



Department of Energy
Schenectady Naval Reactors Office
Post Office Box 1069
Schenectady, New York 12301-1069

REC&SD:DAD05-27

AUG 10 2005

Mr. Stephen Gavitt
Assistant Bureau Director
Bureau of Environmental Radiation Protection
New York State Department of Health
547 River Street
Troy, New York 12180-2166

Dear Mr. Gavitt:

**Subject: KAPL RADIOACTIVE WASTE INFORMATION RELATED TO THE LAKE
ONTARIO ORDNANCE WORKS**

In our telephone conversation of July 8, 2005, you requested information and available documents on Knolls Atomic Power Laboratory (KAPL) radioactive waste that was stored at the Lake Ontario Ordnance Works (LOOW) during the 1950s. In particular, you were interested in any records documenting that the KAPL waste was shipped from LOOW to Oak Ridge. I have attached the documents we have located that are responsive to your request.

For background, from 1952 to 1954, KAPL shipped radioactive waste to LOOW as directed by the Atomic Energy Commission (AEC) and later the Department of Energy. The limited records available from this period indicate that a large portion of the KAPL waste from this time period was associated with the Separations Process Research Unit (SPRU), an AEC pilot plant for developing methods for extracting fissionable material from irradiated uranium.

These documents provide information on the number and types of radioactive waste containers sent to LOOW. Several of these documents also provide information on the subsequent shipment of the KAPL waste at LOOW to Oak Ridge in 1958. The information in the documents indicates that the large majority of the radioactivity in the waste was fission product radioactivity. Of all the waste shipped from KAPL, only a small fraction of the containers had waste containing residual separated plutonium associated with SPRU work, which was a very small fraction of the total radioactivity.

AUG 10 2005

In addition to the documents themselves, I have attached a brief summary sheet for each document commenting on the significance of that document to your request. If you have any questions on the attached information, please contact my office.

Sincerely,

ORIGINAL SIGNED BY

J. Hughes Robillard, Director
Radiological/Environmental Controls
and Safety Division

Attachments:

- (1) USAEC Schenectady Operations Office Letter (Batza) to KAPL (Perleberg), dated October 13, 1954, "KAPL Radioactive Waste Presently Stored at LOSA"
- (2) KAPL letter (Perleberg) to USAEC Schenectady Operations Office (Anderson), dated October 26, 1954, "KAPL Radioactive Waste at LOSA"
- (3) KAPL letter (Manieri to Collins) dated December 2, 1954, "Estimated Curies Activity Shipped from LOAS from KAPL"
- (4) KAPL letter (Manieri) to Oak Ridge National Laboratory (Witkowski), dated January 29, 1958, "Radioactive Waste Shipment from Model City, New York"
- (5) Hooker Electrochemical Company letter (Seager) to KAPL (Manieri), dated February 14, 1958, "Radioactive Waste Shipment from Model City, New York"
- (6) Hooker Electrochemical Company letter (Seager) to Oak Ridge National Laboratory (Witkowski), dated June 26, 1958, "Radioactive Waste Shipment from Model City, New York"
- (7) KAPL letter (Manieri) to Virginia Military Institute (Morgan), dated August 18, 1961, "Data on KAPL's Radioactive Waste Disposal"
- (8) Paper on LOOW Waste from KAPL files, date unknown

Mr. Stephen Gavitt

-3-

AUG 10 2005

bcc: Michelle Rhodes, USACE
W. N. Perry, DOE-Oak Ridge
S. B. Feinberg, DOE-SPRU

Attachment (1)

USAEC Schenectady Operations Office Letter (Batza) to KAPL (Perleberg), dated October 13, 1954, "KAPL Radioactive Waste Presently Stored at LOSA"

KAPL sent radioactive waste to LOOW (also known as Lake Ontario Storage Area or LOSA) from January 22, 1952 to September 9, 1954. This USAEC Schenectady Operations Office letter addressed to KAPL states that a memorandum was received by Oak Ridge stating that future storage of KAPL waste at LOOW would not be permitted. It also stated that it was necessary for Oak Ridge to take steps to reduce to a minimum the hazard potential of materials presently stored at the Niagara Falls site. KAPL was requested to provide information on the waste shipments made to LOOW. Attachment 2 is the response to this request.

