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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOV 21 1979

40-2061

Kerr-McGee Chemical Corporation
ATTN: Mr. Ivan L. Denny
Project Manager
Kerr-McGee Center
Oklahoma City, Oklahoma 73125

Dear Mr. Denny:

Enclosed are copies of the comments prepared by various organizations on the proposed stabilization plan for the West Chicago, Illinois, site. We discussed these comments in our meeting on November 13, 1979. We expect to receive comments from the Illinois Environmental Protection Agency and the Illinois Department of Public Health and will forward the comments to you when they are received. As we discussed at the meeting, answers to the comments should be submitted as replacement or additional pages for the stabilization plan report. Changes or additions should be clearly marked. A cross reference relating changes in the report to comments would be helpful.

I am also enclosing a copy of a study made by the Region III Office of Inspection and Enforcement of NRC on the airborne risks posed by thorium-bearing residues found at various locations in West Chicago.

Sincerely,

Handwritten signature of W. A. Nixon in cursive.

W. A. Nixon
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

Enclosures:

1. Comments
2. Region III Study

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Uranium Fuel Licensing Branch

Comments on Kerr-McGee Stabilization Plan

1. The discussion of alternatives to on-site stabilization should be expanded. There is, currently, too little information and analysis presented to lead to the conclusion that on-site stabilization should be the preferred solution. Further, the reasons given for the rejection of potential alternatives are, in some cases, weak.
2. In various places in the plan, reference is made to removal of fencing around the disposal site and to a 3-year period for monitoring the disposal sites. If on-site stabilization is approved, decisions as to fence removal and termination of monitoring will be made by NRC based on the results of an ongoing Kerr-McGee monitoring program. The length of the monitoring program cannot be now established.
3. Tailings material is present in Kress Creek as a direct result of lack of control of tailings in the past. Kerr-McGee should address the problem of, and responsibility for, clean-up of Kress Creek.
4. If on-site stabilization is selected, rain water may collect in the lined area before the area is capped and the water may be contaminated. Provisions for sampling the water and for disposal of the water should be included in the plan.

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5. If contaminated water is detected in the lined area after stabilization is completed, how would the water be handled?
6. The plan should include and discuss the "as low as reasonably achievable" concept as applied to off-site releases and personnel exposures during all phases of the demolition and stabilization operations.
7. The criteria for surface water sampling and analysis during stabilization operations as given on Page 7.6 is inadequate. Quarterly sampling is too infrequent and the analyses to be performed are not listed.
8. Criteria given for stabilized wastes and for decontaminated ground areas on Page 7.8 are not acceptable. The GEIS on Uranium Milling includes criteria acceptable to the staff. These criteria include, for buried wastes, a calculated radon release rate of $2 \text{ pCi/m}^2\text{-s}$ and direct gamma exposure of essentially background. Criteria for decontaminated mill sites are given in Appendix J, Volume II, of the Draft GEIS on Uranium Milling (NUREG-0511).
9. A copy of the letter from DOE denying the use of Argonne or Fermilab as disposal sites should be included in the plan.

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ANL COMMENTS ON THE KERR-McGEE

STABILIZATION PLAN DATED AUGUST 15, 1979

I. The new (August 15, 1979) plan includes adequate response to most of the earlier ANL comments (February, 1979). However, a few comments have not been adequately addressed including: 4, 11, 12, and 35.

4. There is still no adequate characterization of site area terrestrial biota.
11. There are still no specifics on borrow area, location, potential impacts and mitigative and reclamation measures.
12. No mention is made of dewatering at all. At least a small paragraph as to why this is not necessary seems in order. If it is still contemplated, details are needed in the report.
35. A sufficient number of samples (see Comment #14 below) are necessary to make an adequate estimate of the average activity concentration of the residual material. However, the radiological analysis in the applicant's latest decommissioning plan is still based on single samples of the sludge and ore residues.

II. Our review of the new plan has identified other specific deficiencies as indicated in the following comments:

1. Section 2.6.1 Surface Water

There is no discussion of offsite surface water (e.g., Kress Creek and W. Branch DuPage River). These streams ultimately receive runoff from the site and should be included in vicinity drainages discussion especially Kress Creek as this creek is mentioned later in Sections 7, 8 and 9. Impacts on these streams should be discussed in Section 5.

2. Section 3.2.3 Groundwater Analyses

The first paragraph states..."groundwater quality...is acceptable". The question is, by comparison to what standards or criteria, certainly not drinking water quality? Comparative data should be included.

3. Page 4.28

More discussion is needed concerning location, mitigative measures and reclamation of borrow areas.

4. Page 4.37 and 4.38

What is the source (location) of silty, clay deposits tested as liner and cap material?

