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concordia college

PHYSICS DEPARTMENT

moorhead, minnesota 56560

299-4611

July 15, 1982

Mr. Russell F. Rhoades, Director
New Mexico Environmental Improvement Div.
P. O. Box 968
Santa Fe, NM 87504-0968

Dear Mr. Rhoades:

On May 16, 1982 the Rev. Shirley E. Greene and I visited with Bruce Gallaher, EID-Water Pollution Control Bureau, and Kent Breese, EID-Licensing Section, Radiation Protection Bureau. Rev. Greene is the director of the New Mexico Inter-Church Agency; I am a physicist completing an independent review of the 1979 Church Rock, N.M. uranium mill tailings spill with the aid of a "blue-ribbon" panel of 5 other scientists. This review sponsored by a variety of state and national church agencies has been in process over the past 10 months during which time I was on sabbatical working out of an office full-time in Window Rock, Arizona.

A number of questions was posed with Mr. Breese at the above-mentioned meeting, a few of which were eventually partially answered by Jere Millard in a letter to me dated June 21, but post-marked June 25, 1982. Mr. Breese indicated to me in a telephone conversation subsequent to our meeting that he had turned responsibility completely over to Mr. Millard for passing on answers to questions within his (Mr. Breese's) jurisdiction to us along with those which Mr. Millard could answer. In any event, only a small fraction of the questions were answered and then only partially in some cases. Hence, I am appealing to you for a more satisfactory and complete response.

The questions left unanswered to date are the following:

- UNC 1. How many (number and percentage) Navajos were employed in the UNC mine and mill before the work force was put on a standby status? In the Kerr-McGee Church Rock mines?

2. Do any (how many) of these Navajos live downstream from the UNC mill within, say, 2 miles of the Puerco River?
3. What are the specifics on both UNC and Kerr-McGee mine dewatering? When begun? How much (gpm)? Increases when and how much? Barium Chloride treatment installed when in each case (UNC and Kerr-McGee)? I am aware of Kerr-McGee's objection to EPA's attempted requirement to have the former's discharge comply with NPDES concentration limits and the May 1980 settlement. Please fill in details, however.
4. Why doesn't NMEID impose fines on Kerr-McGee, for example, when the latter grossly is out of compliance with NPDES limits? As reported in Millard, Buhl, and Baggett's draft report on the radionuclide concentrations and doses resulting from that spill which Millard mailed me last April, surface water samples taken on 2/1/80 contained 91.5 pCi/l Ra-226 at the upstream ford and 45.4 pCi/l in Gallup. Millard et al.'s draft report further comments: "These high Ra-226 values were most likely due to ineffective or inoperable barium precipitation treatment for Kerr-McGee mine waters discharged upstream on the UNC tailings dam." Or has NMEID imposed fines on Kerr-McGee for such violations?
5. Why doesn't NMEID require UNC and Kerr-McGee to institute an ongoing animal sampling program to be part of the licensing procedure as highly recommended in the GEIS NUREG-0511?
6. How much water is UNC hauling to the Puerco River Valley residents and livestock each day? How far downstream from the mill site does this occur?
7. Whose tanks were placed in the Valley for this purpose? How many?
8. Why are uranium mines not licensed by NMEID whereas mills are? *Redacted by 107/10*
9. Why haven't the signs erected every 1/2 mile downstream from the UNC mill to the Arizona state line been officially ordered removed by NMEID one year after the spill after CDC and NMEID press releases declared the Puerco River water safe?

- f. 10. If the answer to No. 9 is because of the high sediment load, then why weren't signs erected when mine dewatering began? Or more realistically, why aren't the present signs exchanged for ones that discourage dependence upon the stream because of the high sediment load of the waters?
- WS 11. Wouldn't it have been appropriate (and isn't it still) for New Mexico to require UNC and Kerr-McGee to help maintain shallow wells and associated pumping equipment along the Puerco River to discourage dependence upon mine dewater effluent by livestock and owners (for livestock water)?
- NS 12. What is the status of the seepage problem at UNC's mill ponds? When was neutralization to have gone into full scale use?
- R 13. Will there be new, additional elements (regulations) required of UNC when relicensing of its milling operations occurs later this year? If so, what are they?
- NS 14. Will NMEID be establishing a genuinely helpful (to the public including Navajos) public relations office (staff person) in the near future? Bruce Gallaher hinted at that prospect.
- NS 15. Is excess (to subsistence needs) livestock raised along the Puerco River purchased without hesitancy by the Gallup markets? Is there documented evidence one way or the other on this as a function of time relative to the spill date?
- WS 16. What was the cost of installing the cluster of 4 monitoring shallow alluvial wells along the Puerco drilled in 1978 and also that of the additional 19 drilled in the 1981 field season?
- WS 17. On May 26 Mr. Gallaher indicated that the monitoring program involving the original 4 and additional 19 test wells might be halted because of the lack of funds in spite of the fact that the latter had only been sampled 2-3 times. Hence, Bruce said it would be fruitless for Rev. Greene to attempt to pick up bi-monthly (the sampling frequency) the results directly from him to facilitate information flow to the Navajo Tribe. Yet in a telephone conversation I had on about June 24 with Dave Tague, Bruce's supervisor (since Bruce would not be back in the office before I had to leave for Minnesota), Mr. Tague expressed surprise about the possible cessation of sampling of those