UNITED STATES
ATOMIC ENERGY COMMISSION
SCHENECTADY, NEW YORK

ADDRESS REPLY TO:
THE MANAGER
U. S. ATOMIC ENERGY COMMISSION
P. O. BOX 1069
SCHENECTADY, NEW YORK
AND REFER TO:

TAD:AAB

RECEIVED

OCT 14 1954

C. N. PERLEBERG

October 13, 1954

General Electric Company
Knolls Atomic Power Laboratory
Schenectady, New York

Attention: Mr. C. N. Perleberg

Subject: KAPL RADIOACTIVE WASTE PRESENTLY STORED AT
LOSA

Gentlemen:

A memorandum has been received from Oak Ridge advising this office that future storage of KAPL waste at LOSA would not be permitted. This memo indicated that it is necessary for Oak Ridge to take steps to reduce to a minimum the hazard potential of materials presently stored at the Niagara Falls site.

It was requested that specific information concerning the amounts and specifications of each of the waste shipments made to LOSA be furnished as soon as possible. It would be appreciated greatly if you would forward this data if it is available.

Very truly yours,

A. A. Batza, Chief
SF Accountability and
Special Materials Branch

RECEIVED

OCT 15 1954

UTILITIES UNIT

Attachment (2)

KAPL Letter (Perleberg) to USAEC Schenectady Operations Office (Anderson), dated October 26, 1954, "KAPL Radioactive Waste at LOSA"

This letter is the KAPL response to the AEC request in Attachment (1).

Seven shipments were made to LOOW between January 22, 1952 and September 9, 1954. It is stated in the letter that KAPL did not keep a log of the items listing the contents of each container in detail. However, the number and type of boxes or drums are listed.

October 26, 1954

Mr. J. B. Anderson, Manager
Schenectady Operations Office
U. S. Atomic Energy Commission
Knolls Atomic Power Laboratory
Schenectady, N. Y.

Attention: Mr. A. A. Batza

Subject: KAPL Radioactive Waste at LOSA.

Dear Sir:

Complying with your request of October 13 there is attached a list of the items which have been shipped to LOSA since January 1952 when the first shipment was made according to our records. We have not kept a log of the items showing the contents of each container in detail.

If an inventory is desired, it should be taken from the markings on the containers at LOSA. At the time of shipment, each container is so labeled, along with the radiation level. The latter will be lower now in cases of short half-life contamination.

Very truly yours,

C. H. Perleberg, Manager
MAINTENANCE & UTILITIES SUB-SECTION

CHP/RFW/meh
Attach.

bcc: ES Collins
RF Wyer

The following material was shipped to LOSA on January 22, 1952:

- 2 1½ x 1½ x 2 ft. waste boxes
- 1 2 x 2 x 2 waste box
- 1 2 x 2 x 8 ft. waste box
- 1 4 x 6 x 12 waste box
- 202 4 x 4 x 4 waste boxes
- 31 30 gal. s/s drums
- 61 55 gal. s/s drums
- 99 70 gal. s/s drums
- 217 55 gal. o/s drums
- 9 275 gal. storage tanks

The following material was shipped to LOSA on October 16, 1952:

- 26 4 x 4 x 4 boxes containing plastic tubing, contaminated clothing and rubbers, assorted pieces of steel, galvanized copper, and stainless steel pipe and contaminated concrete, dirt and paper ashes
- 9 boxes pipe
- 6 boxes ashes
- 5 boxes metal dust work
- 2 boxes machinery
- 84 boxes baled paper, scrap glass-fiber and GWS filters, scrap metal, glass dirt, ashes, rubbers and clothing
- 6 bales honeycomb
- 29 bales GWS filters
- 15 bales paper
- 7 bales scrap

The following contaminated waste material was shipped starting August 27, 1953:

- 97 4 x 4 x 4 boxes misc. contaminated waste material
- 13 pallets of contaminated baled paper
- 2 boxes 42 x 26 x 26 contaminated waste material
- 1 box 89 x 26 x 48 misc. contaminated waste material
- 1 box 50 x 34 x 36 misc. contaminated waste material
- 1 box 66 x 30 x 46 misc. contaminated waste material
- 38 pallets, 4 ballels per pallet, of liquid contaminated waste material
- 26 pallets contaminated filters
- 21 boxes assorted sizes of misc. contaminated waste material
- 2 pallets (5 gal. cans) contaminated waste material
- 22 pallets (55 gal. drums) contaminated slurry
- 1 pallet (15 gal. drums) contaminated liquid waste material
- 96 drums liquid contaminated waste