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ANL Comments on Kerr-McGee, August 15 Plan - Continued

5. Section 5.6.2

Please explain how recharge will improve Kress Creek water quality.

6. Section 7.3.1, page 7.2.

It would seem more appropriate to have monthly samples of Kress Creek outlet during excavation and grading activities plus during heavy runoff periods.

7. Section 7.3.2 Groundwater

No mention is made of monitoring nearby offsite wells penetrating the dolomite aquifer. It would appear prudent to monitor some of these (closest ones) perhaps on an annual basis at least through the first five years after decommissioning.

8. In the Summary and Conclusions, Kerr-McGee states that "the most significant negative impact of Kerr-McGee's plan on the residents of West Chicago will be the increase in truck traffic in vicinity of the facility during implementation of the plan" (pg. iv). On page 4.28 of the ER, it states "Kerr-McGee is exploring means to minimize the inconvenience to the community, including the use of railroad transportation to bring clean materials on site". However, the preferred plan limits transport of materials to the site by truck. The revised ER should indicate how local agencies will be involved in the transportation planning for decommissioning including routes, road repair, and signing. Will there be local agency approval of the traffic plan?

9. The ER concludes on pg. 4.29 that noise emission levels are not anticipated to be a health hazard. However, no current noise levels have been measured at the site. The noise levels from heavy equipment at the site have not been cited nor have the noise levels to nearby residences been calculated. These calculations should be made and reflect both indoor and outdoor noise levels due to onsite heavy equipment; and include noise due to truck traffic entering the site from the proposed routes of travel.

10. There should be some provision for traffic coordination and monitoring during the three year decommissioning process.

11. The radiological analysis is well structured but needs to be better documented and extended in the following areas: (1) the basis for the radionuclides' activity concentrations in the sludge and residue piles is not adequate and (2) the analysis should include health effects due to inhalation of Rn-220 (thoron) and daughters.

12. (p. 3.23 Table 3.2.2(b)) Based on the volume, density, and activity concentration of U_{nat} given elsewhere in the document, the mass of U_{308} in the sediment pile should be close to 1000 lbs. Why is the value given here (2800 lbs) so much higher?

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ANL Comments on Kerr-McGee, August 15 Plan - Continued

13. (p. 3.31, Table 3.2.3e) The isotopic analyses given here for the sludge and ore residues are based on a single sample from each. This is not adequate. It is suggested that at least 12 samples be taken, at three locations on each residue pile and at two depths per location. The samples should be broken down by particle sizes into $< 10 \mu\text{m}$, 10 to $50 \mu\text{m}$, $50\text{-}100 \mu\text{m}$ and several standard size groupings above $100 \mu\text{m}$. The activity concentrations of the three smallest particle size groups should be measured.
14. (p. 5.3, Table 5.1) The units of the values given in this table should be provided.
15. (Appendix II, p. 1) Why is Rn-220 (thoron) dose effect not considered? High concentrations of Ra-224 exist in both the sludge and residue piles, so that the dose from thoron decay products could be non-trivial at short distance.
16. (Appendix II, p. 3, 2.1.1.1) Ra-226 activity concentrations in the residues and sludge are determined from too few samples (only one each). The materials comprising the residues and sludge can be expected to be very heterogeneous (ANL tests strongly indicate this), so that results based on single samples cannot be taken to accurately represent the average activity concentrations that exist in the residues and sludge.
17. Sludge pile volume is given here as $650 \times 10^3 \text{ ft}^3$. In Table 3.2.2 (a) (p. 3.22) it is given as $86 \times 10^3 \text{ ft}^3$. The same $650 \times 10^3 \text{ ft}^3$ value is used to represent the volume of the residue pile; however, the residue pile is clearly more voluminous than the sludge pile, please clarify.
18. (Appendix II, p. 4.2.1.3) 550 pCi Ra-226/g for an average value of the reclaimed residues appears to be an arithmetic average of sludge and residue activity concentrations. The effective average of the reclaimed residues should be a weighted average of sludge and residues, since the masses of sludge and residues are not equal. This same comment applies for bulk density.
19. (p. 5, 2.2.1) Concerning Table 2 of Ref. 1, the table cannot be found within the stabilization plan and reference 1 is not a published document, please provide or include a copy of Table 2.
20. (Appendix II, p. 11, Table 3.1-1) The whole-body dose conversion factor for Th-232 should be higher by an order of magnitude (i.e., $0.22 \text{ } 94 \text{ E}+8$). This is a significant difference, one which can increase the total whole body dose by over 30%. Was the correct value used in the calculations?
21. (Appendix II, p. 9, 3.1) The source term is modified (assume multiplied) by a factor of 0.238 to simulate a continuous one year release. This implies that an actual release period of 87 days, continuous, is expected. However, in p. 6, a 1440 hour (60 day), continuous release is cited. On p. 4.20, eight weeks is allowed for grading the ore pile in Area 2. On

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ANL Comments on Kerr-McGee, August 15 Plan - Continued

p. 5.1, the last paragraph implies that operations will not be on a continuous basis. Thus, eight weeks equals 56 working days which (divided by three) is about 18 continuous days. Please clarify and indicate which is the correct release period expected.

