

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 04002061/83-01(DRMS)

Docket No. 04002061

License No. STA-533

Licensee: Kerr-McGee Chemical Corporation  
Kerr-McGee Center  
Oklahoma City, OK 73125

Facility Name: Kerr-McGee - West Chicago Project

Inspection At: Kerr-McGee, West Chicago, IL

Inspection Conducted: January 4-6 and 25-28, 1983

*N. A. Nicholson*  
Inspector: N. A. Nicholson

2/17/83

*M. C. Schumacher*  
Approved By: M. C. Schumacher, Chief  
Independent Measurements and  
Environmental Protection Section

2/17/83

Inspection Summary

Inspection on January 4-6 and 25-28, 1983 (Report No. 04002061/83-01(DRMS))  
Areas Inspected: Nonroutine, announced inspection of liquid effluent releases and the new operational water retention system; surface water results; airborne monitoring for personnel, the work site, and perimeter and offsite locations; personnel dosimetry; survey instrument calibration; and offsite shipment surveys. The inspector collected samples from the Building 14 sump and the Acid Alkali Storage Vault (AASV) along with the licensee for comparative results. The inspection involved 46 inspector-hours on site by one NRC inspector.

Results: No apparent items of noncompliance were identified.

## DETAILS

### 1. Persons Contacted

W. J. Shelley, Vice President, Nuclear Licensing and Regulation  
\*W. Harris, Project Manager  
\*S. C. Munson, QA Manager, Site Health Physicist  
W. Wachowiak, Safety Engineer  
\*E. Polz, Health Physics Supervisor  
M. Swanson, Senior Health Physics Technician  
M. Krippel, Health Physics Technician, Laboratory Supervisor  
K. Lambert, Health Physics Technician  
E. Marinew, Health Physics Technician  
N. Smith, Health Physics Technician  
K. O'Brian, Associate Health Physics Technician  
G. Van Desteeg, Kerr McGee Technical Center

\*Attended exit meeting January 28, 1983.

### 2. Scope

This report summarizes onsite inspection activities for January 1983. Areas reviewed include the following: liquid effluents from the laundry to the sanitary sewer and onsite water runoff released to the storm sewer; the AASV and tank retention system; surface water analytical results; airborne particulate monitoring onsite, offsite, and for occupational personnel; personal dosimetry; survey instrument calibration techniques and maintenance; and radiological results of offsite shipment surveys.

During the fourth quarter of 1982, Building 5 was prepared for demolition as authorized by Licensee Amendment 3; part of the northern section has been dismantled. The new retention system for site water runoff was constructed and put into operation. Assembly of the onsite incinerator, authorized by Amendment 2, was begun.

### 3. Actions on Previous Findings

(Closed) Open Item described in I&E Report No. 04002061/82-03 identified a gap between the perimeter fence and the embankment. The licensee has filled the gap with railroad ties to prevent unauthorized access.

### 4. Water Retention System

The new water retention system, operational since November 1982, collects surface water runoff from the factory site. Runoff north of the Building 9 Acid Alkali Storage Vault (AASV) flows through the main drain line into this basin which has an operational capacity of approximately 157,000 gallons. A two foot weir wall built in this line near the AASV precludes runoff from draining into the Building 14 sump as previously. Runoff south of the AASV collects in the sump and can be pumped through a line to the AASV. AASV contents can be pumped into any one or all of three former acid storage tanks. Through valving,

the licensee can select an individual or combination of tanks to be filled; Tank 108 has a capacity of 47,000 gallons; Tanks 108A and B capacities are 22,000 gallons each. A pump in series with the tanks recirculates effluents prior to release. If two or more tanks are being recirculated, effluents are exchanged among them. A filter in the line downstream collects large particle sediments and an inline valve controls the releases. The outflow line connects with the storm sewer drain line onsite downstream of the Building 14 valve.