The following material was shipped to LOSA April 16, 1954:

- 80 4 x 4 x 4 boxes misc. contaminated waste material
- 16 boxes 4 x 4 x 4 containing baled paper
- 42 boxes misc. contaminated waste

The following material was shipped to LOSA April 23, 1954:

38 boxes 4 x 4 x 4 misc. contaminated waste material

The following material was shipped to LOSA June 4, 1954:

36 4 x 4 x 4 misc. contaminated waste material
6 pallets, four 55 gal. drums each pallet, contaminated oil
12 boxes baled paper
3 boxes filters
7 4 x 4 x 4 misc. scrap

The following material was shipped to LOSA September 9, 1954:

14 pallets, 4 barrels per pallet, contaminated waste material
39 boxes 4 x 4 x 4 misc. contaminated waste material
2 boxes 4 x 2 misc. contaminated waste material
1 box 6 x 6 misc. contaminated waste material
17 boxes 4 x 2 CNS filters
1 box 6 x 6 x 8 containing desk and tools from EML
1 box 6 x 4 x 8 containing 1 bench, tools, and misc. items from EML

Attachment (3)

KAPL Internal Letter (Manieri to Collins) dated December 2, 1954, "Estimated Curies Activity Shipped from LOAS from KAPL"

This internal letter provides the estimated curies of waste shipped to LOOW. (Note that the letter uses the acronym LOAS for LOSA.) It was estimated that 408.08 Ci of MFP and 0.63 Ci of Pu was shipped.

In the SPRU pilot plant, irradiated uranium from Hanford was dissolved and processed to extract plutonium and uranium. The resulting liquid waste was processed by evaporation to concentrate most of the radioactivity in a slurry form. This radioactive slurry would contain fission product radioactivity as well as some residual plutonium not extracted by the SPRU process. This slurry would have accounted for most of the radioactivity in the KAPL waste. Thus, this 1954 KAPL curie estimate was primarily based on the amount of slurry shipped and samples of the slurry material. The curie content of the boxes was based on an assumed average dose rate of 12 mr/hr on the box. The curie content of the boxes is assumed to be entirely mixed fission products.

RECEIVED
DEC 3 1954
UTILITIES UNIT

December 2, 1954

H.S. Collins
E-1 Basement
KAPL

SUBJECT: ESTIMATED CURIES ACTIVITY SHIPPED LOAS FROM KAPL

Approximately 700,000 lbs. of contaminated waste in 16 box cars have been shipped to LOAS since September, 1953.

*Low
activity
cars not
included*

The above shipment included approximately 675 boxes and 394 slurry drums.

Sample analysis indicates an average of 3.4 curies (mixed fission product) per 150 gallons of slurry or .023 curies per gallon.

394 slurry drums X 50 gal/drum = 17,700 gal. of slurry.

.023 curies/gal. X 17,700 gal. slurry = 407.1 curies of mixed fission product.

Assume an average of 12 mr/hr. per box. 675 boxes x 12 mr/hr = 8100 mr/hr.

8.3 R/hr. = 1 curie activity

8.1 R/hr. = 0.98 curie activity

8.3 R/hr.

Assume - 407.10 in slurry drum
 0.98 in waste boxes
 408.08 curies (mixed fission product)

Estimated curies activity of Plutonium. Sample analysis indicates an average of 0.025 gram Plutonium per drum.

394 drums x .025 g/drums = 9.85 g/total pu.

$1.4 \times 10^{11} =$ d/m/g of pu.

$1.4 \times 10^{11} \times 9.85 = 1.38 \times 10^{12}$ d/m/394 drums

$\frac{1.38 \times 10^{12}}{2.2} = 0.63$ curies pg/394 drums

2.2×10^{12} d/m/curies

407.10	in slurry drums
<u>0.98</u>	in waste boxes
408.08	curies (mixed fission products)
<u>0.63</u>	curies pu/294 drums

Total curies activity 408.71

The above report is based on assumption and also on sample analysis of the slurry.

