levels and hazard indices. Hazard indices continue to appear to be calculated incorrectly.

C-8 7. The EE/CA still contains no procedures for identifying how individual sites will be selected for removal response, no procedures for identifying contaminant characteristics at the time of removal response, and no procedures identifying the fate of removed materials found not to be radioactively contaminated.

Response C-3

The transportation, monitoring, and decontamination procedures to be used during remedial activities at the SLDS will be similar to those that have been developed and refined during 10 years of experience with similar operations at other FUSRAP sites. Contaminated soil (which would be misted during excavation to preclude dust generation) would be transported in covered dump trucks. Misting would be accomplished with a quantity of water that is absorbed readily without resulting in runoff or percolation. Therefore, any water used to control dust would not have to be contained, treated, or released to the municipal sewer system. Contaminated protective clothing, plastic, and some building decontamination waste would be placed either in 55-gal drums or 90-ft^3 LSA boxes for transportation and storage. Large contaminated items (e.g., structural members and tanks) would either be wrapped in plastic or painted to fix any loose contamination before transport to the storage facility. Such large items could be sectioned or decontaminated at the storage facility.

Monitoring during operations would include radiological surveys of vehicle exteriors, especially tires, and all transportation routes. Personnel involved in these operations would wear dosimeters and, where the potential existed for airborne radionuclides, various methods of air sampling would be conducted, including those for monitoring radon (via track etch detectors). During remedial activities, air would be sampled with high-volume samplers located adjacent to the work area, and breathing zone samplers would be worn by remedial action workers. All personnel would be routinely checked for contamination before leaving controlled areas. Vehicles and large items would be decontaminated at the decontamination facility to be constructed adjacent to Building 116. If decontamination by means other than water were required, it would be conducted inside Building 116 with proven contamination-control techniques such as negative pressure enclosures and directing exhaust air through high-efficiency-particulate-air filters.

Response C-4

Contaminated soil would be stored in bulk in a covered pile (or piles) inside Building 116. This approach has been used for storing contaminated materials for the past 7 years at a FUSRAP site located near Albany, New York, with no measurable migration of contaminated soil outside the building. The methods that would be employed to prevent and verify the absence of contaminant migration include routine inspection and maintenance of the structure (i.e., Building 116) to ensure the structural integrity of the storage facility; misting the pile's surface when wastes are being placed into controlled storage; keeping the pile covered except during operations; routine radiological surveys of the periphery of the controlled area enclosing the pile; routine sampling for airborne radionuclides; routine fixed-point and random-point surveys of the building interior and exterior; and routine bioassay of personnel involved in remedial activities.

If contamination were identified in an uncontrolled area, measures would be taken to safeguard potentially exposed individuals and minimize impacts to the environment. These measures include the following: establishing access control barriers; defining the

extent of contamination; situational analysis to determine the source of contamination and other potential migration routes and receptors; decontamination of the affected areas; collection of bioassay samples from any potentially exposed individuals; and implementation of necessary corrective measures to prevent recurrence.

Response C-5

During implementation of the proposed action, radon levels would be continuously monitored. If levels exceeded worker exposure criteria, a system of active, mechanical ventilation would be added to the building. Building 116 has some degree of passive ventilation. In addition, the pile cover inside the building would not be airtight, but, because the primary purpose of the cover is dust control, it would be draped over the materials. The edges would not be sealed. The method typically used to remove the cover would not place the worker in a flow of trapped gases. The workers would pull the cover by its edge, usually walking on top of the cover and dragging the cover material behind them. The soils being exposed would not be directly under the workers as they removed the cover. This would allow any trapped gases to disperse into the room. Although the levels in the room might become temporarily elevated as a result of accumulated radon, the ambient radon monitoring should accurately reflect worker exposures.

