



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

August 3, 1977

*DR*  
*for*  
*FTL*

MEMORANDUM FOR: Region III Files

THRU: G. T. Lonergan, Chief, Materials Radiological  
Protection Section No. 1

FROM: C. T. Oberg, Radiation Specialist

SUBJECT: KERR-MC GEE CHEMICAL CORPORATION, WEST CHICAGO, ILLINOIS  
LICENSE NO. STA-583  
BRIEF TOUR OF FACILITY BY REGION III INSPECTOR

On July 26 and 28, 1977, an NRC Region III inspector made brief tours of the subject licensee's West Chicago, Illinois Rare Earth Plant in a continuing effort to maintain cognizance of the status of the facility.

The Action Items (AI) No. 1 through 4, as agreed to by the licensee in their letter dated November 30, 1976, appear to remain satisfied. Progress on AI No. 5 continues as Atcor personnel, contracted for removal of high concentration source material waste by Kerr-McGee Corp., package and ship material from the licensee waste storage area to Sheffield, Illinois (NECO). A total of seven (7) shipments have been made to date. All of the shipments have consisted of sealed, "tote" boxes containing thorium sulfate of varying concentrations. RIII has copies of shipment and survey data for six (6) of the shipments.

During the morning of July 26, 1977, at about 10:30 a.m. a fire took place in a tank loaded as an overpack for waste source material, during the final seal weld operation. The tank is the first of several to be used as a shipping overpack for waste thorium mantle material contained in 44 gallon corrugated fiber drums. The legs of the tank had been cut off, all penetrations had been sealed by welding, the tank was laying on its side, filled with the drums of waste, and the final plate was in the process of being welded in position to seal the tank. Apparently, sparks from the welding operation ignited the fiber drum and the fire ensued. The West Chicago Fire and Police Departments responded to the fire which was extinguished in about 20 to 30 minutes. At the time of the fire, the tank was in the open away from any flammable buildings or material, the wind

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was from the Northeast and no air sampler was in operation. Resulting smoke from the fire was carried over the gangue pile, across the railroad tracks and vacant field to the West of the licensee's waste storage area. The firemen used a complete tanker/pumper engine full of water on the fire and used foam in addition to the water. Atcor personnel surveyed both men and equipment as they departed from the site; no radioactive contamination was detected.

The RIII inspector arrived at the site waste area at about 2:00 p.m. and observed that the contents of the tank was still smoldering. General direct reading surveys were made in the area and of the tank but no discernable measurement, except for 60-70 mR/hr at the bottom interior of the tank, could be obtained because of the background effect of other items and the gangue pile in the vicinity. Upon the suggestion of the RIII inspector, Atcor personnel took an air sample in the stream of smoke from the smoldering tank contents. The sampler was set for 20 liters per minute and ran for approximately 10 minutes. A Gelman Corp., two inch filter housing loaded with a Gelman Corp. "Microsorbin" glass filter was used to collect the sample. Subsequent to sampling, the filter was measured with an end window GM survey instrument and obtained about 400 net CPM. An alpha count gave 2000 net cpm. Atcor personnel were to evaluate these data and perform some additional air sampling in the shed and at the East gate to the waste area. An incident report will be written by Atcor and a copy will be issued to RI and RIII.

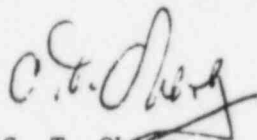
On July 28, 1977, another brief inspection tour to the Kerr-McGee, West Chicago site. With regard to the tank which caught fire, the top has been sealed by bolting and the tank was being moved into the vicinity of the sheds in the waste area to make final preparations for shipping. Atcor personnel have calculated that the Firemen and Police who were on the scene of the fire on July 26, 1977, were exposed to 11 mR for a total of 44 minutes in approximately a 15 mR/hr field. The air sample taken at the smoldering tank calculated to contain  $2.12 \text{ E-}10 \text{ } \mu\text{Ci/cc}$   $\beta\text{-}\gamma$  and  $3.53 \text{ E-}10 \text{ } \mu\text{Ci/cc}$  alpha at about 3:15 p.m. on July 26, 1977. At 5:15 p.m., the alpha activity had decreased to  $1.64 \text{ E-}12 \text{ } \mu\text{Ci}$ . Based upon the  $3.53 \text{ E-}10 \text{ } \mu\text{Ci/cc}$  alpha and  $2 \text{ E-}12 \text{ } \mu\text{Ci/cc}$  MPC for a 40 hour week for thorium 230, as the most restrictive radioisotope, those on the scene of the fire were exposed to about 24% of a MPC for a 13 week period as calculated by Atcor personnel. As a basis of comparison and for background references, Atcor personnel performed air sampling at the East gate to the Kerr-McGee waste storage area. The results of this measurement gave  $1.33 \text{ E-}10 \text{ } \mu\text{Ci } \beta\text{-}\gamma\text{/cc}$  and  $4.9 \text{ E-}13 \text{ } \mu\text{Ci alpha/cc}$ . A

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second air sample measurement was being made inside the waste storage shed where the loading was being performed and dust was created in the process. Personnel involved in these operations were wearing coveralls, gloves, head covers and respirators. The doorway to the shed is being used as a change point. The results of the second air sample were not available at the time that the inspector left the site.

Atcor personnel are continuing the packaging and shipment of waste source material for the subject licensee.

Brief inspection tours to the Kerr-McGee, West Chicago facility will continue as necessary to remain cognizant of the status of the facility and programs in progress.



C. T. Oberg  
Radiation Specialist