KERR-McGEE CHEMICAL CORPORATION
KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

September 30, 1983

J. G. Keppler
Regional Administrator
Region III, USNRC
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Re: Docket No. 04002061

Dear Mr. Keppler:

This responds to the Notice of Violation for Kerr-McGee Chemical Corporation's West Chicago Facility, which is operated pursuant to NRC License No. STA-583. The Notice was received under cover letter dated August 31, 1983 and alleges violations of two NRC regulations. Kerr-McGee objects to each of the citations of violation contained in the Notice. On the basis of the discussion below and NRC enforcement policy evidenced in 10 CFR Part 2, Appendix C, Kerr-McGee urges that the Notice be rescinded.

10 CFR 20.201(b)

The first alleged violation involves 10 CFR 20.201(b). That regulation requires that each licensee make or cause to be made such surveys as may be reasonable under the circumstances to evaluate the extent of radiation hazards that may be present and necessary to comply with NRC regulations. The Notice asserts that Kerr-McGee Chemical violated these requirements in that surveys for lead-212 were not made in an unrestricted area outside the facility fenceline although surveys in an adjacent restricted area some nineteen feet inside the fenceline showed lead-212 levels in excess of the limit for unrestricted areas. In this regard, it should be noted that the survey data on which the Notice is based were furnished to Region III by Kerr-McGee.

Kerr-McGee has been in reasonable compliance with 10 CFR 20.201(b). It has operated, and continues to operate, sufficient environmental monitoring stations for evaluating the extent of any potential radiation hazards associated with the West Chicago facility and for complying with NRC regulations. The citation of violation is accordingly inappropriate and should be rescinded. A number of factors support these conclusions.

First, the Company could reasonably conclude that monitoring of the specific location to which the Notice pertains was irrelevant for the purpose of evaluating radiation hazards or for assuring compliance with NRC regulations. The area in

question is a small parcel of land lying immediately between the restricted area and a 10 to 15 foot high railroad embankment. There is no occupancy of this area and any radiation exposure to casual traffic -- whether pedestrian or on a passing train -- would be negligible. This aspect was detailed previously and agreed to by the Atomic Energy Commission when, in response to the Company's request, License No. STA-583 was amended by AEC in accordance with 10 CFR 20.105(a). That amendment authorized the licensee "...to produce a radiation level in the unrestricted area at the southwest boundary of the licensee's plant of not more than 2.5 millirems per hour."* The unrestricted area for which this authorization was granted, and which has been continued by NRC, includes that small parcel of land between the facility fenceline and the railroad embankment --the same area in question regarding this citation. Moreover, NRC's own assessment, as contained in USNRC Region III Report No. 04002061/83-02 (DRMSP) of August 4, 1983, estimates actual exposures to lead-212 concentrations for the area in question would range from 1.0% to 2.4% of unrestricted MPC limits.

Second, the Company's monitoring program for airborne particulates has complied with 10 CFR 20.201(b) requirements as construed by NRC for milling operations. NRC has published in the form of Reg. Guide 4.14 (Rev. 1, 1980) an extensive interpretation of the §20.201(b) provision as applied to raw materials processing. This Regulatory Guide nominally applies to uranium mills but may reasonably be relied upon by licensees of other raw materials operations, such as thorium mills, which are comparable to uranium mills. Reg. Guide 4.14 calls for a minimum of three stations for monitoring air particulates (including the lead decay product of radon) at or near the site boundary. Kerr-McGee maintained at least four such stations at its West Chicago facility.** Moreover, the four stations were reasonably located at points near areas where exposure might potentially occur. (All these stations indicate ready compliance with unrestricted area limits.) The Company thus conformed to the requirements for air particulate monitoring specified in the pertinent regulatory guide. It is arbitrary and unreasonable to cite Kerr-McGee for a violation of §20.201(b) when the Company has complied with NRC's own interpretation of the regulation as applied to raw materials processing activities.

