Drum R16-003B

Items consolidated into drum R16-003b

RWCF # 57435 – Received 9/15/15

RWCF # 56626 – Received 1/15/16

RWCF # 58543 – Received 3/7/16

RWCF # 58544 – Received 3/7/16

RWCF # 58545 – Received 3/7/16

Radioactive Waste Control Form

Serial: R57435 Life Number: 16232 Generator Name: Kalb Dept: EE

Form Received: 6/23/2015 Account No: 06560 Bldg: 0490 Placed: 6/18/2015 Characterization: NCR

Chem Name: 10 (500 ml) containers Y12 contaminated Soil tr Hazards: Mercury Date Ent: 9/15/2015

Paper: Plastic: Glass: Metal: Soil: 50 Rubber: Wire:

Biotiss: Water: Sludge: Cloth: Concrete: Resin: Wood: Other: 50

Container: Plastic Bag Number: 1 Liquid: 0 CUB FT: 0.1 Weight: 5

State: S Radlev: 0.1 Stream: M22 Suffix: Method: Date Recd: 9/15/2015

Problem Code: Day Sent: Day Ret:

Waste Volumes

Serial:	R57435	Volume:	0.00
Cont #:	R57435-01/01	Cubic ft:	0.10
Pack #:	R16-003B	Weight:	5.00
Percent Full:	100	Stored:	855-8
Process:		Date Proc:	
Manifest:		Dsp_Date:	
Alt Disposal Tracking #:		Sampled	

PrinIsot

Serial	Isotope	Microcurie
R57435	099Tc	0.000342
R57435	155Eu	0.000089
R57435	228Th	0.000817
R57435	230Th	0.000416
R57435	232Th	0.000861
R57435	235U	0.000064
R57435	238U	0.00109

SERIAL	EPA#
R57435	D009

Result Of Spill?

Pickup Attempted:

Radioactive Waste Control Form — MIXED WASTE — RWCF # 57435

GENERAL Generator (print) Larry Milian / Paul Kuik Life/Guest # 16232 13604 Dept. EE Ext. 4364

Dept. Responsible for Waste: EE Acct. # 06560 Accumulation Area Bldg. # 815 490 rm 9-245 Placement Date 06/18/15

WASTE QUANTITY Pkg. Type 10 - 500 mL containers Pkg. Material Plastic Bag Pkg. ID# _____
(i.e. 55 gal. drum, B-25, cubic yard box, bag) (i.e. plastic, metal, cardboard, glass) (bin, intermodal, connex, & BLIP cans ONLY)

Volume of WASTE: Solids 0.1 (ft3) Net Weight of WASTE ONLY: 5 (lbs.)

1 ft3.= 7.5 gal. 1 liter = .26 gal. Liquids _____ (gal) *Gross Weight of Package and Waste _____ (lbs.)
1 lb. = 454 gm. 1 gm. = .0022 lb. *not required for waste packaged in bags

RAD WASTE CHARACTERIZATION Describe Waste: Oak Ridge (Y-12) Contaminated soil treatment using Sulfur Polymer Cement

Physical State: Solid ☒ Liquid ☐ Gas ☐

COMPONENTS with their percentages by volume

paper	%	wood	%
plastic	%	soil	50 %
glass	%	resin	%
metal	%	sludge	%
rubber	%	absorbent	%
concrete	%	liquid	%
Other: Sulfur Polymer Cement	50 %		

RADIOACTIVE ISOTOPE(S) and ACTIVITY of each in microcuries (µCi)

Eu 155	8.9E-5 µCi	U 235	6.4E-5 µC
Tc 99	3.42E-4 µC	U 238	1.09E-3 µC
See Attached Sheet			µC
Th 228	8.17E-4 µC		µC
Th 230	4.16E-4 µC		µC
Th 232	8.61E-4 µC		µC

For wastes with greater than 12 isotopes, list the nuclides with the greatest activities in the table and attach a supplemental sheet which clearly identifies the remaining isotopes and their activities. If a supplemental sheet is attached, check here ☐

Check all applicable methods used to determine the radioactive content of the waste. Supporting documentation (i.e. calculations, analytical reports, label photographs, basis documents, etc.) **MUST** be submitted with the RWCF before it will be reviewed and processed.