D.A. Manieri, Foreman

UTILITIES OPERATIONS SUB-UNIT
KAPL

DAM:sjp

cc: RF Wyer
CH Perleberg
NH Truran
File

Attachment (4)

KAPL Letter (Manieri) to Oak Ridge National Laboratory (Witkowski), dated January 29, 1958, "Radioactive Waste Shipment from Model City, New York"

This letter discusses a shipment of three railcars of KAPL radioactive waste from LOOW to Oak Ridge National Laboratory scheduled for January 31, 1958. This letter also states that Hooker Electrochemical Company personnel are planning to incinerate KAPL's combustible waste now in storage at Model City. The ashes and miscellaneous non-combustible materials were to be packaged to meet I.C.C. regulation and included in the next shipment to Oak Ridge. Attachments 5, 7, and 8 indicate this plan was followed.

A listing of the containers, contents, dose rates and weights in each box car is provided. Six different categories of contents are described in this listing. One of these categories is described as "Pu waste" composed of all materials contaminated with Pu. This type of waste was put into one gallon cans and then into drums. The remaining five waste categories included primarily fission product radioactivity. One of the three railcars on this list was ATMX 208. There was a note under the packing list for this railcar stating that 16 additional pallets would be loaded into this railcar. The packing list in the document forwarded to SNR by Mr. Gavitt also was for the ATMX 208 railcar. This second list included more material than in the list in the attached document and apparently includes the additional waste material indicated in the note.

It is noteworthy that only 5 of the 134 pallets and none of the boxes listed in this shipment were Pu waste. This is consistent with only a small fraction of the KAPL waste material being plutonium contaminated waste. Furthermore, the description of the plutonium contaminated waste indicates that it was double encapsulated, first in paint cans and then in drums. This material would have been less likely to leak during storage than the more highly radioactive, semi-liquid "slurry" waste which was not noted as being double encapsulated.

This letter, along with some of the subsequent letters, indicates that KAPL was aware of the shipment of KAPL waste from LOOW to Oak Ridge and played some role in assisting with arrangements for that transfer.

GENERAL ELECTRIC

Knolls Atomic Power Laboratory
Schenectady, New York

January 29, 1958

Mr. E.J. Witkowski
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Gentlemen:

Subject: Radioactive Waste Shipment from Model City, New York

Confirming our telephone conversation of January 29, 1958 attached is a list of items which Hooker Electrochemical Company is including in the three (3) carload shipments of radioactive waste material scheduled for shipment on January 31, 1958.

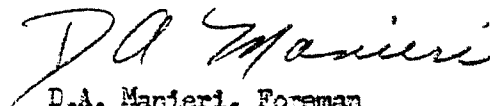
Mr. F.W. Malone, Chief AEC Niagara Falls Branch will advise you by phone exactly what day the shipment will leave Model City, New York. In addition, he will make arrangements to route the waste shipment to the I-12 siding on the L & N railroad as per your request.

In the very near future (six to eight weeks) the Hooker Electrochemical Company personnel are planning to incinerate KAPL's combustible waste now in storage at Model City, New York. The ashes and the misc. non-combustible materials will be packaged to meet I.C.C. regulation and be included in the next waste shipment to Oak Ridge.

As in the past, a list of materials including dose rates, description and weights that will be put into each box car will be forwarded to you with our shipping documents. In addition, an itemized list of materials will be tacked inside of each box car shipped to assure for continued safe handling of our loadings and for your guidance at Oak Ridge burial grounds.

KAPL and the Hooker Electrochemical Co. appreciate 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, Foreman
Radioactive Waste
OPERATION & MAINTENANCE

DAM/eng
Attachment

Distribution

W.F. Eppenberg - SOC

B. Ball - SOC

F.R. Chung - KAPL

A.J. Schoen - Oak Ridge CC

A. Stachman - AEC, D.C.

E. Cherubin - KAPL

T. ... - KAPL

... - Oak Ridge CC

F.W. Malone AEC Niagara Falls

J.D. Sweeney Hooker Co.

