6FA1096#162 MH&S WASTE DISPOSAL 2/2

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO: S. R. Sapirie, Manager
Oak Ridge Operations
(THRU) J. J. Bloch, Director, Division of Production, Washington

FROM: Harold L. Price, Director
Division of Civilian Applications, Washington

DATE: OCT 25 1957

3764

SUBJECT: DISPOSITION OF SOURCE MATERIAL WASTES FROM AEC LICENSEES

SYMBOL: CA:REC

Reference is made to our memorandum entitled "Disposition of Source Material Wastes from AEC Licensees" which was forwarded to you on September 26, 1957. That portion of the memo which dealt with waste disposal under Section 20.304, 10 CFR 20, "Standards for Protection Against Radiation" contained a mistake in the total quantity of uranium or thorium which might be buried in any one year. Therefore, we request that you substitute for the paragraph which read;

"20.304 provides for disposal by burial in soil. Under the provisions in this section a licensee may bury 7.35×10^4 grams of natural uranium and 7.5×10^4 grams of natural thorium per year."

The following paragraph;

"20.304 provides for disposal by burial in soil. Under the provisions in this section a licensee may bury up to 8.81×10^5 grams of natural uranium or 9.00×10^5 grams of natural thorium per year."

For purposes of clarification we also request that you substitute for the paragraph which read;

"20.303 provides for disposal by release into sanitary sewage systems. Under this provision a licensee can release 1.47×10^6 grams of natural uranium and 1.5×10^6 grams of natural thorium per year. (0.681 uc/g and 0.666 uc/g is accepted as the specific activity of natural uranium and natural thorium respectively as interpreted in 10 CFR 20.5 (c))."

The following paragraph;

MEDICINE, HEALTH & SAFETY 3-4 (Waste Disposal)

G 9816

NOV 5 1957

ChemRisk Repository No. 1244
ChemRisk Document No. 1244

"20.303 provides for disposal by release into sanitary sewage systems. Under this provision a licensee can release up to 1.47×10^6 grams of natural uranium or 1.5×10^6 grams of natural thorium per year. (0.681 uc/g and 0.666 uc/g is accepted as the specific activity of natural uranium and natural thorium respectively as interpreted in 10 CFR 20.5 (c))."

68A1096 #162 - M448 WASTE DISPOSAL 2/2

FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Herman M. Roth, Director, Research and Development Division

DATE: September 10, 1957

FILE COPY

FROM : Arthur Schoen, Health Physicist, Biology Branch Research and Development Division

SUBJECT: VISIT OF DRD REPRESENTATIVES RELATIVE TO ORNL WASTE DISPOSAL ACTIVITIES

SYMBOL: ORB:AS

Dr. J. A. Lieberman and Mr. W. G. Belter of the Sanitary Engineering Section, DRD, visited OROO and ORNL on August 27 and 28. The purpose of their visit was two-fold. Dr. Lieberman was interested in reviewing the Laboratory's waste disposal operations to acquaint himself with the volumes of waste involved and the procedures and the problems involved in operating such a facility. He was also interested in acquainting Mr. Belter, a recent addition to his staff, with the waste disposal research program and personnel at ORNL.

We met with A. F. Rupp to permit Dr. Lieberman to discuss the attitude and philosophy of laboratory management regarding their present waste disposal operations and the possibility of formally establishing a regional burial site in Oak Ridge. Mr. Rupp indicated that while this was not the type of business the laboratory sought they would have no objection to operating such a facility. Dr. Lieberman stated that the DRD was considering other locations in the Northeast and primarily in North Central Pennsylvania, for establishing such a regional burial site, but that he was inclined to favor the selection of Oak Ridge. Included among the reasons for this inclination is the availability of Government owned land and the fact that we now have enough information about the local geology and hydrology as a result of the ORNL waste disposal research program to rather quickly select a suitable waste disposal site.

A question yet to be resolved in regard to the operation of such a waste burial facility is whether it should be contractor operated or privately owned and operated on a strict commercial basis. DRD appears to favor the latter alternative.