Direct Method
- Gamma Ray Spectroscopy ☐
- Scintillation Counter ☐
- Off-site Analysis* ☐

Indirect Method
- Dose Rate to Activity Conversion ☐
- Material Balance ☒
- Scaling Factors ☐

For sealed sources, attach photos showing markings & provide applicable source ID numbers below:

BNL ID#: _____

Mfg. Serial#: _____

*- Laboratory COC#'s _____

MIXED WASTE CHARACTERIZATION Does the waste contain or has it come in contact with hazardous chemical substances? ☐ NO ☒ YES, IF YES COMPLETE BACK

PRECAUTIONS Note any special hazards Mixed Waste, but treated the ~~mercury~~ mercury - see TCLP results

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature Paul Kuik Date 6/11/15

FOR FACILITY SUPPORT USE ONLY List the RADIATION levels for WM handling and transport

Radiation Levels (mR/hr)	Waste Container		Shielded Transport Container (or Lead Pig)	
	<0.1 @ contact	<0.1 @ 12"	_____ @ contact	_____ @ 12"

Note: The shielded transport container and the outside of the waste container should meet contamination release criteria or arrangements must be made in advance of pickup with WM Facility Support

Internal (waste) Contamination levels (as applicable): α <1000 dpm βγ <5000 dpm **ATTACH ALL SURVEYS**

Do any items within the package exceed a dose rate of 5oo mR/hr? ___ yes X no

Surveyor's Sig. Laura Sommer Life # F9603 Date 06/18/15

BNL F 2975D 10/12

Adequate analytical Data 9/15/15

57485

MIXED WASTE CHARACTERIZATION Complete this section if the waste contains or has come in contact with hazardous chemical substances:

List CHEMICAL CONSTITUENTS with their percentages by volume

Mercury	%		%		%
	%		%		%
	%		%		%
	%		%		%
	%		%		%

		YES	NO
CORROSIVITY	Is the pH less than or equal to 2.0 or greater than or equal to 12.5?	☐	☒
GENERAL	Is the waste an unused chemical or spill clean-up?	☐	☒
	Was the waste used as a solvent or degreaser? If so which?	☐	☒
IGNITABILITY	Is the flashpoint less than 140 F (60 C)?	☐	☒
	Is the waste an oxidizer or pyrophoric?	☐	☒
REACTIVITY	Is the waste unstable, water reactive, or explosive? If so which?	☐	☒
	Does the waste contain cyanide or sulfide? If so which?	☒	☐
TOXICITY	Based on your knowledge, does the waste contain any of the following?	YES ☒ (If yes, check all that apply)	NO ☐

State Regulated Materials	
Asbestos	
Carcinogens	
Chelating Cmpds	
Infectious Agents	
Halogenated Organics	
Oils	
Organic Solvents	
PCB's	
Polycyclic Aromatics	

RCRA Regulated Materials							
Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p-Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	
Cadmium		2,4-D		Lead		Tetrachloroethylene	
Carbon Tetrachloride		1,4-Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2-Dichloroethane		Mercury	X	Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6- Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5-TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature Paul Kolb Date 6/18/15

FOR WASTE MANAGEMENT DIVISION USE ONLY RCA Sign/Date [illegible] 8/15/15

Waste Management Division Storage Location 855-104 Red Shelf Life # 22132

Waste Category: LLW TRU *MW/RCRA TSCA EPA codes: D009

RCRA Hazard Class: Ignitable Corrosive Reactive Toxic N/A Waste Stream Code: M22

DOT Hazard Class: 7 Waste Profile Number(s) 9521-09

*- For MW/RCRA wastes the top of the front of the RWCF must be stamped with the words "MIXED WASTE"

Radioactive Waste Control Form

Serial: R56626 Life Number: 21767 Generator Name: Campione Dept: AD

Form Received: 12/14/2015 Account No: 18214 Bldg: 0960 Placed: 11/14/2015 Characterization: NCR

Chem Name: Lead Solder Copper / Light Bulbs Hazards: Date Ent: 12/14/2015

Paper: Plastic: 5 Glass: 15 Metal: 20 Soil: Rubber: Wire:

Biotiss: Water: Sludge: Cloth: Concrete: Resin: Wood: Other:

Container: 55 Gal. Drum Number: 1 Liquid: 0 CUB FT: 7.5 Weight: 252

State: S Radlev: 0.5 Stream: M20 Suffix: Method: Date Recd: 1/15/2016

Problem Code: Day Sent: Day Ret:

Waste Volumes

Serial:	R56626	Volume:	0.00
Cont #:	R56626-01/01	Cubic ft:	7.50
Pack #:	R16-003B	Weight:	252.00
Percent Full:	100	Stored:	855-8
Process:		Date Proc:	
Manifest:		Dsp_Date:	
Alt Disposal Tracking #:		Sampled	

PrinIsot

Serial	Isotope	Microcurie
R56626	003H	41.7
R56626	007Be	24.4
R56626	022Na	12.2
R56626	054Mn	30.9
R56626	057Co	48.2
R56626	058Co	33.1
R56626	060Co	209
R56626	063Ni	41.7

SERIAL	EPA#
R56626	D008

Result Of Spill?

Pickup Attempted:

MIXED WASTE ed WASTE

Radioactive Waste Control Form **RWCF #** 56626

GENERAL ~~Generator (print)~~ Leary Campione Life/Guest # 21767 Dept. C-AD Ext. 5502

Dept. Responsible for Waste: C-AD Acct. # 18214 Accumulation Area Bldg. # 960 Placement Date 12/14/15

WASTE QUANTITY Pkg. Type 55 Gal. Drum (i.e. 55 gal. drum, B-25, cubic yard box, bag) Pkg. Material Steel (i.e. plastic, metal, cardboard, glass) Pkg. ID# _____ (bin, intermodal, connex, & BLIP cans ONLY)

Volume of WASTE: Solids 7.5 (ft3) Net Weight of WASTE ONLY: 252 (lbs.)