Response C-6

Some of the waste resulting from remedial activities at the site would be containerized -- i.e., contaminated protective clothing, plastics, rags, and some building decontamination waste. Contaminated soil and building debris that would be suitable for eventual disposal in a landfill, however, would not be containerized. On the basis of proven experience from operation of a similar FUSRAP storage facility located near Albany, New York, containerization of such wastes is not necessary to prevent contaminant migration.

Because of previous experience in dealing with mixed waste, DOE is very sensitive to and cognizant of the need to segregate wastes. Before any actions were initiated, additional sampling would be conducted, as required, to classify the waste for proper management.

Response C-7

Calculations were performed in the EE/CA to estimate the potential hazards associated with exposure to the radioactively and chemically contaminated materials resulting from implementation of the proposed removal action. To assess the radiological risks to remedial action workers, the following exposure routes were considered: external gamma irradiation, inhalation of particulates while conducting outdoor excavation activities, and inhalation of radon and its decay products while working indoors. To estimate the dose from external gamma irradiation, the highest measured indoor and outdoor average exposure

rates were used along with the assumption that a remedial action worker would spend half of the work year indoors and half outdoors. The calculations can be expressed as follows:

$$\text{Dose (mrem)} = \text{ER (mR/h)} \times \text{DCF (mrem/mR)} \times \text{ET (h)} \ ,$$

where:

ER = measured exposure rate, 0.048 mR/h indoors and 0.015 mR/h outdoors;

DCF = dose conversion factor, 0.95 mrem/mR; and

ET = exposure time, total of 2,000 hours (1,000 indoors and 1,000 outdoors).

The dose from inhalation of particulates was calculated on the basis of soil radionuclide levels, as given in Table 1 of the EE/CA. To calculate air concentrations from soil concentrations, it was assumed that the same concentration of radionuclides was present in air particulates as was present in the soil. For example, assuming a mass loading factor of total particulates in air of 0.0002 g/m^3 and a soil uranium-238 concentration of 183 pCi/g, the concentration of uranium-238 in air can be calculated as follows:

$$\text{Air concentration (AC)} = 0.0002 \text{ g/m}^3 \text{ air} \times 193 \text{ pCi/g} = 0.0386 \text{ pCi/m}^3 \text{ air}) \ .$$

This method of calculating the air concentration of a contaminant is conservative because it has been shown that less than 50% of air particulates are actually derived from soil (EPA 1980). The above calculation assumes that 100% of air particulates at the site would be soil-derived and that all of the particulates would come from the site itself. It also was assumed in the dose calculations performed in the EE/CA that all airborne particulates could be inhaled, contributing to the inhalation dose. This approach is conservative because only 30-50% (or less) of airborne particulates are generally in the respirable size range.

The dose received from inhalation of airborne radionuclides was calculated as follows:

$$\text{Dose (mrem)} = \text{AC (pCi/m}^3\text{)} \times \text{IR (m}^3\text{/h)} \times \text{DCF (mrem/pCi)} \times \text{ET (h)} \ ,$$

where:

AC = air concentration, as given above;

IR = inhalation rate, 1.2 m^3/h;

DCF = dose conversion factor for each radionuclide (from Gilbert et al. 1989); and

ET = exposure time, 1,000 hours for outdoor exposures.

The individual doses from each radionuclide measured in soil (i.e., uranium-238, thorium-230, thorium-232, and radium-226), were added to obtain the total dose. The dose conversion factors (DCFs) used in this calculation account for the radioactive decay products associated with these radionuclides. In addition, on the basis of data from a source-term analysis (discussed on page 5 of the EE/CA), doses from protactinium-231, actinium-227, and all subsequent radioactive decay products (based on an estimated soil protactinium-231 concentration of 18 pCi/g) were included in the estimation of the radiation doses from inhalation.

The dose received from inhalation of radon-222 decay products while indoors was also calculated. On the basis of an average indoor radon-222 concentration of 2 pCi/L, the working level (WL) was calculated as

$$\text{WL} = \text{EF} \times \text{radon-222 concentration (pCi/L)}/100\ \text{pCi/L},$$

where EF = indoor equilibrium factor, 0.5.