Subsequent discussions were held with the people responsible for operating the burial ground at X-10. It soon became apparent that there was no record kept of the tonnage or volume of waste buried or of the rate at which land is being utilized for this purpose. The tonnage figures contained in the letter from Dr. Swartout, dated August 16, 1957, are gross estimates and while the figures 7,000 tons for FY 1956 and 600 tons for FY 1957 imply a reduction by an order of

NOTE * SHOULD BE APPROXIMATELY 700 TONS operations

[illegible] in [illegible] of the [illegible] magnitude in the volume of wastes handled, discussions disclosed that the 7,000 ton estimate for FY 1956 is nearer 600-700 tons. It is apparent then that there have been no significant changes in the quantities of waste handled during the last two years. We were concerned that the Laboratory would submit such gross estimates without clearer qualification, especially when they create such an erroreous impression. Dr. Lieberman felt that this matter should be brought to the attention of laboratory management.

Discussions with the people in the field indicate that, in some instances, waste is shipped to ORNL and buried without knowledge of its contents. This is a situation which can permit the kind of incident that occurred in March in connection with the contaminated sodium waste that was sent by P&WA via Radiological Services without suitable description. Since then only isotope users have been advised to describe the contents of waste shipped to ORNL for burial. No such request has been made of AEC contractors. Such information is generally volunteered by waste shippers. However, there are instances where unknown wastes are handled and buried despite the fact that Mr. Rupp stated that the Laboratory did not bury wastes which were not described. The Laboratory should be requested to advise all organizations shipping waste to ORNL that waste will not be accepted for burial without specific descriptive information regarding its contents.

Information regarding the volume (ft.^{3}) of waste shipped to ORNL from various sources is not readily available nor was it included in the ORNL letter of August 19. However, it was determined that reasonable estimates could be developed with the aid of a record that is kept by the burial ground operator, of the number of containers in each shipment and the operators knowledge of the size of containers used by each shipper. Dr. Lieberman indicated that they may subsequently request such volume estimates.

The effort to acquaint Mr. Belter with the waste disposal research program began with a meeting with Mr. Struxness and developed into a meeting of the Intra-Divisional Committee on Waste Disposal Research and a full review of current research programs including a discussion of the apportionment of funds under program 4630 for the eight waste disposal research projects. Dr. Lieberman has reservations about the justification for spending 20% ($166,000) of the total on "Soil Disposal of Intermediate Level Wastes". This project is rather near completion and Dr. Lieberman feels that the report on the three experimental surface pits, which is in its final stages of preparation, will contain enough information to permit the improved design of subseqent pits by operations people. While there may be some continued research and

development interest in certain phases of the operation of these improved pits it will be primarily an operating problem which should be supported by operating funds.

The visit concluded with a meeting in Dr. Cope's office very briefly summarizing the results of the visit particularly in regard to the problem of establishing a regional burial site.

Arthur Schoen

Arthur Schoen

CC: J. A. Lieberman, Wash.

NOTE: * SHOULD BE APPROXIMATELY 700 TONS

68A1096 #162 MH&S Waste Disposal 1/2

GENERAL ELECTRIC

Knolls Atomic Power Laboratory
Schenectady, New York

May 13, 1957

Oak Ridge National Laboratory
Oak Ridge, Tennessee

Attention: Mr. J. R. Gissel

Gentlemen:

Confirming our telephone conversation of May 10, 1957, attached is a preliminary list of items which KAPL expects to include in the three carload shipments of radioactive waste approximately June 3, 1957.

KAPL's Traffic Department is investigating routes and times, and will advise exactly what day of the week a shipment should leave here to be reasonably sure of arriving at Oak Ridge on a Monday or Tuesday. The Traffic Department will also arrange to telegraph Oak Ridge the expected arrival date two days in advance.

This section will make a list, similar to the preliminary list attached, which will show what actually went into the car and will forward it to Oak Ridge on or before shipment. In addition, a copy of the list will be attached inside of each boxcar shipped to assure for continued safe handling of our loadings.