22. Since the release period will be of short duration, the annual average meteorological conditions may not apply and an appropriate seasonal average (e.g., summer) should be used instead.
23. Appendix II, p. 9. What population distribution was used in the calculation of population dose? What is the basis of this population distribution?

24. (p. 6.4, 6.1.2.3) (Accident Analysis)

The tornado strike analysis given in the Uranium Milling GEIS is based among other considerations, on dispersion of 100% of any uncontained yellowcake produce and dispersion of 15% of contained product. Since the residues and sludge at West Chicago are uncontained, more of the material could potentially be dispersed.

25. (p. 7.6, 7.5.2 (A)) (Monitoring)

What is the frequency of air sampling during dusty work conditions? What will be the basis for background levels of air particulate activity?

26. With regard to the continuous air sampling that will be conducted during the time any work is being performed, how often will the samples be analyzed?

27. Background measurements should not be taken close to the site; a minimum distance of 500 meters and a maximum of 1 km would be more appropriate than "within a radius of one-half mile".

28. Section 2.1.2. A wind rose is presented which was compiled from data taken at Commonwealth Edison's Dresden Nuclear Site near Morris, Illinois which is nearly 40 miles southwest of the Kerr-McGee plant. Chicago's O'Hare and Midway Airports, two first-order National Weather Service Stations, are about 20 miles away and DuPage County Airport, which reports hourly observations to the National Climatic Center in Asheville, is within five miles of the site. The data from these locations (preferably those from O'Hare) are probably more representative of the wind patterns in West Chicago.

29. Section 2.1.4. The table of tornado frequency trend over the past century as it appears has serious implications. It should be discussed in further detail or the table should be eliminated. The pertinent information is the probability of a tornado strike. A conservative estimate, but an estimate none the less, can be determined from Thom's article* in Monthly Weather Review, 1963.

*Thom, H. C. S. "Tornado Probabilities", Monthly Weather Review, October - December, 1963

ANL Comments on Kerr-McGee, August 15 Plan - Continued

30. Section 2.2. There is no baseline information on NO_x concentrations. As you show in Section 5.1, diesel engines will emit this pollutant. What is the present NO_x concentration in the West Chicago area?
31. Section 5.1. The mass emissions of NO_x, SO₂ and particulates from vehicular traffic are given. What are the temporal dimensions of these releases? How do you know the air quality will be impacted to a small extent? Did you estimate short-term, down wind concentrations for conditions of poor diffusion?
32. Page 2.36. Units needed for Fecal Coliform Count.
33. Section 7.2. There is no description of the monitoring program, please provide.
34. Section 7.5.3 (B). Radiation Monitoring after Completion of Phase III
No indication of frequency or type of monitoring.
35. Section 10.5.1, p. 10.2. Should read "...commitment of terrestrial biotic habitat will occur".
36. The plan calls for excavation of site A (1W) to an elevation of 734 ft; then installation of the clay liner. Where will sediments from Pond 2 be stored until they can be placed inside the clay liner?
37. The applicant has erroneously stated in the first paragraph of Sec. 2-8.2, p. 2.35 that no aquatic biota exist in the disposal site. They should state that the ponds in the disposal site contain biota typifying farm ponds in the area. However, due to chemical and/or physical stresses the ponds contain more pollution tolerant biota.
38. In Section 5.6.2 (p. 5.8) the applicant should add that the on-site aquatic biota will be eliminated. However, their elimination will not be of significance as the species inhabiting these ponds are common and generally distributed over the Midwest.
39. Section 2.6.2 (Figure 2.6.2)

This figure (reproduced from ANL report, 1977) was derived from the Illinois EPA report (July 1976) and represents an estimate of the static water level in the dolomite aquifer based on available well data dating from the 1930's to the early 1970's. Due to the inherent uncertainties in this approach, including large time spans between measurements, the ANL staff in co-operation with the Illinois EPA conducted a field program to measure the water levels in the dolomite aquifer in the site vicinity during the fall of 1977.

This recent data indicates a groundwater gradient to the west-northwest beneath the site. Aside from a few local perturbations and possible biases in interpretation, the plots of the two data sets are similar.

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