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**REMOVAL SITE EVALUATION BUILDING 56A
WAREHOUSE CONVERSION MARCH 1993**

DOE-FN/FERMCO

**25
RESEARCH**

REMOVAL SITE EVALUATION
BUILDING 56A WAREHOUSE CONVERSION

Fernald Environmental Management Project

U.S. Department of Energy

March, 1993

REMOVAL SITE EVALUATION BUILDING 56A WAREHOUSE CONVERSION

Introduction

At the Fernald Environmental Management Project (FEMP), current storage space for hazardous and radioactive mixed waste materials under the Resource Conservation and Recovery Act (RCRA) is almost 100% utilized. Projections show that more storage space is needed at FEMP; therefore, Building 56A is to be converted into a RCRA storage facility for radiologically contaminated non-flammable liquids and solids. [WEMCO: TD (NSS): 92-1009, 1]

Building 56A Warehouse is a single story structure measuring 180 feet by 50 feet located on the northwest side of the Site Services area, 2149 feet south of the site boundary. (See Figure 1). Prevailing winds are from the southwest. The building is a non-combustible, pre-engineered metal structure with a concrete floor. Ventilation is provided by two wall mounted fans. Building 56A was emptied for the proposed construction modifications. [WEMCO: TD (NSS): 92-1009]

Building 56A is located near the north side of the controlled area of the FEMP at the intersection of B Street and 3rd Street. This building was originally constructed for the storage of new equipment waiting to be installed in the production plants. The building was used for this purpose until the 1970's. Then it was used for the storage of non-radiologically contaminated excess equipment (office furniture, machines, transite panels, maintenance equipment, etc.). This excess equipment was either shipped to other DOE sites or sold to the general public. [WEMCO:EM:RCRA:(FME):92-003]

In late spring of 1991, this facility was cleared of excess equipment and 1789 drums of enriched unrestricted material were placed in it. These drums remained in storage until January 1992 when they were moved out to make this building available for conversion to a RCRA warehouse. [WEMCO: TD (NSS): 92-1009]

In June 1991 Building 56A was declared a Hazardous Waste Management Unit (HWMU) because 11 five-gallon and 2 ten-quart containers of spent photographic solution, and 3 five-gallon pails of photographic paper which contain silver nitrate (Silver 0011) were stored inside the building. This waste was identified and moved to the proper RCRA storage area. None of the spent photographic solution was spilled or released in the building.

There was one recorded spill of new cutting oil (approximately 8 ounces) on April 19, 1990. This material was cleaned with absorbent pads and the waste was disposed of per site procedures. Visual inspection of the building on June 3, 1992 did not reveal any significant stains on the concrete floor. There are no significant cracks in the floor that would have trapped any material.

The building was used for indoor storage of various enriched residues from March 1991 until February 1992. There were no recorded spills/releases of any residue materials during this period. [WEMCO:EM:RCRA:(FME):92-003]

The following construction activities are included in the approved Project Authorization (PA) to upgrade the building to RCRA standards:

- build a system of internal controlled curbs and ramps to upgrade the warehouse to RCRA storage standards
- repair cracks in the floor
- seal expansion joints with an elastomeric material
- seal the floor and curbing with a floor sealant compatible with the material to be stored in the building
- insulate the interior of the building

[WEMCO: TD(NSS) :92-1009]

Building 56A is to be converted to a RCRA storage facility for non-flammable liquids and solids. The material to be stored in this building has not been generated yet.

These construction activities, as well as the prior use of Building 56A as a storage area for enriched unrestricted materials, raise the following waste concerns:

- presence of residual radioactive contamination due to prior use of Building 56A. This contamination constitutes a potential release in and of itself or by contaminating construction waste
- a potential asbestos release
- presence of general construction wastes (e.g., rubble, soil, debris) which might be contaminated

This Removal Site Evaluation (RSE) has been completed by the DOE under authorities delegated by Executive Order 12580 under Section 104 of CERCLA and is consistent with Section 300.410 of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). This RSE addresses the proposed modification of Building 56A to a RCRA storage facility, involving the above listed construction activities and the potential waste generated by these activities. This removal site evaluation is being conducted to determine whether conditions are present to warrant the implementation of a removal action. This removal site evaluation consists of an evaluation of the factors defined in Section 300.415 of the NCP

which are to be considered in determining the appropriateness of a removal action.

