

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

January 6, 1977

Region III Files

KERR-MC GEE CHEMICAL CORPORATION, WEST CHICAGO, ILLINOIS  
LICENSE NO. STA-583

BRIEF TOUR OF FACILITY TO DETERMINE LICENSEE'S PROGRESS ON ACTION ITEMS  
DELINEATED IN NRC-III LETTER OF NOVEMBER 23, 1976, AND AGREED UPON BY  
LICENSEE IN LETTER DATED NOVEMBER 30, 1976

On January 5, 1977, IE:III inspector toured the licensee's West Chicago, Illinois facility to determine the status of progress made to date on the subject Action Items. The following observations were made.

1. The fence modifications around the waste area are about 85% completed. Inspector observed work being performed along the North fence line.
2. A clear zone of about 5 feet from the fence has been made around 75 to 85% of the site perimeter. Most of that which has not been cleared, borders on private property.
3. With the exception of the North fence now being worked on, HRM/CRM signs, about 10 inch by 12 inch size, have been installed on the inside of the fence at 50 foot intervals or less.
4. The inspector was informed that the site perimeter fence is being patrolled at least once every eight hours.
5. According to site personnel, three outside contractors have reviewed the material to be removed for disposal and presumably will be submitting bids to perform the task. One contractor was from Sheffield, Illinois and indicated that they would take all the material; the others were from New York and Pennsylvania. Personnel also mentioned that the removal work would probably not be accomplished until springtime because the residue piles are frozen and the material is to be transferred to drums for removal. Nothing further has been heard since the outside contractors were there.



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January 6, 1977

## Additional Observations

With reference to the plant area; a truck trailer and an automobile (snow covered) were parked in the South area. About four (4) to six (6) pallets containing new wood stakes were stored in this same area. A pick-up truck, not Haur Company, was observed awaiting entrance to this area through the East gate but apparently no one was in attendance at the gate to open it. Evidence of vehicular traffic through this gate was observed in the form of tire packed snow.

*C. T. Oberg*  
C. T. Oberg  
Radiation Specialist

cc: J. M. Allan  
G. T. Lonergan

October 21, 1976

Kerr-McGee Chemical Corporation  
ATTN: F. D. Lyons, Vice President  
Chemical Manufacturing Division  
Kerr-McGee Center  
Oklahoma City, Oklahoma 73115

License No. STA-303

40-2061

Gentlemen:

This refers to your letter of October 8, 1976, in which you supplied this office with a copy of a plan to provide health physics surveillance of decontamination activities at your West Chicago, Illinois facility.

In order to properly evaluate the plan proposed by your consultant, it is necessary that the Commission have a copy of the decontamination guidelines you plan to use. In this case, a copy of the Proposed Health Physics Society Standard 'Control of Radioactive Surface Contamination on Materials, Equipment and Facilities to be Released for Uncontrolled Use', should be supplied this office, and the Fuel Processing and Fabrication Branch of the Division of Fuel Cycle and Materials Safety in Washington, D. C. 20555.

The plan which was prepared by Eberline Instrument Corporation indicates that the contamination limits to be applied are different from those initially in use and therefore this office has forwarded your request for approval along with the plan to our headquarters for review and decision by the Fuel Processing and Fabrication Branch of the Division of Fuel Cycle and Material Safety.

I have included for your information, copies of the results of Region III's independent surveys made of your West Chicago, Illinois facilities at the request of representatives of NRC's Division of Fuel Cycle and Material Safety.

*Cop also in Survey &  
Sample Data file  
p. 10 1/4*

OFFICE	IE:III	IE:III	IE:III			
SURNAME	Loneran	Alton	Adams			
DATE	10/21/76	10/21/76	10/21/76			

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If you have further questions regarding this matter, please feel free to contact this office.

Sincerely yours,

James G. Keppler  
Regional Director

Enclosures:  
as stated

cc w/enclosures:  
G. W. Roy, IE:HQ  
R. F. Warnick, Regional  
Coordinator

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SURNAME #						
DATE #						

RESULTS OF SURVEYS OF BUILDINGS NO. 11, 12, 20 AND 21 AT  
KERR-McGEE CHEMICAL CORPORATION, WEST CHICAGO, ILLINOIS  
FACILITY - LICENSE NO. STA-583

Kerr-McGee Chemical Corporation submitted to NRC Headquarters on April 20, 1976, a request for the release of four buildings at their Thorium Facility in West Chicago for unrestricted use. That request was transmitted to the Region III Office of Inspection and Enforcement by memorandum through Gen W. Roy and received on July 1, 1976.

The requested independent survey was initiated by Region III, Fuel Facility and Materials Safety Branch, Materials Radiological Protection Section personnel on July 9, 1976, and concluded on July 16, 1976. The average and maximum measurements obtained for total and removable surface contamination levels are tabulated in Table I. Detailed surveys were performed in all but building 20, a truck garage. A cursory survey of this building was performed and the results are discussed in a following paragraph. Measurements were made using a PAC-30 alpha survey instrument and an end window type GM beta-gamma survey instrument with a detector window thickness of less than  $7 \text{ mg/cm}^2$  total absorber. Removable activity was obtained by wiping with dry filter paper over a surface area of  $100 \text{ cm}^2$  and assaying the radioactive material on the wipes using appropriate instrumentation available at the ERDA, ANL facilities.

