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St. Louis County
Department of Health

MEMORANDUM

To: Members of the Radioactive and Hazardous Waste Oversite Commission

From: Alpha Fowler Bryan, M.D., Director and Chairman of the Commission

Through: Jean Leadbetter Jean Leadbetter
Secretary to the Director

Date: November 1, 1993

Re: November meeting

Attached is a copy of the minutes of the meeting which took place on September 14, 1993.

Please remember our next meeting is scheduled for Tuesday, November 9, 1993, at 7:30 a.m. in the offices of the Department of Health.

For the information of those who were not in attendance at the September meeting, there were several handouts made available for those who wanted them. These included a report concerning the Latty Avenue dump-site, and a letter and news release by the Department of Natural Resources concerning U. S. Department of Energy involvement in the cleanup. If you would care for a copy of these handouts, please send a request to Jean Leadbetter and she will provide copies for you at the November meeting, or through the mail, whichever you prefer.

AFB:jal

cc: Lee Brotherton
Conn Roden
Dr. Wayne Black
Chris Byrne
Patty Hazel (Bechtel National)

Buzz Westfall
County Executive

Alpha Fowler Bryan, M.D.
Director

11 S. Meramec Avenue
Clayton, Missouri 63105

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MINUTES

Radioactive and Hazardous Waste Commission

Meeting of September 14, 1993

Commission Members Present

Dave Farquharson (Mayor, Hazelwood)
Wm. "Bill" Miller (Mayor, Berkeley)
Dr. Alpha Fowler Bryan
Nancy Lubiewski
Sally Price
Kay Drey
Dr. Barry Siegel

Guests

Patti Hazel (Bechtel National)
Robert Geller (Missouri Department of Natural Resources)
Dan Tschirgi (Missouri Department of Natural Resources)
Larry Erickson (Missouri Department of Natural Resources)

Staff

Dr. Wayne Black
Conn Roden
Lee Brotherton
Chris Byrne
Jean Leadbetter

Dr. Bryan opened the meeting and asked the guests to introduce themselves to the assembled members of the Commission.

Dr. Bryan asked for corrections to the minutes. Kay Drey advised on Page three at the bottom we needed to add the word "site" after "airport". Also "Coldwater" is one word. There were no other corrections and they were adopted as written.

Old Business

Regarding inquiries about the City's Commission regarding radioactive and hazardous waste, Dr. Bryan had been attempting to find out what the status of that Commission was. Lee Brotherton had stated there was either an existing Commission or the preparation for the development of such a Commission within the City. He thought it might be a good idea to meet with them to develop a cooperative effort regarding radioactive and hazardous waste. Dr. Bryan has since spoken with the Mayor of the City of St. Louis who states there is no such Commission. Kay Drey advised in July of 1992 they had authorized it, but it did not get put in place. Dr. Bryan said the Mayor had indicated they could not find any record of such authorization. At this

Dr. Bryan suggested the date for the next meeting should be Tuesday, November 9, 1993 at 7:30 a.m. This was agreed to by all the Commission members present.

Transcribed by J. Leadbetter
October 25, 1993

Nancy Lubiewski asked the Commission to focus on the five options that the Department of Energy (DOE) had proposed. The first option, the "no action" one, could not be considered because that had already been ruled out by federal regulators. The second option, "controlling" was also not a viable option. Consolidate and cap with no ground seal, the third option, Ms. Lubiewski felt failed on several points including having no liner underneath and being dependent on natural geology and groundwater monitoring to ensure safety of drinking water in the area. She pointed out the referendum, which is not binding, states it is to be a total cleanup and removal. Going by this referendum Option 4, partial excavation, would not be an option either because of incomplete removal.

Ms. Lubiewski stated she is aware of requirements in a Superfund grant that says we have to look into all clean-up options and disposal sites. She questions whether we have done so. She had a copy of a plan developed by students in a program at Southern Illinois University--Edwardsville concerning the Latte Avenue site.