Source Term

The two concerns in Building 56A are residual radioactive contamination and asbestos. A radiological survey dated 2/21/92 is included in this document in Appendix A. Also included is a map of the building which shows the exact location of the data points. Fifty (50) points were surveyed in the building for both alpha and beta/gamma radiation: 30 on the floor, 4 on beams, 6 on or around windows, 2 in the expansion joints, and 8 others at miscellaneous points around the building.

Levels of removable alpha contamination were below the minimum detectable activity (MDA) for the survey instrument except for a reading of 68 dpm/100 cm² at one data point. Levels of removable beta/gamma contamination ranged from undetectable to 463 dpm/100 cm². Levels of fixed plus removable beta/gamma contamination ranged from undetectable to 31000 dpm/100 cm².

Asbestos can be generated on a construction site in either a friable or non-friable form. Since the transite panels are no longer in the building, the asbestos is probably in a friable form, primarily located in the floor expansion joints. No quantifiable data are available concerning the anticipated amounts of friable asbestos to be generated; however, probably no more than 1 cubic foot of such material would be produced.

Concrete/expansion joint waste will be generated from the scabbling operation around the inside perimeter of the building for installation of containment dikes. Metal waste to be generated is from the removal of the roll-up door on the southeast end of the building. Although this door was painted with lead based paint, analytical results for TCLP lead were below the regulatory limit. Since this limit was established based on the toxicity of lead to protect human health and the environment and the concentrations of lead are below this protective limit, the threat created by a release from this material is very small. The threat is even further reduced when the site control procedures discussed below are implemented. At this point, the threat of a toxic material (lead) release from this project becomes negligible. [WEMCO:EM:RCRA:(FME):92-003]

Historical records and process knowledge of the work area did not reveal significant spills of hazardous chemicals within the project area that would pose a threat of release. Therefore, the radionuclides and asbestos, as noted above, are the only potential sources of threat created by a release from this project.

Evaluation of the Magnitude of the Potential Threat

Both radiological contamination and asbestos could constitute a potential threat if the

contaminants migrated through the air, or were carried by equipment, workers, construction wastes, or cleaning procedures.

The radiological survey performed by WEMCO in Appendix A lists radiation levels for 50 points in the building. The removable contamination is a pertinent source of threat because it can migrate. Fixed contamination in the concrete could be released into the air during scabbling which also poses a threat. The DOE limits for removable contamination are:

- alpha - 1000 dpm/100 cm²
- beta/gamma - 5000 dpm/100 cm²

These limits are 5 times the limits set by FEMP:

- alpha- 200 dpm/100 cm²
- beta/gamma - 1000 dpm/100 cm²

None of the points surveyed exceeded the alpha or beta/gamma removable contamination limits of FEMP or DOE.

Although radiological contamination is present, the threat of a release to the environment is minimal because the contamination is inside the building. Controls implemented using procedures and orders listed in Appendix B will prevent the spread of contamination during scabbling or any other construction activity. Some of these controls are described below.

- Physical barriers will be in position around the work area to prevent unauthorized access.
- Protective clothing and respiratory protection will be provided for workers, as required.
- Plastic tarpaulins and bags and appropriate containers will be readily available to contain radiologically contaminated materials, as required.
- High efficiency particulate air (HEPA) filters will be provided, as needed.

Asbestos is present in Building 56A. Although there is the potential for the release of asbestos during the building modifications, the potential for a release will be controlled through the existing procedures. Consequently, the asbestos does not present an imminent and substantial danger to the public health or welfare. All work associated with the removal or treatment of asbestos will be performed in accordance with the asbestos procedures and orders listed in Appendix B.

