

27-43-6466-43



DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-6422



REPLY TO
ATTENTION OF

HSHB-MR-HI (40)

15 JAN 1993

MEMORANDUM FOR Commander, U.S. Army Toxic and Hazardous Materials Agency, ATTN: CETHA-TS-S, Aberdeen Proving Ground, MD 21010-5401

SUBJECT: Radiological Status of Iron Mountain, Fort McClellan, Alabama

1. References:

a. Memorandum, CETHA-TS-S, USAEHA, subject: Request for U.S. Army Environmental Hygiene Agency (USAEHA) Support, 7 April 1992, (Enclosure 1).

b. Memorandum, ATZN-FEE, for SJA, subject: Anniston East Bypass, 22 May 1992, with enclosures (Enclosure 2).

c. Report Titled - Iron Mountain (Rattlesnake Gulch) Radioactive Material Burial Site, by MAJ Raymond L. Anderson, Chemical Corps, 29 July 1971 (Enclosure 3).

d. Fort McClellan site visit by Mr. Allen E. Hilsmeier on 22-23 October 1992.

e. U.S. Army Toxic and Hazardous Materials Agency, Installation Assessment of Fort McClellan Report No. 110, April 1977, Volume 1.

f. AR 200-1, Environmental Protection and Enhancement, 23 April 1990.

2. Reference a was a request by the U.S. Army Toxic and Hazardous Materials Agency (USATHAMMA) for USAEHA to conduct a radiological evaluation of several sites throughout Fort McClellan, AL. A general orientation of previous sites where radiological operations were conducted was accomplished per reference d. Emphasis was directed to the past radiological operations on Iron Mountain since this location is included in the proposed Anniston East Bypass (see reference b).

3. The only information that could be obtained regarding former radiological operations at Iron Mountain is provided in Reference c (Enclosure 3). A careful review of this information revealed three separate operations that involved radioactive material. The operation that causes the most concern was a burial ground for radioactive material at approximately grid coordinates 105290 of Map-

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Alabama

Anniston, Sheet 3851 III, Series V744, Scale 1:50,000. Another operation was a field training site where sealed radioactive sources were placed in the ground on the north side of Iron Mountain but south of the Summerall Gate road. A third radiological operation was a "hot cell" used for cobalt-60 encapsulation in the vicinity of grid coordinates 102295.

4. Regarding the burial site at approximate grid coordinates of 103290, a number of concerns are outlined below:

a. Only one document in reference c, (page 4) specifies the location of the burial site. Its accuracy is unknown. A walk around tour of that area (see reference d) did not reveal any evidence of the previous burial ground with the exception of a single strand of old barb wire embedded into a tree. It is not known if it is the barb wire mentioned on page 4 of reference c.

b. Only surface measurements made by state-of-the-art gamma radiation survey meters developed in the 1970's were used to detect radioactive contamination. Such a survey would be ineffective in detecting only beta emitting radioisotopes such as strontium-90, which was mentioned on page 15 of reference c. Further, the rudimentary trenching operation discussed on page 22 of reference c with the radiation survey conducted within and around the trenched area, would not have revealed the presence of strontium-90, any other pure beta emitting radioisotope or alpha emitting radioisotopes. In fact, the trenching technique would be ineffective in determining the presence of gamma emitting radioisotopes throughout the burial site.

c. Reference c, page 5, identified 18 "hot spots" in the radioactive waste disposal area. The daily activity log on pages 18 to 22 only addresses, at most, the clean up of 12 of the hot spots. At least 6 hot spots were apparently never decontaminated. Further, the daily log does not state specifically, that several hot spots that were attempted to be decontaminated were indeed, completely decontaminated. This incomplete clean up effort supports the conclusion that radioactive material is still present in the disposal area.

d. The area in and around grid coordinates 103290 was littered with mortar duds. The persons at Fort McClellan (health physicists) could not state if the mortar rounds were for training purposes, i.e., no explosive component, or if these rounds were unexploded ordnance. In either case, it would seem prudent to remove the hardware before relinquishing the land for unrestricted use.