KAPL appreciates your cooperation and trust that this shipment will run as smoothly as the past operations. If Oak Ridge has any questions regarding the plan or schedule, please do not hesitate to advise this section.

Very truly yours,

D. A. Manieri

D. A. Manieri, Foreman Radioactive Waste
OPERATION & MAINTENANCE

DAM/ck
Attachment

MEDICINE, HEALTH & SAFETY 3-8, ~~C 4377~~
Waste Disp.
MAY 16 195

Distribution
H. McAlduff - Oak Ridge O. O.
W. F. Trolenberg - SOO
J. J. Berlinger - KAPL
A. S. Bates - KAPL
L. Cherubin - KAPL
T. R. Young - KAPL
C. J. Detwiler - KAPL
J. A. Zegers - KAPL
H. Wetzel - KAPL
A. A. Schoen - Oak Ridge O. O.
J. Lieberman - AEC - D. C.
G. W. Wallace - KAPL

PRELIMINARY LIST

of

KAPL Radioactive Waste

Ready for Shipment to

OAK RIDGE NATIONAL LABORATORY

ITEMS	DESCRIPTION	
2	7' x 7' x 4' Boxes Maximum dose rate Maximum weight	Lab. Steel Tables & Equip. Less than 150 MR/Hr. 1,000#/Box
90	4' x 4' x 4' Boxes Maximum dose rate Maximum weight	Miscellaneous Scrap Less than 10 MR/Hr. 500 #/Box
40	Carbon Steel Drums Maximum dose rate Maximum weight	Solid Waste 3 MR/Hr. 500 #/Pallest
20	Fibre Drums Maximum dose rate Maximum weight	PU Waste (Sealed) Less than 6 MR/Hr. 400 #/Pallet
50	Carbon Steel Drums Maximum dose rate Maximum weight	Solid Waste Less than 500 MR/Hr. 400 #/Pallet
10	Carbon Steel Drums Maximum dose rate Maximum weight	Contaminated Oils Less than 6 MR/Hr. 2,000 #/Pallet
3	6' x 6' x 6' boxes Maximum dose rate Maximum weight	Contaminated Tables 1,500 MR/Hr. 600 #/Box
20	4' x 3' x 2' boxes Maximum dose rate Maximum weight	Baled Paper 10 MR/Hr. 650 #/Box
4	4' x 4' x 4' boxes Maximum dose rate Maximum weight	Cont. Filters Less than 400 MR/Hr. 300 #/Box

Miscellaneous Scrap is composed of materials contaminated with low level fission products, such as air filters, glass, metals, wood and all materials that cannot be baled.

G 4377

MAY 16 1957

Baled Materials are composed of dry waste, such as paper, rags, floor sweepings, gloves, lagging, etc., contaminated with low level fission products.

Solid Waste is composed of high level fission products and includes both miscellaneous scrap and baled materials.

PU Waste is composed of all materials contaminated with PU. This type of waste is put in one gallon cans and then into drums.

Slurry is compossed of evaporator bottoms, neutralized and contaminated with high level fission products.

Oils are composed of degreasing fluid and cutting oils, contaminated with low level fission products.

All boxes are palletized and covered with water proof paper.

All drums are banded to a 4' x 4' x 4' Pallet.

All containers meet ICC Specifications for Off-Site shipment.

D. A. Manieri

D. A. Manieri, Foreman

DAM/at

68A 1096 #162 M, H, & S Disposal of Contaminated Items.

October 3, 1957

ORB:AS

Oak Ridge, Tennessee
October 3, 1957

Union Carbide Nuclear Company
Post Office Box P
Oak Ridge, Tennessee

Attention: Dr. J. A. Swartout, Deputy Director
Oak Ridge National Laboratory

Subject: APPR-1 DEMINERALIZERS

Gentlemen:

Confirming discussions with Mr. A. F. Rupp, it is desired that ORNL assume responsibility for burial ground disposal of an internally-contaminated, spent demineralizer unit from the primary coolant loop of APPR-1. Receipt of the demineralizer at ORNL is expected in the immediate future. In addition, there is a great deal of interest by the Army Reactors Branch, DRD, in the material collected by the demineralizer resin, and it has been proposed that the demineralizer contents be sampled and analyzed for constituents of interest.