Potential environmental asbestos releases can also be controlled through site-specific measures. In this particular case, friable asbestos could exit the building if it were blown out of the building by the wall ventilation fans. Therefore, the removal of asbestos containing material will be carefully controlled to eliminate this pathway. Some of these controls include:

- testing joint material to see if asbestos is present
- dampening surface to be sealed
- using other existing procedures for asbestos control, including the use of personal protective equipment (PPE) to prevent worker exposure or transferral to an uncontaminated area

Construction waste generated will be handled according to site policies and procedures including SSOP-0044, "Management of Soil, Debris, and Waste from a Project" and Removal Action 17 "Improved Storage of Soil and Debris."

Assessment of the Need for Removal Action

Consistent with Section 40 CFR 300.410 of the NCP, the Department of Energy shall determine the appropriateness of a removal action. Eight factors to be considered in this determination are listed in 40 CFR 300.415(b)(2). Based on the data presented above, the following of the eight criteria listed in the NCP applies to this project.

- 40 CFR 300.415(b)(2)(i)
Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants

As discussed previously, the preventive measures taken in the field during construction mitigates the threat of a release. Therefore, while the above criterion can be applied to this project, the level of threat is negligible and a removal action is not required.

Appropriateness of a Response

Based on the evaluation of all the above factors, it has been determined that a removal action will not be necessary and this project should be continued as a best management practice in support of the CERCLA remediation process and waste management. Furthermore, the controls planned in conjunction with this construction activity are adequate to mitigate any hazards at this site and to prevent deterioration of existing site conditions.

APPENDIX B

Radiological Controls

DOE 5400.5, Radiation Protection of the Public and Environment

DOE 5480.11, Radiation Protection for Occupational Workers

FMPC-0505, Radiation Control

FMPC-515, Radiation Work Permit

FMPC-2084, Radiation Control

OSH-P-35-016, Radiation Work Permit Manual

OSH-P-35-017, Procedure for Personal Decontamination

RM-0009, Radiological Controls

APPENDIX B (Continued)

Asbestos Controls

29 CFR 1910.1001, Asbestos, Tremolite, Anthophyllite, and Actinolite

40 CFR 61, Subpart M, National Emission Standard for Asbestos

DOE 6430.1A, Section 0110-5.4, General Design Criteria for Asbestos Containing Material

