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THIS DOCUMENT CONSIST OF 6 PAGES
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MOUND LABORATORY MONSANTO
Central File No. 63-8-123

August 8, 1963

Mr. W. B. Creamer, Area Manager
U. S. Atomic Energy Commission
P. O. Box 66
Miamisburg, Ohio

Dear Mr. Creamer:

Low-Level Solid Radioactive Wastes Burial

Upon receipt of your letter of July 1, 1963, instructing us that low-level solid radioactive wastes should henceforth be buried in commercial facilities, we undertook a thorough classification review of all of our waste materials. Our purpose was to make certain that all wastes being sent to the Government burial site at Oak Ridge were, in fact, unclassified according to current classification guides. We have encountered several problems in this regard on which we would like your advice and guidance.

The Mound Laboratory Classification Guide, MLM-CF-61-1-128, page 47, states:

	TOPIC	CLASSIFICATION
7.1.4.2	Presence of tritiated compounds at Mound Laboratory	
	a) T_2O, HTO, DTO, UT_3, if specifically designated for unclassified research	U
	b) If identifiable with the weapons program	S-RD

GROUP 1
Excluded from automatic downgrading and declassification

RESTRICTED DATA
This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.

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TOPIC	CLASSIFICATION
c) LiT	S-RD
d) Li (DT)	S-RD
e) TiT_x and/or ZrT_x	U by Topic 1.1256 in CG-WL-1

In addition, Topic 1.055 of CG-W-1, Joint US/UK Nuclear Weapons Classification Guide, indicates that AEC interest in Li^6T and Li^6DT is classified.

The wastes from the hot area of the SW Building are combined and drummed for burial. These drums usually contain sufficient quantities of Li^6DT and Li^6T to permit their assay and identification. The present volume of wastes from the areas of the SW Building where we process weapons components or weapons materials consists of approximately 12,000 cubic feet per year. On the basis of classification guidance cited above, we have concluded that perhaps 75 per cent of these wastes may reveal the presence of Li^6T and Li^6DT and that therefore they may be considered classified. If you concur in this interpretation, these wastes should not be sent to a burial site to which the general public has access.

Would you please review this matter with the appropriate AEC classification authorities for concurrence or for further guidance on the classification treatment of these materials. If the AEC agrees that these wastes are classified, then we will also require instructions for disposing of them.

We would also like guidance concerning the application of current classification rules to our polonium and plutonium wastes. Our past practice has been simply to seal these materials in appropriate containers which then are placed in sealed vans and escorted to Oak Ridge for burial. Information concerning the contents of the shipments has been transmitted to Oak Ridge by letter, but the individual containers carried no identification other than an appropriate label indicating that their contents were radioactive materials.

In order to dispose of our wastes in commercial facilities however, we will have to label each container indicating the principal isotope in the container and the estimated curie quantity. We will also have to mail to the operator of the burial site a Radioactive Shipment Record Form (copy attached) listing for each container the physical state of the contents, the principal isotope and the curie quantity; and each container will have to be identified by number or some other appropriate method. Since these materials are now to be buried at a non-Government site, we are concerned by the fact that records and materials which may reveal the scope of our classified activities at Mound Laboratory will now be made accessible to uncleared parties.

At the present time, we are generating approximately 16,500 cubic feet per year of wastes containing polonium-210. This consists of approximately 7,200 cubic feet of dry waste, 175 fifty-five-gallon drums of residue from our hydrolysis process, and 2,000 thirty-gallon drums of sludge (approximately 20 per cent solids) from our Waste Disposal Facility.

The Mound Laboratory Classification Guide sets forth the following classifications for wastes containing polonium-210:

	TOPIC	CLASSIFICATION
5.2.2	Waste Disposal	
5.2.2.1	The waste disposal process used at Mound in detail	U
5.2.2.2	Quantities of waste processed, effluent specific activity, or process efficiency.	U

However, the polonium wastes that do not go through the WD process (dry trash and hydrolysis wastes) must not show scope of operations at Mound.

	TOPIC	CLASSIFICATION
5.1.2	Use of polonium in the weapons program	S-RD

In our opinion, it is technically feasible to derive information from our hydrolysis wastes which, when combined with information already published in unclassified issuances, might reveal the total quantity of polonium processed at Mound Laboratory.

