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

September 30, 1977

MEMORANDUM FOR: Region III Files

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

FROM: C. T. Oberg, Radiation Specialist

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

On August 16 and September 6, 1977, NRC Region III inspectors made brief inspection 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 and the work in progress.

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. Work on AI No. 5 is in progress.

ATCOR personnel under contract to the subject licensee, continue to package waste source material from a storage shed in the waste area, in preparation for shipment to NECO, Sheffield, Illinois, for burial.

During inspection tour of August 16, 1977, the inspectors were informed that Tri-State Hauling, licensed transporter, had picked up the five (5) large tanks containing waste thorium (mantle) material as overpacks in three (3) separate shipments. The tanks went to Seneca, Illinois, (Tri-State terminal) enroute to NECO, Sheffield, Illinois, for overnight instead of the driver stopping at some motel with the shipment. Two (2), 2,500-3,000 gallon tanks were shipped on August 10, 1977. The highest surface contact readings from these tanks were 22 mR/hr which, based upon ATCOR's calculations of 10 mCi of thorium 232 for a maximum measured dose rate of 40 mR/hr, gave a total of 5.5 mCi for each tank. The shipment also included three (3) "Tote" boxes containing 3.2 mCi each of thorium 232. The total shipment contained 20.6 mCi.

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On August 11, 1977, one more tank of the same size was shipped plus five (5) "tote" boxes. The tank contained 10 mCi, three boxes contained 3.2 mCi, one box contained 4.8 mCi and the last box contained 6.4 mCi for a total of 30.8 mCi of thorium for this shipment. The final shipment took place on August 15, 1977, and contained only two (2) large (5,000 gallon) tanks. One tank contained 10 mCi and the other contained 35 mCi for a total of 45 mCi for this shipment. These shipments appeared to satisfy the requirements for Type A shipments.

Additional air particulate sample data through August 15, 1977, was obtained during this same inspection tour. These data were from samples taken within the storage shed while ATCOR personnel were loading containers with thorium bearing materials for shipment. All sample results to this date have shown less than a concentration of 2×10^{-8} uCi/ml and average about 5×10^{-9} uCi/ml. Personnel working in shed wear respirators for which ATCOR has approval.

The RIII inspectors were also informed that Mr. Levesque, Corporate RPO for ATCOR, plans to be at the Kerr-McGee, West Chicago, IL site on August 22 and/or 23, 1977, for the purpose of supervising the transferring thorium bearing material from the Marvin Moore Chemical Company storage barn, Andres, IL to the Kerr-McGee site as an intermediate transfer point for loading and shipping to NECO, Sheffield, IL for burial. Kerr-McGee has contracted ATCOR to perform this removal and transfer of the source bearing material, to perform a detail survey of the Chemical Co. storage barn subsequent to the material removal and to specify what, if any, additional decontamination may be necessary to release the storage barn for unrestricted use.

The inspectors were also informed that vandals had breached the waste storage area security fence and had stolen the DOT type "RADIOACTIVE" signs from the trailer which had been parked overnight.

ATCOR personnel are presently employing new, unused 55-gallon drums with sealing lids, as overpacks for remaining thorium bearing waste material. These drums are being loaded with monazite sand, sealed, removed from shed and then washed free of any surface dirt. Many of these drums are sitting on skids awaiting shipment to NECO, Sheffield, IL for burial.

During the inspection tour of September 6, 1977, the inspector performed a verification survey of a loaded trailer ready to depart for NECO, Sheffield, IL. The highest contact beta-gamma readings obtained from the sides of the trailer were 11 to 12 mR/hr and at about three (3) feet from the trailer, readings of 3 mR/hr were obtained. At the outside rear of the tractor cab, a measurement of about 1.5 mR/hr was made. These readings appeared to agree favorably with those made by ATCOR personnel.

Mr. Robert Levesque, ATCOR Corporate RPO, had replaced Mr. George Williams as Supervisor for the week of September 5, 1977, while Mr. Williams returned to their HQ offices for personal reasons. Mr. Williams will return by September 12.

The inspector was informed by ATCOR personnel that they expect to complete the present waste removal, terminate the contract, and be off of the site by September 16, 1977. Tentatively, some personnel will remain to perform an assessment survey for the feasibility of cleanup of the site.

The inspector reviewed the ATCOR personnel dosimetry data for the months of July and August 1977 (through August 21, 1977). Personnel are using both dosimeters and whole body badges. ATCOR has NRC-4 and 5 forms for all of their workers and is permitting up to 2500 mRem per quarter for them. The film badges for eight (8) individuals during the month of July ranged from 210 to 530 mRem and the corresponding dosimeter readings were 160 to 504 mRem. For August 1977, seven (7) workers were badged and their film badges ranged from 480 to 660 mRem with one low of 160 mRem for the supervisor. The agreement between some of the dosimeter and film badge readings for the month of August was reviewed and the following data was obtained.

COMPARISON OF FILM BADGES WITH DOSIMETERS
ATCOR PERSONNEL AT KERR-MCGEE, WEST CHICAGO, IL SITE
8/77

<u>Reference</u> <u>Identifications</u>	<u>Film Badge Reading</u> <u>(mRem)</u>	<u>Dosimeter Reading</u> <u>(mRem)</u>
A	660	497
B	480	481
C	480	348
D	600	602

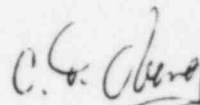
Comparison of the preceding readings shows that good agreement was not always achieved between the badges and dosimeters, the latter appearing to be low. ATCOR supervision was questioned about this but could not qualify or identify reasons for the differences. The workers appear to be wearing both items while performing their tasks but the dosimeter may at times be worn under coveralls and thus may be somewhat shielded.

The inspector was informed that vandals had again penetrated the security fence around the waste area and had stolen a box of tools from the subcontractor's truck. The security guard apparently did not see the

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trespassor(s) and there was no apparent evidence of damage to, or a break in, the security fence around the waste area. The local law enforcement agency (West Chicago, IL Police) were contacted, by both Kerr-McGee and ATCOR personnel, and informed of the incidents plus the fact that some of the tools may possibly be contaminated with low levels of thorium waste radioactivity. Nothing further has been heard from the police on the stolen items.

Brief inspection tours of the subject licensee's facility will continue as necessary to maintain cognizance of the status of the facility and the progress of any work being performed.



C. T. Oberg
Radiation Specialist

cc: J. M. Allan