ORNL/M-1227, Environmental Guidance Program Reference Books, RCRA

ORNL/M-1126, Environmental Guidance Documents, Toxic Substances Control Act

FMPC-516, Control of Permits for Accomplishing Hazardous Work

IH&S-IH-03, Control of Work Involving Asbestos

PL-FMPC-3002, Asbestos Management Plan

OM, Asbestos Operating and Maintenance Work Practices Manual

SOP-630, Inspecting and Storing Hazardous Waste

SOP-200616, Inspection of Hazardous Waste Units

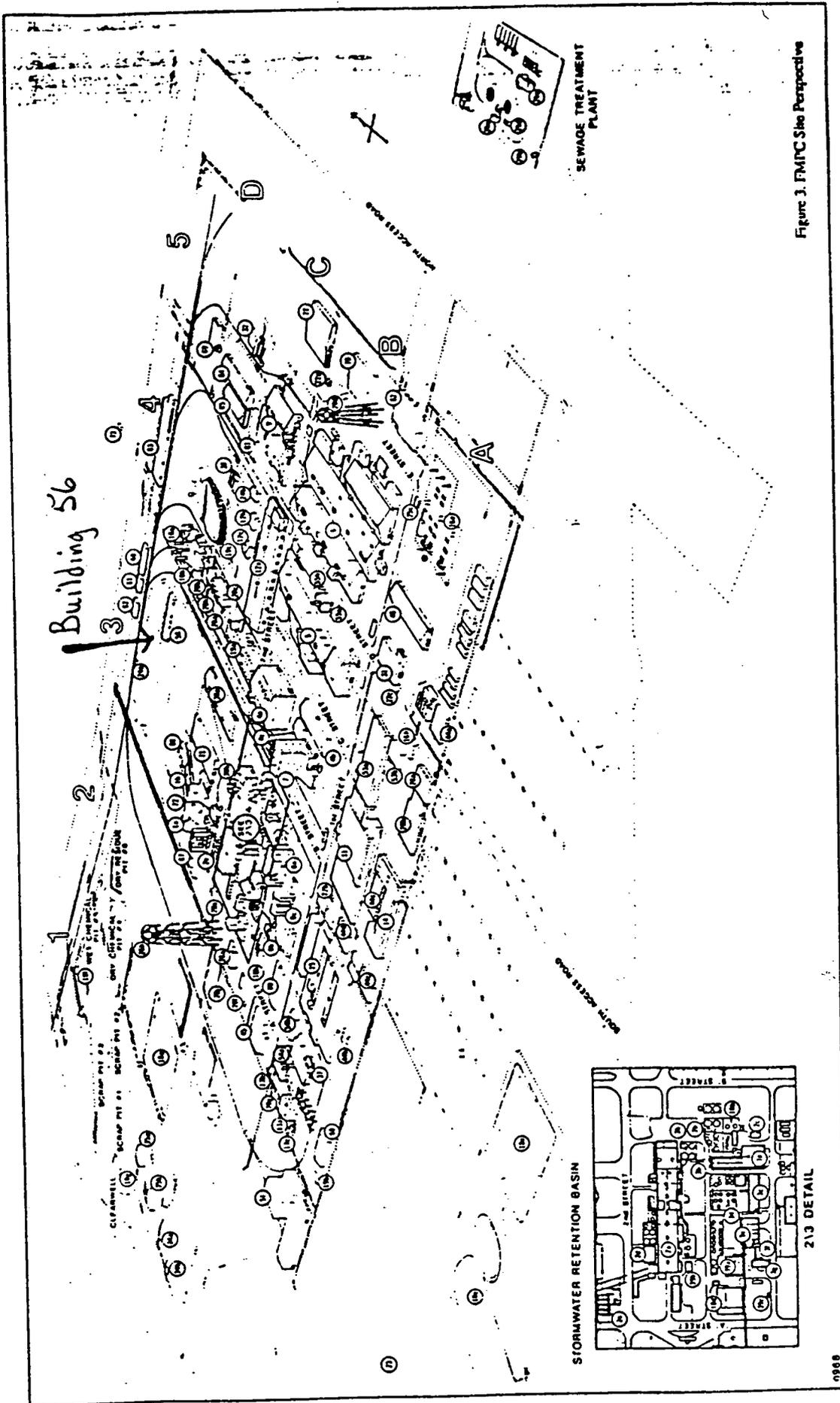


Figure 3. FMIC Site Perspective

Figure 1

Fernald Site
 IRS&T - RADIOLOGICAL SAFETY
RADIOLOGICAL SURVEY REPORT

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21-92	LOCAT. ON. Butler Building	PRINT NAME WARD ROBE	PAGE
300	LEVEL 580	SIGNATURE <i>[Signature]</i>	1 of 4
REASON FOR SURVEY	RDE - CONSTRUCTION SURVEY		

INSTRUMENTS								INSP./PERFORMANCE TEST SAT.	
MODEL	SERIAL NUMBER	TYPE (a, B, γ)	CALIBRATION-DUE DATE	BKGD. (cpm)	EFF./CF	MDA (dpm)	YES	NO	
3	77187	B.γ	4-92	100	.26	1K	✓		
14C-4	44496	B.γ	5-92	100	.24	1K	✓		
3	77208	B.γ	4-92	100	.31	1K	✓		
85100	#6	B.γ α	3-92	B.γ 2.06 α .62	.431 312	37 36.5	✓		