J. Hamner Hooker Co.

Radioactive Waste Material
In Box Cars for Disposal
 AT
OAK RIDGE NATIONAL LABORATORY

Car #ATMX 207

<u>Qty</u>	<u>Containers</u>	<u>Material</u>	<u>Max. Dose Rate</u>	<u>Max. Weight</u>
9 Pallets	65 gal. s/s drum	Slurry	50 mr/hr.	2800#/pallet
2 "	55 " " "	"	50 "	2000 "
1 "	55 " " "	"	100 "	1000 "
1 "	55 " " "	"	80 "	1000 "
1 "	55 " " "	"	95 "	2000 "
1 "	55 " c/s "	PU	40 "	1000 "
3 "	65 " s/s "	Slurry	20 "	2800 "
6 "	55 " " "	"	40 "	2000 "
24 "	55 " " "	"	80 "	2000 "

Car #ATMX 209

9 Pallets	55 gal. c/s drum	Cont. oils	10 mr/hr.	2000#/pallet
8 "	55 " s/s "	Slurry	120 "	2000 "
6 "	65 " " "	"	90 "	2800 "
4 "	55 " c/s "	Solid Waste	200 "	1000 "
4 "	55 " " "	PU	10 "	1000 "
4 "	55 " " "	Oils	6 "	2000 "
2 "	55 " s/s "	Slurry	50 "	2000 "
2 "	65 " c/s "	Cont. ashes	6 "	2000 "
4 "	55 " s/s "	Slurry	180 "	2000 "
5 "	55 " c/s "	Solid Waste	150 "	1000 2

Car #ATMX 208

5 Pallets	65 gal s/s drum	Slurry	20 mr/hr.	2800#/pallet
4 "	55 " c/s "	Oils	10 "	2000 "
11 "	55 " s/s "	Slurry	500 "	2000 "
4 Boxes	4' x 3' x 2'	Misc. Scrap	6 "	300#/box
1 Pallet	55 gal. c/s drum	Solid Waste	3000 "	1000#/pallet
1 "	55 " s/s "	Slurry	800 "	2000 "
2 "	65 " c/s "	Misc. Waste	30 "	2000 "
4 "	30 " s/s "	Slurry	40 "	1500 "

Note: 16 additional pallets of drums will be loaded and monitored into this car by the Hooker Electrochemical Co. personnel.

Monitoring Results:

External radiation

Car ATMX 207) 10 mr/hr. at 12 ft. from outer surface of box car - 10 mr/hr. at 5 ft.

Car ATMX 209) at ends of box car.

Car ATMX 208 - Will be monitored by Hooker personnel when loading is completed

Identification

Since some of this material has been in storage since 1952, we have re-surveyed and color coded radiation readings on each container for your guidance.

Yellow - L - indicates maximum reading 50 mr/hr.

Blue - M - indicates maximum reading 200 mr/hr.

Red - H - indicates maximum reading 1000 mr/hr.

Readings greater than 1 R/hr. have been identified in Red by the actual radiation readings on container.

All containers are palletized and banded four to a pallet.

Materials:

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

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

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

Slurry is composed 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.

DAM/amp

Attachment (5)

Hooker Electrochemical Company Letter (Seager) to KAPL (Manieri), dated February 14, 1958, "Radioactive Waste Shipment from Model City, New York"

This letter discusses the Bill of Materials for shipment for the 4th rail car. It also states that burning of the Schenectady waste material is scheduled to start February 19.

A listing of the containers, contents, dose rates and weights in the box car is provided. There was no "Pu waste" listed in this railcar shipment. The Hooker letter comments that the "results" from this railcar are quite a bit higher than previous readings. This apparently refers to the fact that both the average radiation level on individual pallets as well as the railcar are higher than those listed for the three railcars in the previous shipment. This is unsurprising as this railcar contained mostly pallets of the highly radioactive slurry.

It is believed that the "HESL personnel" mentioned in this letter are from the AEC Health and Safety Laboratory in New York City.

HOOKER ELECTROCHEMICAL COMPANY
NIAGARA FALLS
NEW YORK

Contract No. AT-(30-1)-1524

February 14, 1958

D. A. Manieri
Foreman, Radioactive Waste Material
Knolls Atomic Power Laboratory
Schenectady, New York

Subject: RADIOACTIVE WASTE SHIPMENT FROM MODEL CITY, NEW YORK

Dear Don:

The enclosed Bill of Material shows the results for our fourth car. This was quite a bit higher than we found on previous readings.

The burning of Schenectady waste material is scheduled to start February 19. HESL personnel are due here Tuesday the 18th to lay out the project. Everything should be ready Wednesday. Come up if you can.