Bill Miller advised he had received a packet of information, but after that everything stopped. Dr. Bryan said those options outlined are what we are looking at now. Dr. Bryan is concerned that some people would not have the expertise to go through that material and discern what is best for us. A consultant might be an appropriate use of funds available. Bill Miller pointed out that as we were considering the options, DOE has offered, if we decided to hire a consultant, to provide some funding for this purpose. He is a little skeptical because they could not find anyone who was not bidding on DOE projects or something. He said we could not find anyone not involved in the business end. Kay Drey said she shared that skepticism. Mr. Miller said you could not find a really good firm that was not already involved in business with DOE, or plans to be in the future.

Dr. Bryan stated she was aware of a university professor engaged by the County Council concerning the Weldon Springs project. These people do exist. They are usually not in the business end. We would have to pick an appropriate person.

Dr. Bryan is concerned that we are under a time constraint. The DOE will be coming out with their plan. There will be a public meeting in February, and the plan would then be published in May of 1994. Patti Hazel said she will be getting a newsletter that gives updates on what DOE has been doing and the status of DOE papers. Kay Drey said it should be another option other than the airport site. Dr. Bryan agreed we are not bound by the five options outlined by DOE.

Lee Brotherton agreed there are appropriate people out there who could handle the consultation for us, who have no contact with DOE. We would want to be sure we spread word of our interest far enough that we get a good selection to choose from. We would need to use appropriate means to reach the kind of experts we want, such as professional journals, etc.

Nancy Lubiewski asked what the difference was between a binding and a non-binding referendum. She was advised that if we made a binding referendum the federal government would overrule it. Bill Miller said the reason for the referendum was to get the voice of the people heard.

The floor was given to the representatives of the Missouri Department of Natural Resources for any comments they would like to make.

Robert Geller said there were some changes being made at the Missouri Department of Natural Resources (MDNR). He and the others with him had a newly developed program within the Hazardous Waste program to address federal facilities. They are here to support our efforts. They want to know what our concerns are, where there are difficiencies and what proposals have been made. They consider themselves stakeholders in the process. They are concerned about things like ground water, location of sites, etc.

Dr. Siegel asked why the State considers the current status as unacceptable. Mr. Geller stated they are concerned about the lack of control and continuing spread. Comparing this to other Superfund sites of this magnitude, it is not acceptable. It is up to DOE to see what they can do. We are asking them to look at the short-term remedy. Dr. Siegel asked if they would be looking at surface containment rather than removal. Mr. Geller indicated their initial concern is that the material is being disturbed and is being redistributed. Ground water and other deeper concerns will be addressed later.

Dr. Siegel asked what the State's decision concerning the remedy would be based upon. Mr. Geller replied theirs would be a technical proposal, and the Commission would have to take political status into consideration.

Bill Miller, the Mayor of Berkeley, stated some concerns were not being addressed, such as the impact on the value and status of the surrounding community. He is concerned about the affect on property value and assessments. He said we must consider other factors then just technical data. We must consider the public perception of this site.

DOE has proposed what could be considered short-term removal. That is rather unacceptable because they are not addressing the problem. Mr. Geller said their management will be incorporating those concerns. Mr. Geller said he and the new office that has developed will have to make the technical assessments, but then this Commission should be in touch with their management as to public concerns. The State MDNR does not have a position on any proposal at this time. He did say the clock is ticking and decisions will have to be made.

COPY OF ORDER

STATE OF MISSOURI)
)SS.
ST. LOUIS COUNTY)

In the County Council of said County on the 9th day of September, 1993 the following among other proceedings were had, viz:

In the matter of Report from the Director of the St. Louis County Department of Health with respect to a recent inquiry by the Honorable Geri Rothman-Serot, Councilman for the 3rd District, concerning storage of dioxin-contaminated materials in the flooded Chesterfield area

By motion duly made, seconded and carried, IT IS ORDERED By the County Council of Saint Louis County, Missouri, that the Report from the Director of the St. Louis County Department of Health with respect to a recent inquiry by the Honorable Geri Rothman-Serot, Councilman for the 3rd District, concerning storage of dioxin-contaminated materials in the flooded Chesterfield area, be received, filed and referred to the Hazardous Waste Commission.