During a period of exceptional heavy rainfall in December, the capacity of each tank was released twice December 6-8, 1982 to prevent backflow onsite and possibly offsite. Grab samples were collected prior to each batch release and forwarded to the Technical Center for analysis. Based on results received after the releases, no MPC unrestricted limits were exceeded. Licensee management based the decision to release on previous effluent concentrations, none of which exceeded MPC levels. To provide guidance for similar situations in the future, licensee representatives agreed to (1) write an emergency procedure outlining steps to be taken for release when the surge capacity of this system is approached and (2) keep a running tally of cumulative MPC fractions released over a year to provide a reasonable estimate of the concentrations which could be released to remain in compliance with 10 CFR 20.106(a). This is particularly important in view of the slow turnaround time for effluent analyses (Section 5).

No apparent items of noncompliance were identified.

## 5. Liquid Effluents

### a. Storm Sewer and Surface Water Collections

Samples from fourteen sites, including the Building 14 sump effluent, are collected and forwarded to the Kerr McCort Technical Center (KMTTC) in Oklahoma City for analysis. The KMTTC analyzes the soluble fraction for gross alpha and gross beta; radiometric analysis is performed when the gross alpha concentration exceeds 15 picocuries per liter. During a telephone conversation January 27, 1983, with Region III representatives, the Vice President for Nuclear Regulation and Licensing agreed that the insoluble fraction would also be analyzed at the KMTTC. Currently, both fractions of samples from the Building 14 sump are analyzed onsite for gross alpha and beta concentrations as a screening measure. This practice for effluent releases will continue, according to onsite licensee representatives, and will be extended to include AASV effluents.

The inspector reviewed the results of onsite and offsite analyses for the period September-December 1982. Licensee representatives indicated the only release during this period occurred December 6-8, 1982 (Section 4). Radiometric analyses at KMTTC (soluble fraction) and gross analyses onsite (insoluble fraction) indicated regulatory requirements were met.

The turnaround time for radiometric analyses at the KMTC appears somewhat long. Results for the December release were not received onsite until late January 1983, and the results for most of the other samples during the October-December period had not been received onsite by the end of this inspection. Licensee representatives onsite agreed to investigate the possibility of reducing the turnaround time for effluent samples.

The licensee and inspector collected analogous samples of the AASV and Building 14 sump for independent analyses. Results will be compared in a future report.

b. Sanitary Sewer Releases

Effluents from the onsite laundry are released to the sanitary sewer. Batch release are sampled and both soluble and insoluble fractions are analyzed onsite for gross alpha and beta concentrations. Concentrations of both fractions are summed for reporting. No MPC levels, with dilution considerations, were exceeded.

No apparent items of noncompliance were identified.

6. Personnel Dosimetry

Film badge records were reviewed for the third and fourth quarters of 1982. Exposures for workers and health physics personnel averaged approximately 10 mrem per month. Maximum individual exposures were 20 mrem for the third quarter and 40 mrem for the fourth quarter.

Four instances of lost film badges were reported for this period. In all cases, temporary badges were issued and evaluations of exposure made for the time period credited to the lost badge. No regulatory limits were exceeded.

No apparent items of noncompliance were identified.

7. Survey Instrument Calibration

Survey instruments are calibrated once every six months. Alpha meters have been calibrated onsite since September-October 1982; a contractor calibrates beta/gamma instrumentation. The applicable alpha procedure was reviewed which utilizes a series of NBS traceable  $^{239}\text{Pu}$  sources for calibration over several decades in a 2 pi geometry. Correction factors are used to compensate for probe size and geometry and to normalize readings to a 100 cm<sup>2</sup> probe area. Batteries are changed approximately monthly; operating voltages are confirmed on each alpha meter approximately every two to three weeks.

No apparent items of noncompliance were identified.