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* The level of 2.5 mrems per hour implicitly applies to external gamma dose rate for the area in question. However, the 2.5 mrem/hr is equivalent to a level some 44 times the nominal level that would result in the dose limit for a member of the public under 10 CFR Part 20. By analogy, the maximum permissible concentration (MPC) of lead-212 in air would thus be 44 times the nominal unrestricted MPC. The authorization was granted because it was clear the potential was very slight for an individual to be exposed and any potential dose would therefore be well below the nominally permitted limit.

** EMS 1,2,3 and 4 monitored for air particulates, including lead-212, the decay product of radon-220, at or near the site boundary.

Third, although the facility has been under license since May 1, 1956 and has been inspected for compliance with applicable regulations on numerous occasions, NRC and NRC Region III have never questioned the completeness or adequacy of the Company's survey procedures nor the location of the survey stations. To the contrary, NRC Region III inspection reports have indicated the Company's monitoring program to be in compliance with requirements. This confirms Kerr-McGee's position that it has complied with § 20.201(b), particularly in view of the fact that conditions pertaining to the portion of the facility site of interest have remained virtually unchanged for the past ten years. Put another way, the Region III staff's current interpretation of § 20.201(b), the basis for the citation of violation, is inconsistent with previous interpretations and with repeated previous evaluations of Kerr-McGee's monitoring program.

In short, Kerr-McGee strongly believes a reasonable evaluation confirms that monitoring the small area between the fenceline and the railroad embankment serves no health or safety purpose and was not required by § 20.201(b) as construed in Reg. Guide 4.14. The Company believes the citation of violation is therefore without basis and should be rescinded.

Without wavier of the views expressed above, the Company has undertaken additional monitoring at the request of NRC Region III staff, as described in the August 31, 1983 cover letter and the attached Report of Inspection. This additional monitoring should correct any concerns of Region III with respect to the Company's survey program.

10 CFR 20.106(a)

The second alleged violation involves 10 CFR 20.106(a). That regulation provides that a licensee shall not possess licensed materials so as to cause a release to an unrestricted area radionuclides in concentrations that exceed limits specified in 10 CFR 20 Appendix B, Table II. The Notice asserts that Kerr-McGee Chemical violated this requirement because Region III staff estimate lead-212 concentrations in excess of the Table II limit were released to the unrestricted area west of the boundary fence in the proximity of the thorium waste tailings pile. In particular, Region III staff estimate the concentration between the site boundary and the railroad embankment may be 1.4 MPC on an annual average basis.

Kerr-McGee strongly objects to this citation. Even if the lead-212 concentration in the small area between the facility fence and the railroad embankment is as Region III staff projects it to be, there is no cause for public health or safety concern. As discussed above, there is no occupancy of this small parcel of land, nor could any significant occupancy of the area be reasonably expected. In confirmation, NRC expressly recognized that "...the actual human exposure (in the area in question) appears to be low based on low occupancy..." Inspection Report 04002061/83-02 at page 7. Also as pointed out above, NRC has granted the Company a license condition authorizing along the southwest boundary of the facility radiation levels equivalent to about 44 times the nominal level that would result in the allowable dose limit to the public.

Furthermore, the Company believes the extrapolation and projection procedure used by Region III staff fails to take into account a number of important aspects and therefore does not constitute a valid basis for presuming lead-212 levels have exceeded the unrestricted area limit. The determination by Region III that lead-212 levels exceed the allowable limit has effectively been projected on the basis of 86 days of sampling results, over a consecutive 3-month period. The Company believes this is an insufficient basis for arriving at such a determination in this instance. Lead-212 is a short-lived decay product of the very short-lived gas, radon-220. Radon-220 is comparable to radon-222 in regard to factors that influence its concentration in ambient air. Many authorities have observed that the concentration of radon-222 and its decay products vary widely within very short distances as well as diurnally and seasonally. Further, the concentration is markedly influenced by local meteorological conditions. See, e.g., Gesell, Background Atmospheric Radon-222 Concentrations Outdoors and Indoors: A Review, 45 Health Physics 289 (1983); United Nations Scientific Committee on the Effects of Atomic Radiation, Ionizing Radiation: Sources and Effects, Annex D 141 (1982). A similar conclusion may reasonably be expected to apply with respect to radon-220 and its decay products -- concentrations at any point vary widely from concentrations at a nearby point and are highly dependent upon many factors.

