



United States
Department of
Agriculture

Animal and
Plant Health
Inspection
Service

Science and
Technology

Denver Wildlife Research Center
Building 16, P.O. Box 25266
Denver Federal Center
Denver, CO 80225-0266

July 5, 1991

Commanding General
U.S. Army White Sands Missile Range
STEWS-EL-N (ATTN: Environmental Office)
White Sands Missile Range, NM 88002-5076

Dear General Hite:

I am responding to your letter of 31 May 1991 requesting information regarding the accidental escape of radioisotopes from the Jornada Experimental Range to the White Sands Missile Range. The following recapitulates information already provided to personnel in the Environmental Office of your command, but is provided here in the format of your request:

- A. The study was carried out under radioactive materials authorizations granted to Frederick F. Knowlton, one of our research scientists. He has dual authorizations; one under license granted to USDA/ARS through their Radiological Safety Committee (RSC Approval No. 49-APHIS-340-005-4) and the other (Authorization no. FFK 30 100192) granted under authority of the Utah Bureau of Radiation Control to Utah State University (License No. UT 0300159-02). This study was conducted under the Utah license.

In the course of review, the study was examined for potential impacts on the environment and, based on available information and experience, was categorically excluded under ARS regulations for the National Environmental Policy Act, contingent upon containment upon ARS facilities. Under adverse weather conditions, the requirements on containment proved inadequate. Constraints associated with the decay of isotope markers allowed less than 3 weeks to identify and implement alternate containment procedures, effectively removing that option. Consequently, the study was terminated effective 13 May 1991.

- B. The work in New Mexico was authorized via reciprocity agreement between the State of New Mexico and Utah State University granted via letter of 14 January 1991 signed by Margaret M. Lopez. In reviews conducted subsequent to the accidental release of the isotopes and after the study was terminated, New Mexico concluded this reciprocity agreement was not appropriate to cover the use of radioactive materials on federal lands (Jornada Experimental Range).



- C. Copies of the Study Protocols and their amendments, along with 3 standard operating procedures (WRC-006, WRC-142, and WRC-143) from the Denver Wildlife Research Center applicable/related to the studies involved and/or handling of radioactive materials in these studies are attached.
- D. The study was originally planned to be conducted in Texas but was later relocated to the Jornada Experimental Range. Movement of radioisotopes onto White Sands Missile Range was inadvertent, unintended, and incidental. Throughout the study, the majority of the radioisotopes were confined to the Jornada Experimental Range. Isotopes were used in two phases of the studies, one involving small baits placed on the Jornada Experimental Range for coyotes and the other relating to their use in collars attached to goats.

Isotopes used in small baits:

⁵⁴Mn: The activity calculation date is 16 January 1991. A total of 2,290 uCi (microcuries) placed on the Jornada Experimental Range was removed by animals between 19 January and 9 February 1991. Physical decay would have decreased this activity to 1,680 uCi by 31 May 1991. Of the amount removed by animals, 229 uCi should have been absorbed and 2,061 uCi would have been eliminated immediately. With an effective half-life (physical x biological) of 23 days, total body burdens in the animal populations should have been reduced to 5.97 uCi by 31 May 1991.

¹²⁵I: The activity calculation date is 19 January 1991. A total of 516 uCi placed on the Jornada Experimental Range was removed by animals between 24 January and 9 February 1991. Radioactive decay would have reduced this to 114 uCi by 31 May 1991. With an effective half-life of 42 days, total body burdens in animal populations should have been reduced to 62.7 uCi by 31 May 1991.

An estimated 2/3 of the baits were removed by coyotes. Forty three 43 coyotes were removed from the area on or before 31 May, 1991, including 38 of 42 that had been trapped and released on the Jornada Experimental Range between 19 February and 20 March 1991.

The foregoing calculations apply to all ^{54}Mn and ^{125}I deployed and not retrieved from the Jornada Experimental Range. The fraction transferred to White Sands Missile Range is not known but should not have exceeded 100 uCi ^{54}Mn and 50 uCi ^{125}I . These would have decreased to 75 uCi ^{54}Mn and 11 uCi ^{125}I through radioactive decay by 31 May 1991.

Isotopes used in goat collars:

The activity calculation date for radioisotopes placed in collars used on goats is 22 March 1991. Each collar used on goats contained two reservoirs into which the radioisotopes were injected. Each reservoir on collars for adult goats contained 15 uCi ^{134}Cs and each reservoir on collars for kid goats contained 33.4 uCi ^{65}Zn . Six of the goats (5 does and 1 kid) that escaped were recovered from White Sands Missile Range. Sometime between the time the goats escaped and were recovered, 7 reservoirs on adult goats (containing a total of 105 uCi ^{134}Cs) were punctured and had dispensed their contents. Whether this occurred on the Jornada Experimental Range or White Sands Missile Range is not known. Physical decay would have reduced this to 99.1 uCi by 31 May 1991. Two additional reservoirs were ruptured when one goat was shot. A WSMR Radiation Technician monitored recovery and removal of the contaminated soil and vegetation. None of the reservoirs loaded with ^{65}Zn is known to have dispensed its contents on White Sands Missile Range.

One isotope collar has not been recovered. The radio transmitter attached to that collar was identified as being on White Sands Missile Range on 25 April 1991 but 7 aerial searches since that time failed to locate the signal in that vicinity. Whether that collar remains on White Sands Missile Range is not known. Each of the two reservoirs in that collar also contained 15 uCi of ^{134}Cs (total of 30 uCi), which would have been reduced to 28.3 uCi by 31 May 1991.

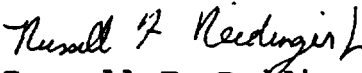
In addition, a maximum of 4 coyotes are estimated to have ingested a total of 5.2 uCi of ^{65}Zn and 5.0 uCi of ^{134}Cs when they attacked and killed goats. Which coyotes were involved and whether they subsequently moved onto White Sands Missile Range has not been ascertained.

The foregoing documents our best estimates of the radioisotopes that may have been transported onto White Sands Missile Range as a result of the study on Jornada Experimental Range.

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We appreciate the cooperation and assistance provided by personnel of White Sands Missile Range during the goat recovery activities associated with terminating this study.

Sincerely,


Russell F. Reidinger, Jr.
Director

Attachments

1. RSC Approval No. 49-APHIS-340-005-4
2. USDA/ARS Materials License No. 19-00915-03
3. Authorization No. FFK 30 100192
4. Utah State University License No. UT 0300159-02
5. Letter of 14 January 1991 from Margaret Lopez
6. Letter of 18 March 1991 signed by Kris M. Havstad
7. Study Protocol QA-043
8. Amendments to Study Protocol QA-043
9. Study Protocol QA-106
10. Amendments to Study Protocol QA-106
11. SOP No. WRC-006
12. SOP No. WRC-142
13. SOP No. WRC-143