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e. If radioactive material is still present in the waste disposal site, as believed to be the case, it is unlikely that the radioactive material is still contained in the bleach cans. This observation is supported in reference c, daily activity log. For example, page 18, entry dated 15 April 1971, states that one 55 gallon drum was filled with hot dirt and the area was still hot. Thus, a major effort of sampling and clean up of soil would be required to declare the area "clean".

f. Reference e, page II-19, states that all radioactive wastes were shipped from Iron Mountain and appropriately disposed of at an approved radioactive waste disposal activity. In contrast to this conclusion, our review of the scant documentation available concludes that radioactive material could still be and probably is present on Iron Mountain, at least in the waste disposal site. Reference c, page 8, supports the conclusion that the buried radioactive material had been partially removed, not totally removed.

5. Regarding the field training site where sealed radioactive sources were placed into the ground, several concerns are outlined below:

a. The exact locations where the cobalt-60 sources were placed into the ground for training purposes is not known. No documentation was available that described, specifically, these locations. Further, it is not possible to visually identify these placement sites to ensure that the radioactive material was removed because of the ensuing years that has returned the training area to its natural state. While we would like to conclude that all sources were removed when training operations were terminated, no specific inventory was located to document such a conclusion. In fact, page 14 of reference c could cause the opposite conclusion, i.e., that sources could have remained in place. In LTC Powell's letter dated 6 March 1971, he was told that the waste disposal area and all source wells were moved to Pelham Range, Rideout Field area about the year 1959. This was not the case for the waste disposal area since radioactive material and ground contamination was found in the 1970's. A conclusion could be made that not all the radioactive material used for training was removed either.

b. If a cobalt-60 source of 2 curies had been left on the Iron Mountain training site, in a 2 foot deep pipe (reference c, page 12) which was then filled in with dirt, calculations that take into account radioactive decay, distance underground from the source to

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d. Where radioactive contamination is discovered, extensive trenching operations should be undertaken around that location and the soil thoroughly analyzed for the amount and type of contamination present.

8. The point of contact for this evaluation is Mr. Allen Hilsmeier, DSN 584-3502 or commercial (410) 671-3502.



HARRIS EDGE

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CF (w/o encls):

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CDR, AMC, ATTN: AMCSF

CHIEF, WDED, ATTN: MR. JOHN RESTA

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the detector and absorption of the gamma radiation in the soil medium, indicate that the source would probably not be detected with a sensitive gamma monitor. If a source capsule had been left in place, it would be very difficult to determine its presence with surface measurements. The accuracy of such measurements would, at best, be suspect.

6. The "hot cell" cited in reference c, pages 14 and 15, was believed to be clean when it was dismantled but several concerns are as follows:

a. Its exact location is unknown, i.e., in the vicinity of grid coordinates 102295. Thus, to conduct field measurements i.e., both external gamma readings and soil analysis, over an imprecise area would probably yield negative results. However, such results would not definitely establish that radioactive material was totally removed. Negative results would mean that if radioactive material was still present, it could not be located.

b. The hot cell was used for cobalt encapsulation. Whether the encapsulation technique involved pellets (which would seem more likely) or powders, the concern for contamination is the same. Pellets could be dropped and broken, misplaced or simply set aside and forgotten. Without any inventory or survey records, there is no assurance that this facility was properly decontaminated, verified clean using appropriate survey instruments, and released for unrestricted use.

7. In summary, and in accordance with reference f, paragraph 12-5 and Appendix B, the following recommendations should be considered before Iron Mountain is released to the public for unrestricted use:

a. The training and/or unexploded ordnance material that currently litters the area should be removed before any other action is taken.

b. Once the ordnance material is removed, extensive radiological surveys, using the most sensitive state-of-the-art gamma measuring equipment, should be conducted over the areas suspected of being potentially contaminated in an attempt to locate residual radioactive material.

c. Extensive soil core borings should be done over broad areas suspected of being potentially contaminated and analyzed for radioactive constituents. These soil borings should be at least 8 feet deep for the former waste disposal site.