The dose from inhalation of radon and its decay products was calculated as

$$\text{Dose} = \text{WL} \times \text{ET}/170\ \text{hours/month (WLM)},$$

where ET = exposure time, 1,000 hours for indoor exposures, and WLM = working-level month.

For chemical exposures, the main exposure route for remedial action workers is inhalation. To calculate exposure levels, or chronic daily intake via inhalation, the air concentration of metals was estimated from average soil concentrations, as was done for radionuclides (see above). For example, assuming a mass loading factor of particulates in air of 0.2 mg/m^3 and a soil concentration of antimony of 39 mg/kg,

$$\begin{aligned} \text{AC} &= 0.2\ mg/m^3\ \text{air} \times 39\ \text{mg Sb/kg soil} \times 10^{-6}\ \text{kg/mg} \\ &= 7.8 \times 10^{-6}\ \text{mg Sb}/m^3\ \text{air}. \end{aligned}$$

Again, this approach is conservative based on the considerations described previously.

The exposure level or chronic daily intake (CDI), based on the air concentration, was then derived with the procedure prescribed by the EPA (1989) as follows:

$$\text{CDI (mg/kg-d)} = \frac{\text{C (mg/m}^3\text{)} \times \text{IR (m}^3\text{/h)} \times \text{ET (h/d)} \times \text{EF (d/yr)} \times \text{ED (yr)}}{\text{BW (kg)} \times \text{AT (d)}}$$

where:

C = air concentration of contaminant, as given above;

IR = inhalation rate, 1.2 m^3/h;

ET = exposure time, 8 h/d;

EF = exposure frequency, 250 d/yr;

ED = exposure duration, 1 yr;

BW = body weight, 70 kg; and

AT = averaging time, 1 yr x 365 d/yr for hazard index calculation.

The values used to calculate CDI were quite conservative, reflecting the maximum amount of time a worker would likely spend conducting remedial action activities. Additionally, it was assumed that 100% of the particulates in air were respirable, which is a very conservative assumption because only 30-50% (or less) of airborne particulates are generally in the respirable size range.

The calculated CDI was then compared with an inhalation toxicity value, also in units of mg/kg-d, to determine if the intake level for any one contaminant, or the entire group of contaminants, exceeded a level likely to cause noncarcinogenic toxicity. Currently, inhalation toxicity values, or reference doses (RfDs), are not available for any of the contaminants of concern for the SLDS, and extrapolation of oral RfD values for use as inhalation RfDs is not considered to be valid (EPA 1989). Because the exposure being evaluated was an occupational exposure, an alternative method employing occupational toxicity values was selected. The permissible exposure levels (PELs) (OSHA 1989) were modified from units of mg/m^3 to units of mg/kg-d by assuming 1.2 m^3/h inhaled, 8 h/d exposure, and a body weight of 70 kg. For example, the adjusted PEL for antimony was

$$\text{Adjusted PEL} = \frac{\text{PEL } (0.5 \text{ mg/m}^3) \times 1.2 \text{ m}^3/\text{h} \times 8 \text{ h/d}}{70 \text{ kg}} = 0.069 \text{ mg/kg-d}.$$

The ratio of the CDI to the adjusted PEL was calculated as the hazard quotient; the hazard quotients of all contaminants were summed to create the hazard index. A hazard index of less than one indicates that noncarcinogenic toxicity is unlikely.

The use of adjusted PELs as toxicity values is somewhat unconventional; however, in the absence of inhalation RfD values, it does allow a quantitative assessment of the likelihood of toxicity, which is applicable for occupational exposures similar to those assessed in the EE/CA. Additionally, in response to previous comments provided by EPA, the hazard index was recalculated using even more conservative assumptions. For the recalculation, the following assumptions were made: 2 mg/m^3 for the mass loading factor for dust in air (vs. 0.2 mg/m^3), and the upper 95% confidence limit of the arithmetic average soil contaminant concentration as the soil input value (vs. the mean). The recalculated hazard index of 0.076 is still much less than one. Therefore, in conjunction with the conservative assumptions used to derive air contaminant concentrations and CDI values, the method used to calculate the hazard index provides a protective assessment of the likelihood of noncarcinogenic toxicity.