Although NRC has attempted to correct its calculations for diurnal variations, there has not been sufficient time to evaluate accurately possible seasonal effects. The only valid method for determining radon and radon decay product concentrations with a precision in the range of 1/2 MPC (the amount which NRC alleges Kerr-McGee exceeded the standard) is through measurement over a sufficient period of time. For example, the Surgeon General's guidelines for Grand Junction call for multiple measurements throughout a period of a year (10 CFR 10.20.3(g)). While extrapolations such as presented in the citation do not rule out the possibility that lead-212 concentrations in the area in question could be in excess of the Appendix B, Table II limit, such extrapolations do not constitute a demonstration of non-compliance.

The Company has been in reasonable compliance with the pertinent regulation. The Citation of Violation is inappropriate and should be rescinded.

Enforcement Policy

Finally, Kerr-McGee notes that the Citation of Violation is contrary to NRC's General Policy and Procedure for NRC Enforcement Actions, 10 CFR Part 2, Appendix C IV. The statement of policy explains that "---NRC will not generally issue a Notice of Violation for a violation that meets all of the following tests: (1) It was identified by the licensee; (2) It fits in Severity Level IV or V; (3) It was reported, if required; (4) It was or will be corrected.., within a reasonable time; (5) It was not a violation that could reasonably be expected to have been prevented by the licensee's corrective action for a previous violation."

All these conditions are satisfied in the situation presented here.

1) The alleged violations were identified by the licensee. The pertinent inspection report indicates that this matter arose due to data which Kerr-McGee reported to NRC for EMS #6.

2) The violations were both classified in Severity Level IV by NRC.

3) There was no reporting requirement applicable. See 10 CFR 20.405(a)(5).

4) The problem which NRC staff perceived has been promptly addressed and corrected within a reasonable period of time.

5) There was no previous violation relating to the alleged violations at issue here.

In sum, under NRC's own enforcement policy, a Notice of Violation should not have been issued even if a violation or violations occurred as alleged in the Notice issued Kerr-McGee.

Measures Taken by Kerr-McGee

Kerr-McGee has implemented a program designed to reduce further the lead-212 levels in the area in question. The facets of the program and data showing its effectiveness are presented in the attached appendix and respond to the specific requirement in the Notice to submit a written explanation within thirty days of corrective action taken and results achieved. In addition, it is noted that monitoring data have been reviewed by Region III staff and that discussions have been held between Region III and Kerr-McGee staff regarding the data.

The measures taken to reduce lead-212 in the area in question prior to decommissioning the facility are necessarily temporary in nature and must be removed for construction activities during decommissioning. Moreover, measures to reduce lead-212 in the area between the facility fenceline and the railroad embankment are unnecessary to protect public health and pose costs disproportionate to any benefit gained. Kerr-McGee believes that it would therefore be appropriate to establish, pursuant to 10 CFR 20.106(b) and 20.501, an exception to the Table II MPC limit for airborne lead-212 in the area between the railroad embankment and Kerr-McGee's restricted area. The exception would be for the duration of activities related to final tailings stabilization.

All criteria specified in §20.106(b) for establishing such a limit have been satisfied. More specifically, Kerr-McGee has made a reasonable effort (see Appendix A) to minimize lead-212 levels in the area in question (§20.106(b) (1)); and NRC staff admits that the lead-212 concentration in the area in question will not result in an exposure of an individual in excess of the limits specified in Part 20, App. B, Table II (20.106(b)(2)). Amendment of the license to establish such a limit specifically for lead-212 would be consistent with the previous amendment authorizing levels of 2.5 millirem per hour in that

area. Kerr-McGee notes, however, that the best method to obtain further reductions of lead-212 levels would be the expeditious stabilization on site of the thorium residues that result in the lead-212.