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A cursory survey performed in building 20 indicated that there were no significant surface contamination levels of radiation within the building that would require further decontamination. However, upon exiting the rear (South) door of this building, ground radiation immediately increased to significantly measurable levels in the yard area behind the building. Ground radiation levels here were measured to be as high as 4 to 6 mrad/hr at some locations.

By comparison to data presented in Table I, the "Preliminary Survey" performed by Kerr-McGee personnel in the West Chicago facility is presented in Table II. The total alpha surface contamination data is graphically compared in Figure 1.

The total beta-gamma surface contamination levels in Table II were obtained using a detector with total absorber greater than  $7 \text{ mg/cm}^2$ , possibly with a total absorber of up to  $30 \text{ mg/cm}^2$ .

The data in Table II, which presents Kerr-McGee's measurements, should in all cases be equal to or less than the data presented in Table III. Table III contains the applicable values from the guidelines for decontamination of facilities and equipment prior to release for unrestricted use.

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TABLE I

Results of Independent Surface Radiation Survey Measurements Made by NRC Region III Personnel

in

Kerr-McGee Chemical Corp., Thorium Facility Buildings, West Chicago, Illinois

Building Identification/Information	Surface Contamination Levels				
	Totals		Removable		
	Alpha (dpm/100cm <sup>2</sup> )	Beta-Gamma (mrad/hr)	Alpha (dpm/100cm <sup>2</sup> )	Beta-Gamma (dpm/100cm <sup>2</sup> )	Beta-Gamma (dpm/100cm <sup>2</sup> )
No. 11, (3 car garage): Average -	3,940	1.1	88.7	160	
No. 11, (3 car garage): Maximum -	40,000	6.0	262	392	
No. 12, (Warehouse) : Average -	3,907	0.81	262	454	
No. 12, (Warehouse) : Maximum -	20,000	5.0	370	609	
No. 21, Ground Floor (Solv. Ex. Plnt): Average -	3,255	0.84	157	272	
No. 21, Ground Floor (Solv. Ex. Plnt): Maximum -	15,000	3.0	826	1,285	
No. 21, 2nd Floor (Solv. Ex. Plnt) : Average -	~ 5,000	0.30	1,161	2,243	
No. 21, 2nd Floor (Solv. Ex. Plnt) : Maximum -	70,000	4.0	2,868	5,908	
No. 21, 3rd Floor Balcony (Solv. Ex. Plnt): Average -	-	0.15	-	-	
No. 21, 3rd Floor Balcony (Solv. Ex. Plnt): Maximum -	-	0.30	-	-	

No. 20, (truck garage; not surveyed in detail)

TABLE II

Preliminary Survey By Kerr-McGee of Surface Radioactivity Contamination Levels  
in Four, West Chicago, Thorium Facility Buildings

<u>Building Identification/Information</u>	<u>Surface Contamination Levels</u>		
	<u>Totals</u> <u><math>\alpha</math> (dpm/100cm<sup>2</sup>)</u>	<u><math>\gamma</math> (mR/hr)</u>	<u>Removable (dpm/100cm<sup>2</sup>)</u> <u><math>\alpha</math> and <math>\gamma</math></u>
No. 11, (3 car garage) : Average -	< 2,000	0.2	< 150
No. 11, (3 car garage) : Maximum -	3,750	0.4	300
No. 12, (warehouse) : Average -	< 3,500	< 0.10	< 200
No. 12, (warehouse) : Maximum -	8,000	0.15	300
No. 20, (truck garage) : Average -	< 2,000	< 0.10	< 250
No. 20, (truck garage) : Maximum -	5,500	0.12	375
No. 21, (Solv. Ex. Plnt): Average -	< 2,500	< 0.1	< 100
No. 21, (Solv. Ex. Plnt): Maximum -	4,000	0.14	-



TABLE III

Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use <sup>1/</sup>

<u>Isotopes</u>		<u>Surface Contamination Levels</u>			
		<u>Totals</u>		<u>Removable</u>	
		<u>Alpha</u> (dpm/100cm <sup>2</sup> )	<u>Beta-Gamma</u> (mrad/hr at 1 cm)	<u>Alpha</u> (dpm/100cm <sup>2</sup> )	<u>Beta-Gamma</u> (dpm/100cm <sup>2</sup> )
U-nat, U-235, U-238, Th-Nat, Th-232 and associated decay products	Ave:	5,000	-	1,000	-
	Max:	25,000	-	-	-
Beta-Gamma Emitters	Ave:	-	0.2	-	1,000
	Max:	-	1.0	-	-

<sup>1/</sup> "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," USAEC, December 1973.

FIGURE 1

COMPARATIVE MEASUREMENTS OF ALPHA SURFACE CONTAMINATION LEVELS

KERR-MCGEE THORIUM FACILITY, WEST CHICAGO, ILLINOIS

KERR-MCGEE AND NRC REGION III MEASUREMENTS