particular wells. Further, Mr. Tague said he would check this out and inform me-something which he has not done yet. What is the true situation regarding this?-

- K 18. What have been the budgets of the New Mexico Health and Environment Department year by year during the past 8 years? Of the NMEID alone (year by year)? This question was posed to Kent Breese and then passed to Jere Millard. The response (encircled on a copy of Mr. Millard's letter to me) is not very satisfactory to say the least. Surely it is a simple matter of listing separately, because of the differing federal and state fiscal years, New Mexico state legislature's allocated funds and outstate funding, such as from the U.S. EPA, year by year.
- K 19. When can we expect with assurance the issuing of NMEID's Church Rock grand report? Last October, Jere Millard indicated to me that it would be around the first of February or March, 1982. About a month and a half ago, Bruce Gallaher told me it would be available at the end of June. Rev. Greene informed me yesterday via telephone that Mr. Gallaher indicated to him recently that another agency has now become involved with the report and therefore no one knows now how long its availability has been postponed! Dr. James Ruttenber of the Centers for Disease Control opined to me last fall that he doubted whether NMEID would ever release a report. Christians and others in New Mexico, Arizona and elsewhere keep raising the rehtorical question: "Would this delay have occurred had the potentially affected people been Anglo instead of Navajo?" noting that tomorrow marks the 3rd anniversary of the accident and still no final report is available from the lead agency, viz., NMEID! This question demands serious examination by your agency.
- K 20. How can NMEID permit the results of soil/sediment leach tests being held up for release after nearly 3 years now? They apparently have become tied up with other studies on tailings-for-mine-backfill which UNC has contracted with Battelle-Pacific Northwest Laboratory to perform. In an October 9, 1979 report by Hussein Aldis of Ecology and Environment, Inc., a U.S. EPA consulting firm, it is stated: "To make a quick determination of the reactions likely between the spill and the alluvium a series of column studies using representative samples of alluvium unaffected by the spill or mine discharge could be used. Reactions to mill discharge water, remaining tailings pond water and Kerr-McGee mine drainage discharge would indicate whether, or which, radionuclides are precipitated or absorbed. Continued flushing with mine discharge water might indicate the possibilities of remobilization."

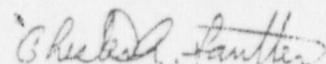
Yet, no one, perhaps outside of UNC and Battelle scientists, has access to those results after all this time!

I have one other request: Please send me a copy of the 6th requirement (issued July 3, 1980) added to the July 16, 1979 order imposed by NMEID on UNC specifying long-term monitoring requirements for both the area affected by the spill and the mill itself.

The answers to these kinds of questions are urgently needed in order to round out our perspective for the independent review. They are questions the public has a right to have answered in any event. Much of that public sector of society is comprised of New Mexico residents who are tax-payers and members of church bodies associated with the church agencies sponsoring the independent Church Rock spill evaluation.

I have written to you directly as a kind of last resort largely because of conflicting replies, unresponsive NMEID staff and/or inordinate delays in requests for information. Mr. Al Topp., head of the Radiation Protection Bureau, for example, was extremely uncooperative. Early in 1982 I requested by telephone a copy of his Bureau's draft report on radon monitoring in the Grants Mineral Belt. He indicated that it had nothing to do with Navajos and therefore I couldn't possibly have any interest in it! He reluctantly promised to send me a copy after review by selected "outsiders" was completed. I have yet to receive anything from him after half a year! I trust that you will give serious and prompt attention to these matters. It would be greatly appreciated if you could give me an early response, preferably within 2 weeks of receipt of this letter if at all possible! Thanking you in advance, I remain.

