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DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY

WASHINGTON. D. C. 20250

Honorable Alan J. Gibbs
Acting Secretary of the Army
Department of Defense
Washington, D. C. 20310

AU6 1 1971

Dear Mr. Secretary:

Thank you fot your letter of.July 18, 1977, acknowledgina the technical guidance received from this Department on several occasions sincc the early 1970's in helping the Department of the Army on protocols for decontaminating and disposing of wheat stem rust **spores** stored for sometime at the Rocky Mountain Arsenal, Denver, Colorado.

Also noted is your request for Drs. Warren C. Shaw and Louis P'. Re-tz of tbe Agticultural Research Service of this Department to again work with persons in your Department in'determinin.- acce,,)table technical approaches for evaluating the level of further deterioration of low-viability decon-taminated **spores buried** in trenches several years ago. The ARS is willin-. to assiire further cooperation on the activity. However, since Dr. z--itz retired se@eral years aoo, it is sug-ested that his replacement, n=ely, Dr. Lcland W. Bria.-.1e, work with Dr. Shaw in helping your Department on this assignment.
if the suggested c@ange is acceptable to you, x.:e-urge that appro;r@a@--versons in the Departmentof the Ar,.ny communicate directly with Drs. Shalf (teleplione: 344-3301) and Briggle (telephone:.344-3160). The scientists would **appreciate** sufficient lead time to permit advance planning o@' travel with minimum disruption to commitments alrea@y made. If security clearance is necessary because of gettina involvcd with classified =aterials, T.-e urge that the level of clearance required be communicated by appropriate persons of your Department to each of these scientists at an early date.

We are pleased to work with your Department on problems for which agricultural expertise is desired and perhvs required.

Sincerely,

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however, "apparently the areas were not used for permanent disposal of bombs or other material.it Earlier Army studies noted that this area was suspected to have been used to test and dispose of incendiary weapons, but it does not appear that extensive testing of this area was conducted iii preparing the EA or the USATHAMA report.

6. Other Known and Suspected Contamination. In addition to the contamination described in the USATHAMA report and shown on Map 1, there exist other reports of known and suspected contaminants. The location of these reported areas of contamination is shown on Map 2, and they include:

* Mortar testing and possible burial of incendiary bombs in Section 29.
* Disposal of incendiary weapons and rockets in'Sk.ction 32.
* Burial of munitions and possibly mustard gas rockets in Section 30, east of the GB plant.
* Metal scrap, ash and iron oxide residue were disposed of in Section 20; mortar shells may also be present there.
* **Wheat** rust biologic agents are believed to be **buried** in Sections 23 and 24.
* Incendiary bombs are known to be **buried** in Sections 7 and 8.
* Mustard gas and munitions may have been **buried** along the western boundary in Section 4.
* The area around the benzene storage tank in Section 1 is believed to be contaminated.
* White phosphorus grenades were **buried** in a pit near the western boundary in Section 9.

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SECTION A.12: TX PRODUCTION AND DEMILITARIZATION

From January 1962 through October 1969, the Army grew, purified and biodemilitarized at RMA the microbiol'ogical **anticrop** agent referred to by the Army as "TX". The Army conducted these operatons for the Department of the Air Force. [RMA Fact Sheet regarding "Biological Waste Material at RMA - **Wheat** Rust **Spores**," 8 May 1974 (RMA034 0020-0021)]. TX was also referred to as "stem rust of **wheat**" or "**wheat** stem rust." It is scientifically identified as uredispores of Puccinia graminis, var. tritici. [RMA Final Report, "Destruction of the Biological **Anticrop** Agi!nt TX at RMA," 1 June 1973 (RSA016 0388)]. TX is specifically a plant pathogen and does not affect animals or man. [Phase I Plan: "Disposal of **Buried** Material at RMA," Fort Detrick and Rocky Mountain Arsenal, 4 June 1970, p. 3 (RAA037 1507) 1.

From 1962 through 1968, TX-treated grain was grown on plots of land at the Arsenal in Sections 23, 24, 25 and 26. [Installation Assessment of RMA, Records Evaluation Report No. 107, Volume 1, March 1977, p. II-4 (RMA028 1831), Volume 11 - Appendix R and S, itarch 1977, pp. F.38, F-40 (RIIA028 2069, 2071); Deposition transcript of D.G. Mack, October 7, 1985, Vol. 1, p. 23]. Five other locations in various uvstern states were selected as growing sitcs.

Unprocessed TX agent associated with other sites was transported to RMA for purification and storage. [RMA Fact Sheet regarding "Biological Waste Material **Wheat** Rust **Spores**," 8 Ilay 1974 (RIIA034 0020)]. The purification process for TX grown on and off the Arsenal included si-fting of the agent to remove the **wheat** chaff, washing of the agent with Freon to remove silt and other impurities, and drying of the agent in a rotating vacuum dryer to remove moisture. [RMA Fact Sheet regarding "Biological Waste Material at RMA-**Wheat** Rust **Spores**," 8 May 1974 (RMA034

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0020-21)]. This process resulted in the production of waste consisting largely of soil particles, chaff, weed seeds and tailings. This material contained a very low level of TX **spores**. [Phase I Plan: "Disposal of **Buried** Material at RMA," Fort Detrick and Rocky Mountain Arsenal, 4 June 1970, p. 5 (RAA037 1509)].