GERI ROTHMAN-SEROT
VICE CHAIRMAN, COUNTY COUNCIL

Copies to:
6 Highway
1 Dir. of Health
1 Hazardous Waste Commission

Along the RR at Latty site high levels of Uranium were found at 309 pCi/g, Radium at 1100 pCi/g, and Thorium at 26,000 pCi/g. All at surface soils.

On Hazelwood Avenue, extremely contaminated soil samples show Thorium at 4810 pCi/g. On the west side of Hazelwood Ave ~~across from~~ next to a perishable food storage warehouse, soil samples show a level of 3500 pCi/g of Thorium. A level 17,500 times above that which occurs in nature, and 700 times above that which is the Department of Energy's guidelines for clean- permissible

Policy Issues:

Policy Issue #1: How can the haul roadways of Latty Avenue and adjacent ground areas be decontaminated?

Alternatives:

a) Removal of contaminated soil to off-site disposal areas for land encapsulation.

Local disposal by capping or vertical barriers.

b) Capping involves covering the contaminated site with a barrier sufficiently thick and impermeable to minimize the diffusion of radon gas and attenuate the gamma radiation associated with radionuclides.

c) Vertical Barriers are walls installed around the contaminated zone to help confine the material and any contaminated ground-water that might otherwise flow from the site. ? ?

Policy Issue #2: How can groundwater contamination be treated and removed?

Alternatives:

a) Ion Exchange: Uses synthetic resin material to exchange radio nuclide ions in the polluted water with ions in the resin material.

b) Pump it out and remove it.

c) Filtration: Removes solids by passing the fluid through a filtering system.

Policy Issue #3: What precautions should be taken at the Latty Avenue site upon completion of clean-up procedures?

Alternatives:

a) Surface seal the area (asphalt).

b) Land bank the area either temporarily or perpetually.

c) Let it revert to commercial land use.

AGENDA

Radioactive and Hazardous Waste Oversite Commission

September 14, 1993 meeting

Introductions

Old Business

1. Comments regarding City of St. Louis Commission on Hazardous Waste; conversation with Mayor's office--**BRYAN**

2. Risk assessments prepared by Department of Energy--**BRYAN**

3. Comments re DOE involvement in area wells, i.e. assessment, testing, etc.--**HAZEL**

4. Purpose of Commission and previous goals set in first meeting of the Commission--**General Discussion**

New Business

1. Representatives of the Missouri Department of Natural Resources given the opportunity to speak to the Commission.

2. County Council recommendation that this Commission review storage of dioxin contaminated waste in the "Gumbo"/Chesterfield area, and all other hazardous materials that may be stored in flood plains in the metropolitan area.

3. Set date of next Commission meeting--Tuesday, November 9, 1993, 7:30 a.m.

LATTY AVENUE DUMP SITE

ISSUE ANALYSIS

PRESENTED BY 510B ISSUE ANALYSIS CLASS

ORIGINAL

LATTY AVENUE DUMP-SITE

ISSUE ANALYSIS

PRESENTED BY 510B ISSUE ANALYSIS CLASS

SOUTHERN ILLINOIS UNIVERSITY at EDWARDSVILLE

FOR CWSE TAUGHT BY PROFESSOR MARK DRUCKER

Paul Ohlrogge SIUE Public Administration / Policy Analysis

DAVID C. WHIPPLE

Christine Kozenski

DeNay Burris-Washington

Florence Griebat

Introduction:

The disposal and containment of radioactive wastes from industry is a major issue of vital concern to the health of citizens in the community. Disposal sites, haul roads, and groundwater contamination from radioactive wastes containing uranium and thorium pose serious health risks to St. Louisians. These wastes, the by-products of uranium processing for production of the nation's atomic weapons, have been stored in St. Louis since the late 1940's. Forty years later, the waste products have been moved from where they were originally produced. Some of these new locations lie within residential and commercial/industrial areas. The risks that these sites pose to occupants until recently has not been dealt with. A recent report stated that high levels of uranium, thorium, radium, and radon were detected in soil, groundwater, and air. The Agency for Toxic Substances and Disease Registry considers the St. Louis sites to be a potential health concern because of the emission of radon and the presence of thorium in on-site and off-site soils, and the emission of radiation resulting form the presence of these materials.