The following documents or reports were used as references for the calculations:

- U.S. Environmental Protection Agency, 1980, *Analysis of the St. Louis RAMS Ambient Particulate Data, Final Report*, EPA-450/4-80-006a, Volume I, Office of Air Quality, Washington, D.C.

- U.S. Environmental Protection Agency, 1989, *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A, Interim Final)*, EPA/540/1-89/001, prepared by Office of Emergency and Remedial Response, Washington, D.C., Dec.

- Gilbert, T.L., et al., 1989, *A Manual for Implementing Residual Radioactive Material Guidelines*, ANL/ES-160 (DOE/CH/8901), prepared by Argonne National Laboratory, Argonne, Ill., for U.S. Department of Energy, Washington, D.C., June; and

- Occupational Safety and Health Administration, 1989, *Air Contaminants - Permissible Exposure Limits (Title 29 CFR Part 1910.1000)*, U.S. Department of Labor, Washington, D.C.

Response C-8

The areas to be managed at the SLDS would be mainly those identified by Mallinckrodt. Confirmatory surveys and tests would be performed prior to initiating any removal response action (except in case of emergencies) to verify and refine previous findings, including the boundaries of contamination. Management and disposal of removed materials that were not radioactively contaminated would be the responsibility of Mallinckrodt.

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C-9 8. The EE/CA still does not adequately address the cleanup criteria which will be used during the implementation of removal actions. DOE needs to discuss how the principle of ALARA will be addressed during removal actions, and how the selected removal action cleanup criteria may be impacted by final site cleanup levels arrived at as a result of the evaluation of ARARs during the RI/FS process. We also question DOE's statement in the revised EE/CA that "certain TBC requirements such as DOE Orders are developed on the basis of promulgated standards and can necessitate the same degree of compliance as ARARs".

C-10 We are not opposed to the creation of an interim storage area to allow the temporary storage of contaminated materials. However, any such removal activities should be conducted in a manner which will ensure that contamination is not spread as a result of the activities, that such activities are adequately monitored, that both worker and public health are protected, and that all appropriate regulatory requirements will be met. Unfortunately, the revised EE/CA does not allow us to be convinced that DOE's implementation of its proposed removal actions will satisfactorily meet all those conditions.

It is our expectation that prior to DOE's implementation of any removal actions, DOE and EPA will discuss how DOE intends to address our comments. Should you have any questions regarding our review, please contact Greg McCabe at FTS 276-7709.

Sincerely yours,

Karen A. Flournoy

for Robert L. Morby
Chief, Superfund Branch
Waste Management Division

cc: David Bedan, MDNR

Response C-9

The EE/CA indicates that the cleanup levels for radium and thorium identified by EPA for uranium mill tailings sites are considered relevant and appropriate to the proposed removal action. A preliminary uranium-238 guideline of 50 pCi/g has been developed to guide characterization and interim cleanup activities at the St. Louis Site. These cleanup criteria will be evaluated in more detail in the RI/FS-EIS that is currently being developed. It is expected that the final criteria will be similar to those identified for this removal action. However, if lower values are developed as a result of the RI/FS-EIS process, the need for additional remedial action will be assessed for areas cleaned up as a result of this removal action.

The principle of "as low as reasonably achievable"(ALARA) would be applied during remedial activities to protect workers, in accordance with project health and safety plans (e.g., using protective equipment to reduce potential exposures), and to protect the public (e.g., implementing protective measures such as wetting surfaces to limit releases and possible exposures). In addition, ALARA would be used in identifying areas to be cleaned up below residual concentration guidelines, i.e., cleanup would continue below residual concentration limits as long as the waste volumes and costs were not prohibitively high. This action would ensure that the amount of contamination remaining in the soil would be very low.