Regards,

Paul Seager

Paul Seager
Plant 31

PS:jc
Enclosure

February 14, 1958

RADIOACTIVE WASTE MATERIAL IN BOX CAR-SAL 10063

<u>ITEMS</u>	<u>DESCRIPTION</u>	<u>MATERIALS</u>	<u>MAX. DOSE RATE</u>	<u>MAX. WEIGHT</u>
4-Pallets	65 gal-c/s Capsules	U. Residue	5 mr/hr	1000#/pallet
4-Pallets	55 gal-c/s Drums	Oils	10 mr/hr	2000#/pallet
2-Pallets	65 gal-s/s Drums	Slurry	10 mr/hr	2800#/pallet
3-Pallets	35 gal-s/s Drums	Slurry	10 mr/hr	1000#/pallet
1-Pallet	20 gal-s/s Drums	Slurry	10 mr/hr	500#/pallet
4-Pallets	55 gal-s/s Drums	Slurry	150 mr/hr	2000#/pallet
1-Pallet	55 gal-s/s Drums	Slurry	250 mr/hr	2000#/pallet
3-Pallets	55 gal-s/s Drums	Slurry	300 mr/hr	2000#/pallet
6-Pallets	55 gal-s/s Drums	Slurry	510 mr/hr	2000#/pallet
1-Pallet	65 gal-c/s Capsule	Slurry	10 mr/hr	1000#/pallet
	35 gal-s/s Inside			
1-Pallet	65 gal-c/s Capsule	KAPL Waste & Gaps inside	200 mr/hr	2000#/pallet
2-Pallets	55 gal-c/s	KAPL Waste	150 mr/hr	2000#/pallet
1-Pallet	55 gal-c/s	KAPL Waste	1 R/hr	2000#/pallet
1-Pallet	55 gal-c/s	KAPL Waste	3 R/hr	2000#/pallet
1-Pallet	55 gal-c/s	KAPL Waste	7 R/hr	2000#/pallet
1-Pallet	55 gal-s/s & c/s	Slurry & Oil	200 mr/hr	2000#/pallet
5 Boxes	4' x 3' x 2'	Misc. Scrap	10 mr/hr	300#/Box
3 Boxes	4' x 3' x 2'	Filters	110 mr/hr	300#/Box

Identification:

All Drums have been re-surveyed and identified as follows:

Yellow "L" indicates Maximum reading of 50 mr/hr
 Blue "M" " " " " " 200 mr/hr
 Red "H" " " " " " 1000 mr/hr

Drums are Palletized and banded four to a Pallet.

Material:

Solid Waste - Composed of high level mixed fission product and includes miscellaneous scrap.

Slurry - Composed of high level mixed fission product from evaporator bottoms from KAPL Liquid Waste Process.

Pu - Composed of all materials contaminated with Plutonium or Thorium. This type of waste is packaged into 1 gallon paint cans, and placed into carbon steel drums.

Oils - Ashes - Contaminated with low level mixed fission products.

U Residue - Uranium residue, formerly packaged in 5 gal. can, packed in 55 gal. c/s capsules.

Filters - Spun glass air filters packed in wooden boxes.

Gaps - Cesium and strontium gaps capsuled in 65 gal. c/s drums.

Continued.....

Monitoring Results:

External Radiation

30 mr/hr at 12 ft. from outer surface of sides.

21 mr/hr at 5 ft. from ends of box car.

Paul Seager

Paul Seager

jc

Attachment (6)

Hooker Electrochemical Company Letter (Seager) to Oak Ridge National Laboratory (Witkowski) dated June 26, 1958, "Radioactive Waste Shipment from Model City, New York"

This letter discusses Bills of Materials for a two rail car shipment on or about June 26. The contents in each box car is provided. The box cars only contained wood boxes, and no "Pu waste" is listed.

RECEIVED
JUL 16 1958
D. A. MANIERI

Contract No. AT-(30-1)-1524

June 26, 1958

Mr. E. J. Witkowski
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Subject: Radioactive Waste Shipment From Model City, New York

Dear Sir:

Enclosed are the Bills of Materials for cars ATMX 208 & 209 which will be shipped on or about June 26. The radiation monitoring results are noted and the cars are placarded.

A copy of this Bill of Material is being sent to D. Manieri at KAPL for his records.

Very truly yours,



Paul Seager
Design Engineer
P-31

PS:km
cc: D.A. Manieri KAPL
F.W. Malone NF-AEC
J.D. Sweeney HEC
P. Seager HEC

Contract No. AT-(30-1)-1524

June 26, 1958

RADIOACTIVE WASTE MATERIAL
IN BOX CAR ATMX 209
DISPOSAL AT ORNL

<u>ITEMS</u>	<u>DESCRIPTION</u>	<u>MATERIALS</u>	<u>MAX. WEIGHT</u>
30 Boxes	Wood	Misc. Scrap	750 #/Box
Total	30 Boxes		

Estimated weight of car load 22,500#

Monitoring Results:

Containers should not exceed 200 mr/hr

External Radiation

10 mr/hr at 12 ft. from outer surface of box car sides.