Study Purpose:

The objectives of this study are to identify alternatives and make recommendations that will be useful in reducing to acceptable levels the radioactivity at the uncontrolled hazardous waste sites near the Latty Avenue area.

Issue Environment and Health Concerns:

The radioactive materials at the Latty Avenue site consist of primarily wastes from uranium and thorium processing. These wastes contain residual quantities of these elements and their radioactive decay products, which have remained as contaminants in buildings, soil material, and stream channels after operations at the sites have ceased -- or have been dumped as waste in on-site or off-site disposal areas.

The radioisotopes of concern belong to the uranium 238 and thorium 230 decay series. Hazards to the general population could occur through several pathways, including:

1) inhalation of radon decay products, particularly where radon is concentrated in building structures;
2) inhalation of particulates or ingestion of materials containing radioisotopes of the two decay series;
3) ingestion of radionuclides via drinking water and food; and
4) external body exposure to gamma radiation.

Radiation definitions and levels:

There are three types of radiation generally believed to pose health hazards. One is the alpha radiation (positively charged nuclear particles) associated with the radioactive decay of uranium. Although alpha radiation cannot pass through the outer layers of skin, it can enter the body through inhalation and ingestion. Inhalation of alpha emitting particles is a major health hazard and may contribute to lung cancer. Ingestion of water, dust, plants, or animals that contain alpha-emitters may contribute to cancer in the various parts of the body where the alpha-emitters lodge.

The second type of radiation that may pose a health hazard is gamma radiation. Gamma emitters can contribute to external exposure, since they can irradiate the human body. Such exposure can contribute to cancer in various parts of the body. Different measures may be required to reduce exposure to alpha and gamma radiation.

The third type of radiation is beta radiation (electrons). Energetic beta particles can pass through skin. The primary hazard from beta radiation, however, is internal deposition by ingestion or inhalation. The beta radiation is of secondary concern relative to the alpha and gamma radiation, as the associated risks are typically much lower.

Picocurie (pCi/gram): A picocurie is one trillionth of a curie, which refers to the amount of radioactivity in a gram of soil. One picocurie has 2.22 disintegration of radiation particles per minute.

What occurs in nature: There are emissions of radioactive particles in nature. Thorium-230 occurs at 0.2 pCi/g in soil. Uranium-238 and Radium-226 occur at 1.0 pCi/g in soil.

Soil samples taken along the haul routes of Hazelwood, Latty and Pershall indicate concentration of contaminants above the stated guidelines of: 5 pCi/g of soil for surface soil, and not more than 15 pCi/g for below surface soil levels (6 inches). These areas also indicate higher than normal gamma radiation levels. Normal background levels occur at 6 uR/h.

Samples taken along the haul routes in Hazelwood indicate radioactive disintegrations primarily from the Uranium 238 decay chain. In the banks of Coldwater Creek adjacent to the Hazelwood sites, Thorium 230 was found to be far above the DOE guidelines. Tests show readings of 5100 pCi/g of Thorium and 78 pCi/g of Uranium.

Concentrations of Thorium-230 at levels of 5700 pCi/g were found at the Latty site #2 with Uranium-238 at levels as high as 100 pCi/g, both taken at surface soil levels.

Reduced Alternative List:

1. 1a, 2a, 3a: Removal of contaminated soil to off-site disposal areas, treat groundwater with ion exchange, and surface seal the Latty Avenue area site.