Kerr-McGee has demonstrated that it is committed to taking all measures reasonable and necessary to protect the public health and safety and the environment related to emissions from the inactive thorium processing facility at West Chicago. However, Kerr-McGee believes that, under the circumstances which have occurred as outlined in the Notice of Violation and herein, a Notice of Violation should not have been issued because such a Notice is unwarranted. The Notice should be rescinded by NRC Region III.

Should the Region III staff require supplemental documentation supporting this summary of our position or for purposes of rescision of the Notice, Kerr-McGee will provide such documentation immediately.

Very truly yours,

I. L. Denny
Manager, Special Projects

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Attachment - As

APPENDIX

The Notice of Violation from NRC, dated August 31, 1983, requested the following information from Kerr-McGee Chemical Corporation within 30 days:

1. Corrective action taken and the results achieved.
2. Corrective action to be taken to avoid further non-compliance.
3. The date when full compliance will be achieved.

Although Kerr-McGee does not admit to a violation, the Company has undertaken the following actions to reduce lead-212 concentrations in the small unoccupied area between the railroad embankment and the southwest boundary of the property:

1. A water spray system controlled by an automatic timer was installed in April 1983 on the top and sides of the thorium waste tailings pile. Spraying began April 18, 1983.

2. The water spray system was extended to the east of the tailings pile in May 1983; operation began on May 26, 1983.

3. It became apparent during May 1983 that other sources of thorium residues were contributing to the lead-212 concentration. Additional detailed surveys were conducted on a grid system basis to delineate the sources more precisely. These surveys identified the area between the pond sediment pile and the tailings pile, as well as several localized areas to the west of Building 19, as containing elevated thorium residuals.

4. As a result of additional survey work and the apparent inefficiency of the water spray system in substantially suppressing thoron emanation, application of an asphalt suppression system began July 13, 1983. This system consists of a light coat of cationic asphalt emulsion followed by a non-woven geotechnical fabric (Mirafi) and then a relatively thick top coat of asphalt emulsion. Asphalt emulsion is applied at a rate of 0.22 to 0.26 gallons per square foot.

   Application of asphalt emulsion has been an ongoing program and was begun in areas identified as having the higher thorium residuals.

   Asphalt emulsion has been applied in the following sequence:

   a. July 18, 1983 - Area between tailings and sediment pile covered.

   b. July 29, 1983 - Sides of tailings pile covered.

   c. August 10, 1983 - Localized areas west of Building 19 covered.

   d. August 19, 1983 - Remainder of tailings pile covered.

   e. September 6, 1983 - Sediment pile covered.

   f. September 28, 1983 - Strip of soil adjacent to the west toe of the tailings pile covered.

5. Building 19 has been identified as a source of thoron, and major openings in this building were closed on September 21, 1983.

Through September 6, 1983, a total area of approximately 150,000 square feet or about 3.5 acres has been covered with asphalt emulsion. The total cost has exceeded $80,000, not including engineering or salaries of supervisory personnel. The resulting cost is approximately $0.53 per square foot or $23,000 per acre.

We believe the actions taken will assure annual average lead-212 concentrations at off-site monitoring locations EMS 10 and 11 will be in compliance with 10 CFR 20 App. B, Table II, as interpreted by NRC Region III in the Notice of Violation issued to Kerr-McGee on August 31, 1983. The monitoring data collected during the period since the asphalt emulsion was applied (September 6, 1983 through September 23, 1983) show lead-212 concentrations at EMS 10 and 11, located between the fenceline and the railroad embankment, are well below Table II MPC limits. The respective MPC fractions for the period are 0.42 and 0.69. Extrapolated for one full year, these data indicate ready compliance with unrestricted area limits and represent a substantial reduction from prior calculations of MPC fractions.

We will continue the extensive on-and-off-site monitoring and timely evaluation of the data obtained. If it appears levels do not remain sufficiently low, additional actions will be taken. These actions may include asphalt applications over areas not currently covered. However, for the reasons stated in the main body of this response, no health risk is posed by the lead-212 levels in the area in question. We continue to believe that additional control measures are neither necessary nor justified.