The Schenectady Operations Office has stated to us that the demineralizer will be contained in the APPR-1 Demineralizer Shipping Cask, the cask and contents having a total weight of approximately 6,000 pounds. Maximum readings, when the unit was disconnected from the system on August 19, were 10 r/hr at two inches from surface of the unshielded demineralizer. Pressure was released at that time. The dose rate outside the cask on August 19 was 8 mr/hr at 2".

It is hoped that representative samples can be obtained from the upper, middle and lower sections of the resin contents. A reproduced copy of Alloy Mfg. Co., Inc. Drawing No. B-7126-1, "Alco" Demineralizer, is enclosed. It is suggested that by drilling or cutting a hole in the 16 gage F and D head, samples can be taken at angles in a manner that will permit representative sampling of the resin from each of the three sections mentioned above.

The cask is urgently needed by the shipper, and should be returned as soon as feasible. If, as expected, it is not possible to obtain the samples and discard the demineralizer without employing the cask for

6411

OFFICE ▶		Bio Br. Res & Dev.	Director Research and Development Division		
SURNAME ▶	Enclosure: Drawing	Schoen:mac		MEDICINE, HEALTH & SAFETY	3-4 (Items)
DATE ▶		10-3-57	10/3/57		

Form AEC-318 (Rev. 9-52) CC: C. E. Center, UCNC
R. C. Armstrong
BC: Larry Crocker, Y-12, Bldg. 9-2043

SEP 3 0

G 8574

Memorandum • UNITED STATES GOVERNMENT

Union Carbide
Nuclear Company

- 2 -

October 3, 1957

shielding, the samples may be obtained and stored for analysis, and the demineralizer unit discarded in order to enable an early return of the cask.

We know at this time that the Schenectady Operations Office would like the following analyses to be made on the samples obtained from the demineralizer unit:

1. Gross beta-gamma activity in each of the prospective three samples.

2. Separation of the magnetic (iron, stainless steel, etc.) from the non-magnetic constituents to permit analysis separately of each type of material in each of the samples.

3. Analysis for the following elements: Fe, Cr, Mn, Co, and others as necessary to adequately describe the chemical content of the samples.

4. Analysis for the following radionuclides: Fe 55 and Fe 59, Co 58 and Co 60, Mn 54, Cr 51, Ni 63, and others as may be necessary to describe the isotopic content of each sample.

Schenectady Operations has requested information on your estimated costs of performing the above analyses. It would be greatly appreciated if you could submit an estimate to us of costs for the analyses proposed in order that we may transmit same to Schenectady Operations for their review and subsequent advice. We would recommend, therefore, that you defer the detailed chemical analyses until we can advise you further on SOO requirements. SOO may wish to modify their request covering the whole series of analyses after they have reviewed your cost estimate.

Meanwhile, you will be incurring costs in the disposal of the demineralizer and the obtaining of the samples. We have not determined the method of handling these costs, and will therefore appreciate your advising us of these operations as separate from the analytical costs. You may record these immediate costs as a deferred charge pending receipt of firm accounting instructions.

We greatly appreciate your cooperation and assistance in this matter.

Very truly yours,

ORIGINAL SIGNED BY
HERMAN M. ROTH

Herman M. Roth
Director
Research and Development Division

OFFICE ▶		Bio Br Res & Dev			
SURNAME ▶	Enclosure: Drawing	Schoen:mac		MEDICINE, HEALTH & SAFETY	3-4 (2 Items)
DATE ▶		10-3-57	10/3/57		

CC: C. E. Center, UCNC
R. C. Armstrong
BC: Larry Crocker, Y-12, Bldg. 9-2043

m AEC-318 (Rev. 9-53)

G 8574