The statement that "certain TBC requirements such as DOE Orders are developed on the basis of promulgated standards and can necessitate the same degree of compliance as ARARs" simply means that because these are departmental requirements, they constitute requirements with which the action must comply because it is a DOE action. That is, DOE must also consider these Orders similar to (e.g., on a parallel level with) applicable requirements.

Response C-10

The DOE recognizes the need to consolidate contaminated material identified at the SLDS in order to prevent the inadvertent spreading of that material. Remedial activities will be conducted in a manner that is protective of worker and public health, and in compliance with pertinent regulatory requirements. Adequate monitoring and protective measures will be implemented as described in the EE/CA. Additional details on implementation of the proposed removal action will be included in the administrative record file.

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DOE NEWS

FOR IMMEDIATE RELEASE
June 14, 1991

DOE SEEKS PUBLIC COMMENT ON PROPOSED CLEANUP OF ST. LOUIS DOWNTOWN SITE

OAK RIDGE, TN -- The Department of Energy's (DOE) Field Office, Oak Ridge (OR), is seeking public comment on an Engineering Evaluation/Cost Analysis (EE/CA), for decontamination at the St. Louis Downtown Site (SLDS), in Missouri.

This proposed cleanup plan is being conducted under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP), which was established to identify and clean up or control sites where radioactive contamination (exceeding DOE guidelines) remains from the early years of the nation's atomic energy program. This is part of Secretary of Energy James D. Watkins' comprehensive Environmental Restoration and Waste Management Five-Year Plan. Releasing the proposed EE/CA to obtain the views of concerned citizens for use in developing the Department's work plans is an important step in the overall cleanup process.

During the 1940's, Mallinckrodt Inc., current owners of the SLDS property, processed and produced various forms of uranium compounds and machined uranium metals for the World War II Manhattan Engineering Project and later for the U.S. Atomic Energy Commission, a DOE predecessor agency. The areas proposed for decontamination are contaminated with uranium, thorium, and radium as a result of this work.

The radioactive contamination at SLDS poses no immediate risk to public health or the environment in its current condition. However, some cleanup activity at SLDS is being proposed as an interim measure because plant activities involving excavation or renovation could result in the generation of dust and other materials, and inadvertent spread of contamination.

The EE/CA summarizes the analysis of cleanup alternatives and the rationale for DOE's preferred interim remedial action alternative. Waste control alternatives considered for soil and structures on site includes removal, reprocessing/treatment, interim storage, disposal, access restriction, and no action. Based on available information, DOE's preferred alternative for SLDS is decontamination and/or removal of contaminated structural material and excavation of contaminated soil, with interim storage on site.

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Department of Energy
Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-

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June 13, 1991

Mr. Greg McCabe, Superfund Section
U.S. Environmental Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101

Dear Mr. McCabe:

Enclosed please find a copy of an engineering evaluation/cost analysis prepared in support of a Department of Energy (DOE) proposal to conduct limited decontamination activities at the St. Louis Downtown Site (SLDS) in St. Louis, Missouri. This proposal is being made under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP).

As you may know, SLDS is an industrial facility currently owned and operated by Mallinckrodt Inc. Uranium processing activities were performed at this site during World War II in support of the U.S. Government wartime effort. Residual contamination present at the site as a result of those processing activities poses no immediate health threat; however, cleanup of selected areas is needed to ensure that ongoing maintenance and renovation activities at SLDS do not result in the uncontrolled release of radioactivity.

This proposal is a relatively minor component of DOE's larger effort to implement a comprehensive cleanup of SLDS. Before implementing this comprehensive cleanup, we must first reach a decision on how best to manage the large volumes of contaminated soil and debris that would be removed during these activities. In the interim, DOE is proposing to conduct limited decontamination efforts and to temporarily store the resultant wastes on site. The attached document summarizes this interim proposal and provides DOE's rationale for this approach.