10 mr/hr at 5 ft. from ends of box car.

Paul Seager
Paul Seager
Design Engineer
Plant - 31

km

Contract No. AT-(30-1)-1524

June 26, 1958

RADIOACTIVE WASTE MATERIAL
IN BOX CAR ATMX 208
DISPOSAL AT ORNL

<u>ITEMS</u>	<u>DESCRIPTION</u>	<u>MATERIALS</u>	<u>MAX. WEIGHT</u>
47 Boxes	Wood	Misc. Scrap	750 #/Box
	Total	47 Boxes	
	Estimated weight of car load 35,250#		

Monitoring Results:

Containers should not exceed 200 mr/hr

External Radiation

10 mr/hr at 12 ft. from outer surface of box car sides.

10 mr/hr at 5 ft. from ends of box car.

Paul Seager
Paul Seager
Design Engineer
Plant - 31

km

Attachment (7)

KAPL Letter (Manieri) to Virginia Military Institute (Morgan) dated August 18, 1961, "Data on KAPL's Radioactive Waste Disposal"

From the first and last paragraphs of this letter, it appears that the addressee and a Mr. Costello were working on a technical paper and had requested information on all KAPL waste shipments up to the time of the letter. The KAPL reply indicated that the first shipment of KAPL waste to LOOW for storage started in 1952, and that the first shipment from KAPL to Oak Ridge was in 1955. The letter listed the dates, number of railcars, and volume of KAPL waste sent to Oak Ridge in FY 1958 both from KAPL and from LOOW. This list included six shipments and a total of 11 railcars for the waste sent from LOOW to Oak Ridge National Laboratory as follows:

<u>Date</u>	<u>Freight Cars Shipped</u>	<u>Volume (cubic feet)</u>
January 30, 1958	3	9,186
April 30, 1958	2	6,124
May 7, 1958	2	6,124
May 14, 1958	1	3,062
May 19, 1958	1	3,062
May 29, 1958	2	6,124

However, this list does not appear to include the shipment of one rail car in February 1958 shown in Attachment (5) and the shipment of two rail cars in June 1958 shown in Attachment (6). With these additional shipments, there would be a total of eight shipments and 14 rail cars.

This letter also notes that KAPL assisted in packaging and shipping of the waste from LOOW to Oak Ridge National Laboratory. To the author's (Manieri's) knowledge the Hooker Electrochemical Company under the direction of the AEC New York Operations Office, incinerated all of KAPL's combustible waste. The letter also states: "The ashes with the noncombustible materials were packaged and are included in the 1958 FY shipment to Oak Ridge National Laboratory for permanent burial."

This 1961 letter, coming three years after the 1958 shipments from LOOW to Oak Ridge, appears to reflect the understanding of the KAPL personnel involved that the shipment of KAPL waste from LOOW to Oak Ridge had in fact been completed.

August 18, 1961

Virginia Military Institute
Lexington, Virginia

Attention: Mr. J. M. Morgan, Jr.

Subject: Data on KAPL's Radioactive Waste Disposal

Gentlemen:

In reference to your letter dated August 10, 1961 requesting the gross volume of low and intermediate level solid waste packaged and shipped off site from the Knolls Atomic Power Laboratory since the late 1940's, our records reveal that the first shipment from KAPL to L.O.S.A. for temporary storage was made on October 16, 1952. The first shipment of KAPL Radioactive Waste to Oak Ridge National Laboratory for permanent burial was made on March 17, 1953.

During Fiscal Year 1958, the following waste shipments were made to Oak Ridge National Laboratory for permanent burial.