ITEM NUMBER	LOCATION AND/OR DESCRIPTION	DPM/100cm ² ALPHA		DPM/100cm ² BETA-GAMMA		CORRECTED DOSE RATE (MREM/HR)			
		REMOVABLE	FIXED PLUS REMOVABLE	REMOVABLE	FIXED PLUS REMOVABLE	γ	B/y	γ	B/y
						CONTACT	CONTACT	AT ___ FT.	AT ___ FT.
1	FLOOR 1	<MDA		<MDA	5K				
2	FLOOR 2	<MDA		<MDA	15K				
3	FLOOR 3	<MDA		<MDA	1K				
4	BEAM	68		463	10K				
5	FLOOR 4	<MDA		<MDA	5K				
6	WINDOW	<MDA		<MDA	<1K				
7	FLOOR 5	<MDA		41	1K				
8	FLOOR 6	<MDA		60	4K				
9	WINDOW ledge	<MDA		69	<1K				
10	FLOOR	<MDA		46	<1K				
11	FLOOR	<MDA		<MDA	2K				
12	WINDOW ledge	<MDA		<MDA	<1K				
13	FLOOR	<MDA		<MDA	1.5K				
14	EXPANSION JOINT	<MDA		<MDA	17K				
15	FLOOR	<MDA		<MDA	31K				
16	FOOTER	<MDA		<MDA	2K				
17	WINDOW ledge frame	<MDA		<MDA	<1K				
18	FLOOR	<MDA		<MDA	1K				

DISTRIBUTION OF COPIES	
1	Radiological Safety Supervisor
2	Facility Supervisor
3	Operable Unit Manager

NOTIFICATION OF SURVEY RESULTS					
SUPERVISOR NOTIFIED	TIME	DATE	NOTIFIED BY	REVIEWED BY	DATE
					010

RADIOLOGICAL SURVEY REPORT - CONTINUATION SHEET

ITEM NUMBER	LOCATION AND/OR DESCRIPTION	DPM/100cm ² ALPHA		DPM/100cm ² BETA-GAMMA		CORRECTED DOSE RATE (MREM/HR)			
		REMOVABLE	FIXED PLUS REMOVABLE	REMOVABLE	FIXED PLUS REMOVABLE	γ	B ¹³⁷ γ	γ	B ¹³⁷ γ
						CONTACT	CONTACT	AT FT.	AT FT.
19	FLOOR	<MDA		<MDA	1K				
20	BEAM	<MDA		<MDA	1K				4237
21	FLOOR	<MDA		<MDA	2K				
22	FLOOR	<MDA		<MDA	7K				
23	FLOOR	<MDA		64	1.7K				
24	BEAM	<MDA		<MDA	6K				
25	EXPANSION JOINT	<MDA		<MDA	15K				
26	FLOOR	<MDA		<MDA	1K				
27	WINDOW FRAME	<MDA		<MDA	<1K				
28	FLOOR	<MDA		<MDA	1K				
29	FLOOR	<MDA		<MDA	15K				
30	DOOR	<MDA		41	<1K				
31	FLOOR	<MDA		<MDA	2K				
32	FLOOR	<MDA		<MDA	2.5K				
33	ELECTRICAL BOX	<MDA		<MDA	<1K				
34	FLOOR	<MDA		<MDA	2K				
35	TENSION CABLE	<MDA		46	<1K				
36	FLOOR	<MDA		<MDA	6K				
37	FLOOR	<MDA		<MDA	2K				
38	FOOTER	<MDA		<MDA	2.1K				
39	DOOR	<MDA		<MDA	<1K				
40	FLOOR	<MDA		<MDA	<1K				
41	FLOOR	<MDA		<MDA	1K				
42	WINDOW FRAME	<MDA		<MDA	<1K				
43	FLOOR	<MDA		<MDA	1.5K				
44	FLOOR	<MDA		<MDA	1.5K				
45	FLOOR	<MDA		46	<1K				