Please provide any comments you may have on this proposal by July 10, 1991. My mailing address is U.S. Department of Energy, Former Sites Restoration Division, P.O. Box 2001, Oak Ridge, TN 37831-8723. If you would like to discuss the proposal, please feel free to call me at the St. Louis Site Public Information Office in Hazelwood, Missouri. My number there is (314) 524-4083. Thank you for your interest in this matter.

Sincerely,

David G. Adler
Site Manager

Enclosure

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THE U.S. DEPARTMENT OF ENERGY ANNOUNCES THE AVAILABILITY OF ADMINISTRATIVE RECORDS

FOR THE ST. LOUIS SITES ST. LOUIS, MISSOURI

The U.S. Department of Energy (DOE) announces the availability for public review of two files constituting the administrative records for the selection of a remedial action(s) to clean up contamination at the St. Louis Airport and Latty Avenue Sites in Hazelwood, Missouri, and the St. Louis Downtown Site in St. Louis, Missouri. These sites are part of DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). DOE established FUSRAP to identify and clean up or control sites where radioactive contamination (exceeding current guidelines) remains from the early years of the nation's atomic energy program. DOE seeks to inform the public of the availability of the administrative record files at the designated repository locations in St. Louis (listed below) and to encourage the public to comment on documents as they are placed in the record files.

An administrative record file includes documents that form the basis for the selection of a remedial action alternative for a specific site. Documents now in the administrative record file include preliminary assessment and site investigation reports, as well as reports on work that has previously been conducted at the sites. Other documents will be added to the administrative record as work at the sites progresses. These additional documents may include, but are not limited to, the work plan, the remedial investigation/feasibility study report, other technical reports, the community relations plan, comments and new data submitted by interested persons, and DOE responses to significant comments.

The administrative record files for the sites are available for review during normal business hours at the following locations:

St. Louis Public Library
Government Information Section
1301 Olive Street
St. Louis, MO 63103
(314) 241-2288

St. Louis County Library
Prairie Commons Branch
915 Utz Lane
Hazelwood, MO 63042
(314) 895-1023

DOE Public Information Office
9200 Latty Avenue
Hazelwood, MO 63042
(314) 524-4083

For more information about the site, contact David G. Adler, Site Manager. Written comments on the administrative record should be sent to:

David G. Adler, Site Manager
U.S. Department of Energy
Former Sites Restoration Division
P.O. Box 2001
Oak Ridge, TN 37831-8723
(615) 576-0948

St. Louis
Post Dispatch
June 5, 199

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Implementation of comprehensive cleanup measures will be preceded by a complete environmental review process including preparation of Remedial Investigation and Feasibility Study reports as required by the Comprehensive Environmental Response, Compensation, and Liability Act and the National Environmental Policy Act. This long-term cleanup program will include, in addition to the SLDS, the St. Louis Airport Site and vicinity properties, and the Latty Avenue properties, including the Hazelwood Interim Storage Site. The three properties are collectively referred to as the St. Louis Site.

The EE/CA is available for public review during the normal business hours in the Government Information Section at the St. Louis Public Library, 1301 Olive Street, St. Louis, Missouri 63103, telephone (314) 241-2288; the St. Louis County Library, Prairie Commons Branch, 915 Utz Lane, Hazelwood, Missouri 63042, telephone (314) 895-1023; and the DOE Public Information Office, 9200 Latty Avenue, Hazelwood, Missouri 63042, (314) 524-4083.

The public may comment on the proposed plan by submitting written comments no later than July 10, 1991, to:

David G. Adler, Site Manager
U.S. Department of Energy
Former Sites Restoration Division
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723
(615) 576-0948

-DOE-

News Media Contact: Danielle Jones, (615) 576-0885

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