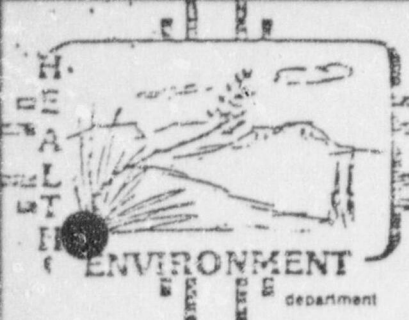
Sincerely yours,



Chester A. Sautter
Assoc. Prof. of Physics

CAS/sds

cc: George S. Goldstein
Shirley E. Greene



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RUSSELL F. RHOADES, M.P.H., DIRECTOR

RADIATION PROTECTION BUREAU

June 21, 1982

Dr. Chester A. Sautter
P. O. Box 1858
Window Rock, AZ 86515

Dear Dr. Sautter:

Enclosed are my comments and an attached statement concerning your rough draft of the Church Rock review.

This is in response to several questions you raised in a letter of May 28, 1982 to Mr. Kent Breese regarding flow and Ra-226 concentrations in treated mine effluent in the Pipeline Arroyo, an inventory of radionuclide materials deposited versus those removed, livestock sampling and EID budget allocations.

Too small (only 2700 gpm) Kerr-McGee alone discharge 3800 gpm.
The flow averages six CFS in Pipeline Arroyo and Ra-226 is typically on the order of 10 pCi/l. Regarding the annual budget allocations for Health and Environment Department and Environmental Improvement Division, the budget section of the Health and Environment Department states they cannot accurately reconstruct annual budget figures due to differing federal and state fiscal years and budget fluctuations within a given year. In response to an inventory of radioactive materials, please see items A and B below.

A. INVENTORY OF RELEASED RADIONUCLIDE MATERIALS

1. LIQUIDS	RADIONUCLIDE	CONC (pCi/l) ^a	TOTAL (Ci)
94 x 10 ⁶ Gallons	U-Nat	8040 ± 200	2.86
356 x 10 ⁶ Liters	Th-230	93000 ± 9300	33.11
	Ra-226	130 ± 20	0.05
	Pb-210	7900 ± 830	2.81
	Po-210	2200 ± 320	0.78

2. <u>SOLIDS</u>	<u>RADIONUCLIDE</u>	<u>CONC (pCi/g)</u>	<u>Total (Ci)</u>
1100 Tons	U-Nat	50 ^b	0.05
1 x 10 ⁹ g	Th-230	340	0.34
	Ra-226	340	0.34
	Pb-210	340	0.34
	Po-210	340	0.34

a. Total raffinate sample collected August 1, 1979 by NMEID. Radiochemical analyses by Las Vegas Environmental Monitoring and Systems Laboratory, Environmental Protection Agency. Other total raffinate samples collected by the NMEID had Ra-226 values of 27, 88 and 210⁹pCi/l (\bar{x} = 111 pCi/l). The U. S. NRC Generic Environmental Impact Statement on Uranium Milling (NUREG 0706, p. 7-6) uses a typical Ra-226 raffinate concentration of 2.5 E-7 μ Ci/mL.

b. Radionuclide concentrations for UNC tailings solids were obtained by (1) using the most current estimate reported in UNC's Environmental Report of 337 \approx 340 pCi/g of ore; (2) using the NUREG 0706 estimate for the fraction of uranium remaining in tailings = 7 percent; and (3) assuming secular equilibrium exists for all radionuclides other than uranium isotopes in determining specific activities present in tailings materials. NUREG 0706 uses specific activities of 40 pCi/g (natural uranium) and 280 pCi/g for all other radionuclides in tailings.

B. INVENTORY OF REMOVED RADIONUCLIDE MATERIALS

UNC reported a final value of 360,033 ft³ (2.7 E 10⁹ g) of removed sediments and an average density of 2.65 gcm⁻³. Using average radionuclide concentrations for pre-cleaned Rio Puerco sediments, the following inventory results:

<u>RADIONUCLIDE</u>	<u>MEAN CONCENTRATION</u>	<u>INVENTORY (Ci)</u>
U-Nat	3.24 pCi/g	0.09
Th-230	27.5	0.75
Ra-226	0.49	0.01
Pb-210	2.78	0.08

27 x 10³ tons