<u>Date</u>	<u>Freight Cans Shipped</u>	<u>From</u>	<u>To</u>	<u>Volume Cu. Ft.</u>
Nov. 1, 1957	3	KAPL	ORNL	14,534
May 5, 1958	3	KAPL	ORNL	8,040
Jan. 30, 1958	3	LOSA	ORNL	9,186
Apr. 30, 1958	2	LOSA	ORNL	6,124
May 7, 1958	2	LOSA	ORNL	6,124
May 14, 1958	1	LOSA	ORNL	3,062
May 19, 1958	1	LOSA	ORNL	3,062
May 29, 1958	2	LOSA	ORNL	6,124
			Total	52,256

In 1958, I had the opportunity to visit LOSA at Model City, New York to assist in packaging and shipping of KAPL's waste material. To my knowledge, The Hooker Electrochemical Company personnel, under the direction of the New York Operations Office, incinerated all of KAPL's combustible waste. The solids with the noncombustible materials were packaged and are included in the 1958 FY shipment to Oak Ridge National Laboratory for permanent burial.

Virginia Military Institute
Attention: Mr. J. M. Burns, Jr.

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August 18, 1961

To complete waste shipment data for Fiscal Year 1961, the following waste material was shipped to Oak Ridge National Laboratory for permanent burial.

<u>Date</u>	<u>Freight Cases Shipped</u>	<u>From</u>	<u>To</u>	<u>Volume Cu. Ft.</u>
Sept. 1960	12	KAFI	ORNL	21,500
Apr. 1961	5	KAFI	ORNL	14,006
			Total	35,506

Attached is a sketch of our standardized palletized 4' x 4' x 8' ply wood boxes, for which Bureau of Explosive Permit No. 1180 has been obtained and which is utilized for packaging most combustible and noncombustible waste generated at the laboratory.

The second sketch is a palletized 4' x 4' x 8' concrete container for which we are now in the process of obtaining an L.C.C. Bureau of Explosive permit. This container, when shielded with earth and capped with concrete, will be utilized to package and ship our intermediate and high level radioactive waste material that is generated at the laboratory.

We hope that the above information will assist you and Mr. D. C. Costello in preparing your paper at Chalk River, Canada. If we can be of further assistance in this matter, please do not hesitate to notify this section.

Very truly yours,

D. A. Masiari, Foreman
Radioactive Wastes
OPERATION & MAINTENANCE

JMH:ng

cc: B. M. Ball
B. J. Feinberg
L. J. Anzures
D. C. Costello - AM - Washington

Attachment (8)

Paper on LOOW Waste from KAPL Files, date unknown

This undated and unsigned document was found in the files of an engineer who worked on radioactive waste from the 1950s through the 1980s. The date or reason it was created is not known. This document states that 8 shipments and 14 box cars of waste were shipped from LOOW to Oak Ridge. This total is consistent with the of shipments and railcars listed in Attachment (7) supplemented by the additional shipments documented in Attachments (5) and (6). It also provides additional indication that cognizant KAPL personnel understood that all of the KAPL waste stored at LOOW was shipped to Oak Ridge in 1958.

LOOW

<u>CONTAINERS</u>	7 Shipments (1952-54) SHIPPED TO <u>LOOW FROM KAPL</u>	8 Shipments - 14 Box Cars (1958) SHIPPED FROM LOOW <u>TO OAK RIDGE</u>
Bales - combustible	57	12 4' x 3' x 2' Wood Boxes
Pallets - combustible	91	346 Wood Boxes
Misc. wood boxes	184	Combustibles incinerated
Boxes - Wood 1½' x 1½' x 2'	2	during 1952-1958 - Ash
Boxes - Wood 2' x 2' x 2'	1	packaged in 70 or 55
Boxes - Wood 2' x 2' x 8'	1	gallon drums.
Boxes - Wood 4' x 6' x 12'	1	
Boxes - Wood 4' x 4' x 4'	541	
Boxes - Wood 42" x 26" x 26"	2	
Boxes - Wood - 89" x 26" x 48"	1	
Boxes - Wood - 50" x 34" x 36"	1	
Boxes - Wood - 66" x 30" x 46"	1	
Boxes - Wood - 4' x 2'	2	
Boxes - Wood - 6' x 6'	1	
Boxes - Wood - Filters	17	
Boxes - Wood - 6' x 6' x 8'	1	
Boxes - Wood - 6' x 4' x 8'	1	
Drums - 30 Gal.	31	32
Drums - 55 Gal.	486	580
Drums - 65/70 Gal.	99	345
Drums - 5 Gal.	2 Pallets	May have been repackaged
Drums - 15 Gal.	1 Pallet	May have been repackaged
275 Gal. Storage Tanks	9	May have been decontaminated and reused.