Our consideration of these classification guides gives rise to two questions:

1. Does the total quantity of polonium wastes generated at Mound Laboratory reveal that it is being processed in larger quantities than are required for unclassified programs and does it therefore reveal use of polonium in the weapons program?

2. If the total quantity of polonium waste is not regarded as classified, should our polonium hydrolysis wastes nevertheless be classified?

We have somewhat the same problem in our plutonium processing at the present time. We are generating a total of approximately 19,000 cubic feet per year of wastes containing plutonium, which consists of about 15,000 cubic feet of dry material and about 600 fifty-five-gallon drums of liquid wastes. We estimate that 85 per cent of the total contains plutonium-238.

The Mound Laboratory Classification Guide gives the following guidance on plutonium:

	TOPIC	CLASSIFICATION
1.2.5.1	Any information direct or implied that plutonium-238 is used in nuclear weapons.	S-RD

If this plutonium waste is sent to a commercial facility, each drum will have to be labeled with the plutonium isotope. Even if it were not so labeled, if an unauthorized person had access to the waste, it would be a relatively simple matter to submit samples to laboratory procedures which would identify the isotope as 238. This gives rise to the following questions:

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1. Does the total volume of plutonium wastes being generated at Mound Laboratory (which could be easily identified as containing plutonium-238) indicate that the Laboratory is processing quantities of plutonium-238 in excess of what might be expected or authorized under unclassified programs such as SNAP?

2. If the answer to the above question is affirmative, should part or all of this plutonium waste then be classified?

We would appreciate receiving AEC guidance on the questions raised in this letter as soon as possible. It is necessary for us to conclude arrangements for the proper disposal of our wastes very soon in order to avoid accumulation of them here at the Laboratory. If it is decided that a portion of these wastes are classified, we will also need detailed instructions on where and how to dispose of them.

Very truly yours,

Original signed by D. L. Scott

David L. Scott
Vice President,
Plant Manager

DLS/mjt

Distribution:

Copies 1 - 3 Mr. W. B. Creamer
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NUCLEAR ENGINEERING CO., INC.

P. O. BOX 146 - BURNS BLDG.
MOREHEAD, KENTUCKY

65 RAY STREET P.O. BOX 218
PLEASANTON, CALIFORNIA

P. O. BOX 356
BEATTY, NEVADA

RADIOACTIVE SHIPMENT RECORD FORM

374

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FROM: ______________________________ DATE ______________ 196 ____

______________________________ PAGE 1 OF ______________ PAGES

INSTRUCTIONS

1. COMPLETE THIS FORM IN TRIPLICATE ON EACH SHIPMENT OF RADIOACTIVE WASTE TO Nuclear Engineering Co., Inc. USE AS MANY PAGES AS NECESSARY. MATERIAL CANNOT BE ACCEPTED UNLESS INFORMATION IS COMPLETE
2. Where more than one isotope is included in a package, indicate each separate isotope and its quantity on a separate line. A single entry may be made in the first columns, but these must clearly relate to the multi-isotope listing. When mixed fission product wastes are involved, record MFP-Sr90 in column 5.
3. On the shipping label, list only the most hazardous isotope in any package.
4. Indicate whether contents are solid, liquid or gaseous in column 2.
5. In last column place a check mark when the package meets the requirements listed below: (Reference is made to IOCFR 20, as amended.)
   - A. Each package has been suitably marked with the words, "CAUTION RADIOACTIVE MATERIAL(S)." (Par. 20.203, (f).(1), & (2).)
   - B. Each package has been suitably labeled to show the isotope(s) contained, the curie quantity, and the date of measurement. (Par. 20.203, (f), (4).)
   - C. Each package has been smeared and surveyed, with appropriate notations being made as to surface contamination, and the maximum radiation level at contact (two inches), and at one meter from the package surface. (Par. 20.401, (c).)

ITEM NO.	PHYSICAL STATE	RADIATION, MR/HR		PRINCIPAL ISOTOPE(S)	MILLICURIES BY-PRODUCT	GRAMS (SNM)	POUNDS (SOURCE)	CUBIC FEET	FINAL CHECK
		AT 2"	AT 1 METER						

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TO NUCLEAR ENGINEERING CO., INC.