2. 1b, 2c, 3b: Local disposal by capping the contaminated soil, use filtration to remove solid radioactive waste of water, and land bank the Latty Avenue site either temporarily or perpetually.

3. 1c, 2c, 3c: Vertical barriers installed around the contaminated zone, use filtration to remove radioactive solids from the water, and eventually have the Latty Avenue site return to commercial land use.

4. 1a, 2b, 3b: Removal of contaminated soil to off-site disposal areas, remove polluted groundwater by pumping process, and land bank the Latty Avenue site either temporarily or perpetually.

Recommendations:

The Latty Avenue dumpsite is in a designated flood plain, earthquake zone, heavily populated and traveled residential/commercial area, and its groundwater directly contributes to the St. Louis County water supply. For these reasons, we have decided to recommend alternative #4. This alternative provides for the removal of contaminated soil to off-site disposal areas, removal of polluted groundwater by pumping process, and land-banking of the Latty Avenue site either temporarily or perpetually.

Costs: Removal of soil is quite expensive, $895/cubic meter. But once the radioactive soil is removed, the cost for operations and maintenance is relatively inexpensive. We assume that if FUSRAP agrees to decontaminate the groundwater, the methods for clean-up will be equally expensive. After the removal of the waste, the Latty Avenue area could be turned into a GREEN area. We recommend in alternative #4 that trees be planted and the area left as a land bank either temporarily or perpetually.

In comparison with alternatives #2 and #3 which recommend the local disposal by capping or vertical barriers, replacement of containment materials will be needed every ~~50~~ 25 or 50 to 100 years because waste remains radioactive longer than the containment materials. Therefore, maintenance costs are much higher with these alternatives.

Effectiveness: Alternative #4 stresses the removal of all radioactive material, water and soil, from the St. Louis vicinity. Local disposal methods, recommended in

alternatives #2 and #3, suggest that the radioactive waste be removed and then disposed of here in the St. Louis area. Due to the fact that this area has high instability because of potential earthquakes and floodplains, we believe that the permanent storage of nuclear waste is not safe.

With the removal of radioactive wastes, we assume that there will be a great reduction in the alpha and gamma rays + Beta particles which may cause serious health problems to those exposed.

Contamination of groundwater is much less likely to occur if waste is removed. Capping and vertical barriers only control certain migrational patterns of groundwater, allowing for potential contamination of groundwater. Capping does not control horizontal groundwater migration and vertical barriers do not control vertical migration.

Feasibility: First and foremost we would like to state that any method of nuclear waste removal and storage that is done haphazardly could cause severe health and environmental problems. Once again, alternative #4 seems to be the best method of dealing with potential future risks. Waste disposal in barriers or capping methods presents a future problem of radiation exposure due to the fact that containment material will need to be replaced. If alternative #4 is implemented efficiently and correctly, the possibilities of having an uncontaminated source of groundwater are better than with the other alternatives #2 and #3.

We agree in principle with alternative #1, however the feasibility of FUSRAP choosing ion exchange to clean the groundwater is not likely due to its high cost. The ion exchange method usually requires a pre-treatment filtration system which is very expensive. According to an EPA Superfund report, ion exchange was rated very high in effectiveness and reliability in decontamination of groundwater. However, alternative #4 recommends pumping the groundwater ~~after the waste soil has been removed.~~ We believe this method to more acceptable and less costly to FUSRAP.

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BIBLIOGRAPHY

Radiological Emergency Operations - Students Manual
United States Atomic Energy Commission.

E.P.A. Assessment of Technologies for the Remediation of Radioactively Contaminated Superfund Sites. January, 1990.

E.P.A. Technological Approaches to the Cleanup of Radiological Contaminated Superfund Sites. August, 1988.