Between 1963 and 1965, 33,190 pounds of this process waste was disposed of through the chemical sewer to Basin F. Between 1966 and 1969, 25,206 pounds of process waste was disposed of in shallow trenches in Section 24. [Phase Plan: "Disposal of **Buried** Ilaterial at RMA," Fort Detrick and Rocky Mountain Arsenal, 4 June 1970, pp. 5, 9 (RAA037 1509, 1514); Installation Assessment of RMA, Records Evaluation Report No. 107, Volume 1, liarch 1977, p. II-4 (RMA028 1831)].

if one assumes, as a worst-case scenario, that process waste contained 1 0% viable 'IX **spores**, then 3,319 pounds of TX was disposed of into Basin F, and 2,521 pounds of TX was disposed of into trenches in Section 24 from the purification process.

Additionally, an undocumented quantity of process waste was disposed of in three or four wells in Sections 23 and 24 between 1962 and 1963. [RMA, Briefing on TX Wastes at RMA 10 October 1977, p. 1 (RAA035 0464)]. Because the amount is unknown, it is not addressed further. .

Some field grade TX was rejected for processing due to a high content of other type **spores** present, or for unfavorable physical properties such as high moisture content. This material contained 40% or more TX **spores**. [Phase I Plan: "Disposal of **Buried** 1-taterial at RMA," Fort Detrick and Rocky Mountain Arsenal, 4 June 1970, p. 5 (RAA037 1509)].

Between 1963 and 1969, rejected field grade TX was **buried** in trenches located within a 30-acre area of Section 24. [Phase I Plan: "Disposal of **Buried** Material at RMA," Fort Detrick and

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The dis.posal wells in Section 24 were lined with brick and concrete casing. All wells were closed by filling them in with dirt and collapsing the upper six feet of,concrete lining 3.nward to form a cap. Water was present in the bottom of all wells during disposal operations, and it was anticipated that this would induce **spore** germination and subsequent death. [RMA and Office of the Program Manager for Demilitarization of Chemical Ilaterial, "Plan for Location and Evaluation of **Buried** Biological Waste at RIIA," 12 itarch 1973, pp. 4-5 (RAA037 1536-1537)].

During **TX** production, an undetermined number of polished aluminum nosecones from harvesting equipment were disposed of in a well in Section 24. [Deposition transcript of D.G. Mack, October 7, 1985, Vol- I, pp. 53-57] It is not known whether this equipment was contaminated with **TX** or not.

Between August 2, 1971 and February 15, 1973, 125,398 lb of stockpiled **TX** were biodemilitarized. [RMA Final Report, "Destruction of the Biological **Anticrop** Agent **TX** at RMA," 1 June 1973 (RSA016 0388)]. Biodemilitarization included the following: (1) verification of **TX** viability; (2) inactivation with 10% ethylene oxide and 90% carbon dioxide; (3) certificat:ron of the material as inactivated; (4) elimination of activated viable **spores**; (5) incineration; (6) verification of complete inactivation of **spores**, and (7) disposal of the incinerator ash residue by disking into soil. [RMA, "Final Report, Destruction of the Biological **Anticrop** Agent **TX** at RMA," 1 June 1973, p. vi (RSA016 0393)].

Biodemilitarization of 125,398 lb of **TX** resulted in 14,384 lb of incinerator residue, 6,632 lb of scrubber residue, and 3,775 lb of nonstockpile residue. [Letter from Edward R. Dapper, Fort Detrick, ND to Commander U.S. Army RMA regarding Analysis of Total Residue from Biodemilitarization Incineration at Rocky Mountain Arsenal, Table 1, 26 February 1973 (RAA036 0862); RIIA,"Final Report, Destruction of the Biological **Anticrop** Agent 'IX at RIIA," 1 June 1973, P. V (RSA016 0392)]. This residue ash was disced into the

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Viable TK may fall within this definition in that it appears to induce a stem rust condition when distributed over crops.

SARA, Section 1 01 (f)

(by North Boundary containment System)

In March 1973, and again in July 1977, the Army reviewed the need to remove and dispose of decontaminated TX **spores buried** in Section 24 of RMA, [RMA and office of the Program Manager, Demilitarization of Chemical Material, "Plan for Location of **Buried** Biological Waste at RMA," dated March 12, 1973 (RAA037 1532-1538); A.J. Gibbs, letter to R.S. Bergland, dated July 18, 1977 (RMA0344 0013); E.D. Peixotto, Memorandum to distribution, re: "FY 1977 Special Inspection of Controlled Substances," dated 14ay 13, 1977 (RAA037 1665-1 666)] .

This removal and disposal program was not instituted. The U.S. Department of Agriculture, after inspecting the disposal area and nearby agricultural areas during the period 1971 to 1977, concluded that the TX **spores** had never caused any observable damage to wheat or other crops grown on the Arsenal or in the agricultural community surrounding the Arsenal, that there was no risk to wheat or other crops posed by the **buried** TX **spores**, and that there was no reason to suspect any damage would occur in the future. [R.L. Duesterhaus, letter to C.L. Alexander, dated November 28, 1977, RMA052 0188-01891.

It is significant that TX has a halflife of less than one month, and TX **spores** are unable to survive in the winter in the cold climate of Colorado. [RMA, Briefing on TX Wastes at RMA, 10 October 1977, p. 3 (RAA035 0466); C.R. Legros, dispostion form, "Results of Mateiral Submitted for Examination, 24 September 1969 (RSH978 1999)].

In addition, it is important that, utereas TX presents no hazard to either personnel or any form of wildlife, with proper controls, even hazards to host plants can be eliminated. Further,