## 8. Offsite Shipments

Survey records for offsite shipments listed in Table 1 were reviewed. Records indicated readings were less than the Draft Guidelines<sup>1</sup> for decontamination referenced in the license. The inspector conducted an independent survey for fixed and smearable contamination of the December 20, 1982, scrap shipment to Cometco which confirmed licensee values. Licensee representatives stated material intended for offsite shipment would be rejected if values averaged greater than 1000 dpm/100 cm<sup>2</sup> direct alpha and/or greater than 200 dpm/100 cm<sup>2</sup> removable alpha.

Material intended for offsite shipments is surveyed for alpha contamination, both direct and removable, and beta/gamma activities. Health physics technicians record numerical values for beta/gamma readings if greater than background; otherwise, "background" is noted on survey sheets and may be dittoed for a series of materials. The inspector noted several survey sheets, reviewed by health physics management, where readings of beta/gamma measurements taken were not recorded; alpha values were documented. Discussions with personnel indicated background levels were measured but not noted on survey sheets. This indicates a more careful review is in order and was discussed at the exit meeting.

The licensee maintains a tracking system of material shipped offsite. A roster of drums, identified numerically, is kept; surveys of individually numbered drums can be referenced.

No apparent items of noncompliance were identified.

## 9. Airborne Activity

### a. Occupational Exposure

One worker per crew wears a personal air monitor (PAM) to sample breathing zone concentrations. A review of air sampling records indicated the 520 MPC hour quarterly limit was not exceeded. For the third quarter of 1982, the maximum individual value was 10.7 MPC hours for thorium natural; the average value, based on the exposures of twelve workers, was 6.4 MPC hours. PAM concentrations in general work areas averaged approximately 2E-12 microcuries per cubic centimeter (long lived activity) for the fourth quarter, 1982. No cumulative quarterly MPC hour totals for individual workers were available for the fourth quarter.

<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, Division of Fuel Cycle and Material Safety, 1976.

If a PAM sample is unavailable, the PAM concentrations of another crew doing similar work in the same general area is applied. If an analogous PAM value is not available, the work area grab sample is used. PAM pumps are calibrated onsite once every six months to a flow rate of two liters per minute. The pump and filter apparatus is attached to a graduated 1000 ml cylinder; the flow rate is determined according to the rise time of a soap bubble to a specific point. The pump is adjusted if necessary.

Work area grab samples average approximately one order of magnitude less than PAM values.

b. Environmental Monitoring Stations (EMS)

A total of nine EMS are located at the site perimeter (6) and offsite (3). Filters are changed each workday and counted with a gas flow proportional counter on three different occasions: (1) immediately upon return to the onsite counting laboratory; (2) five hours post collection for Pb-212 concentrations; and (3) the following Monday (7-14 days later) for thorium natural (long lived) concentrations. For the third and fourth quarters, 1982, thorium natural values for all stations averaged approximately two orders of magnitude less than unrestricted MPC levels. Lead-212 values for the offsite stations average approximately one order of magnitude less than unrestricted MPC; other sites are less than the unrestricted MPC.

No apparent items of noncompliance were identified.

10. Exit Meeting

The inspector discussed the inspection findings with onsite representatives noted in Section 1 on January 28, 1983. The licensee agreed to the following:

- (1) maintain a running record of cumulative MPC fractions released;
- (2) write an emergency procedure to cover periods when the surge capacity of the water retention system is approached;
- (3) review offsite shipment surveys more completely; and
- (4) investigate means to reduce turnaround time for liquid effluent analyses.

Attachments: Table 1



Table 1

## Offsite Shipments Reviewed

<u>Item</u>	<u>Date Shipped</u>	<u>Destination</u>
PCB Transformers	11/2/82 11/8-11/82	Ensco; El Dorado, AR U.S. Ecology Beatty, Nevada
Laboratory Reagents	12/17/82	U.S. Pollution Control, Inc. Waynoka, OK
Scrap Metal, Bldgs. 1, 3, and 5 Dumpster #4	12/20/82	Cometco Chicago, IL
Copper Wire, Bldg. 5	12/27/82	Cometco Chicago, IL
Laboratory Reagents	1/26/83	U.S. Pollution Control, Inc. Waynoka, OK