$895/cubic meter cross country haul (1988) figure N.Y. to Utah

	COSTS		EFFECTIVENESS (HEALTH RELATED)			FEASIBILITY	
	TYPICAL COSTS	MAINTENANCE COSTS	REDUCTION OF WATER HAZARDS	REDUCTION OF SOIL HAZARD	REDUCTION OF AIR HAZARDS GAMMA & ALPHA RAYS BETA	AVOID CREATION OF A WORSE HAZARD	IS TECHNOLOGY AVAILABLE TO PULL THIS OFF WILL FUSRAP USE THIS
1. REMOVE OFF-SITE ION EXCHANGE SURFACE SEAL	a) Removal of offsite $ 895/cubic meter b) Asume groundwater remediation is high priced in dollars c) High costs for asphalt; Higher cost for ~~asphalt~~ concrete	Cost and maintenance for first year for for off-site $ .045/cubic met IN UTAH Fee's charged to waste owner	Removal & land recapsulation is effective control for all migration but must find a suitable site	Removes source of radiation	We assume there will be a great reduction in Alpha & Gamma Rays with the removal of the contaminated soil.	If done haphazardly there could be severe problems	Less likely because ion-exchange is expensive & generally requires filtration as pretreatment. Potential problem with acceptance of states (i.e. CO) where waste would travel through
2. LOCAL DISPPOSAL BY CAPPING, FILTRATION, LAND BANK	a) For capping w/clay $ 200/cubic meter b) Assume groundwater remediation is high priced in dollars c) Land Bank has little to no public cost	$ .44/cubic meter for capping concrete Replacement of capping material will be needed within next 50 to 100 years because waste remains radioactive longer than capping materials life	Capping protects surface water but does not control horizontal groundwater migration Potential contamination due to flood & earthquake	Degree of radiation reduction is unknown and does not remove source of radiation Potential radiation leakage due to earthquake	Level of Alpha & Gamma Rays may not be reduced.	If done haphardiy there could be severe problems Because of replacement need for capping material for radiation exposure will reoccur Groundwater pollution is not eliminated	Yes
3. VERTICAL BARRIERS, FILTRATION, COMMERCIAL LAND USE	a) Vertical barrier $ 377/sq. meter b) Assume groundwater remediation is high priced in dollars c) Little to no public cost	Replacement of capping material will be needed within next 50 to 100 years because waste remains radioactive longer than capping materials life	Vertical barriers controls horizontal groundwater migration but does not control vertical migration Potential contamination due to flood & earthquakes	May not reduce radiation and does not remove source of radiation Potential radiation leakage due to earthquake	Level of Alpha and Gamma Rays may not be reduced	If done haphazardly there could be severe problems Because of replacement need for capping material for radiation exposure will reoccur Groundwater pollution is not eliminated	Yes
4. REMOVE OFF SITE, GROUNDWATER PUMPING, LAND BANK	a) Removal to offsite is $ 895/cubic meter b) Assume groundwater remediation is high in dollars c) Land Bank has little to no public cost	Cost for off-site $ .045/per cubic meter	Removal & land recapsulation is effective control for all migration but must find a suitable site	Removes source of radiation	We assume there will be a great reduction in Alpha & Gamma Rays with the removal of the contaminated soil.	If done haphazardly there could be severe problems	Potential problem with acceptance of states (i.e. CO) where wastes would travel through & to USAS

SIUE Southern Illinois University at Edwardsville

School of Social Sciences
Department of Public Administration and Policy Analysis

June 7, 1991

Ms. Nancy Lubiewski
65 St. Maurice
Florissant, MO 63031

Dear Nancy:

It was wonderful having the chance to work with you. We are very grateful for all of the help you provided our Public Administration graduate student group in developing the nuclear waste issue analysis for you. Thank you for all of your thoughtfulness, kindness, and support.

Sincerely yours,

Mark Drucker

Mark L. Drucker
Associate Professor

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Administrative Record for the Formerly Utilized Sites Remedial Action Program (FUSRAP) North St. Louis County Sites

St. Louis County, Missouri

US Army Corps of Engineers
St. Louis District®

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Formerly Utilized Sites Remedial Action Program (FUSRAP)

ADMINISTRATIVE RECORD

for the St. Louis Site, Missouri

U.S. Department of Energy