1 ft3.= 7.5 gal. 1 liter = .26 gal. Liquids _____ (gal) *Gross Weight of Package and Waste 300 (lbs.)

1 lb. = 454 gm. 1 gm. = .0022 lb. *not required for waste packaged in bags

RAD WASTE CHARACTERIZATION Describe Waste: Lead soldered copper/Light Bulbs.

Physical State: Solid ☑ Liquid ☐ Gas ☐

COMPONENTS with their percentages by volume

paper	%	wood	%
plastic	5 %	soil	%
glass	15 %	resin	%
metal	20 %	sludge	%
rubber	%	absorbent	%
concrete	%	liquid	%
Other:	Copper	60 %	

RADIOACTIVE ISOTOPE(S) and ACTIVITY of each in microcuries (µCi)

OS 12/17/15

BE-7	24.4	~~0.31~~ µCi	Ni-63	41.7 µC
MN-54	30.9	~~0.47~~ µC	H-3	41.7 µC
CO-58	33.1	~~0.5~~ µC		µC
CO-60	209	~~3.16~~ µC		µC
Na-22	12.2	~~0.19~~ µC		µC
CO-57	48.2	~~0.73~~ µC		µC

OS 12/17/15

For wastes with greater than 12 isotopes, list the nuclides with the greatest activities in the table and attach a supplemental sheet which clearly identifies the remaining isotopes and their activities. If a supplemental sheet is attached, check here ☐

Check all applicable methods used to determine the radioactive content of the waste. Supporting documentation (i.e. calculations, analytical reports, label photographs, basis documents, etc.) **MUST** be submitted with the RWCF before it will be reviewed and processed.

Direct Method
- Gamma Ray Spectroscopy ☐
- Scintillation Counter ☐
- Off-site Analysis* ☐

Indirect Method
- Dose Rate to Activity Conversion ☑
- Material Balance ☐
- Scaling Factors ☐

For sealed sources, attach photos showing markings & provide applicable source ID numbers below:

BNL ID#: _____

Mfg. Serial#: _____

*- Laboratory COC#'s _____

MIXED WASTE CHARACTERIZATION Does the waste contain or has it come in contact with hazardous chemical substances? ☐ NO ☒ YES, IF YES COMPLETE BACK

PRECAUTIONS Note any special hazards Lead Solder

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature [signature] Date 11-14-15

FOR FACILITY SUPPORT USE ONLY List the RADIATION levels for WM handling and transport

Radiation Levels (mR/hr)	Waste Container	Shielded Transport Container (or Lead Pig)
0.5 @ contact	0.15 @ 12"	N/A @ contact N/A @ 12"

Note: The shielded transport container and the outside of the waste container should meet contamination release criteria or arrangements must be made in advance of pickup with WM Facility Support

Internal (waste) Contamination levels (as applicable): α N/A dpm βγ N/A dpm **ATTACH ALL SURVEYS**

Do any items within the package exceed a dose rate of 5oo mR/hr? ___ yes X no

Surveyor's Sig. [signature] _____ Life # 25251 Date 11-16-15

BNL F 2975D 10/12

Adequate Analytical Data [signature] 12/17/15

56626

MIXED WASTE CHARACTERIZATION Complete this section if the waste contains or has come in contact with hazardous chemical substances:

List CHEMICAL CONSTITUENTS with their percentages by volume

Lead solder	2 %		%		%
Metal	98 %		%		%
	%		%		%
	%		%		%
	%		%		%

		YES	NO
CORROSIVITY	Is the pH less than or equal to 2.0 or greater than or equal to 12.5?	☐	☑
GENERAL	Is the waste an unused chemical or spill clean-up?	☐	☑
	Was the waste used as a solvent or degreaser? If so which?	☐	☑
IGNITABILITY	Is the flashpoint less than 140 F (60 C)?	☐	☑
	Is the waste an oxidizer or pyrophoric?	☐	☑
REACTIVITY	Is the waste unstable, water reactive, or explosive? If so which?	☐	☑
	Does the waste contain cyanide or sulfide? If so which?	☐	☑
TOXICITY	Based on your knowledge, does the waste contain any of the following?	YES ☑ (If yes, check all that apply)	NO ☐

State Regulated Materials	
Asbestos	
Carcinogens	
Chelating Cmpds	
Infectious Agents	
Halogenated Organics	
Oils	
Organic Solvents	
PCB's	
Polycyclic Aromatics	

RCRA Regulated Materials							
Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p-Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	
Cadmium		2,4-D		Lead	✓	Tetrachloroethylene	
Carbon Tetrachloride		1,4-Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2-Dichloroethane		Mercury		Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6- Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5-TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature _____ Date 12-14-15

12/18/15

FOR WASTE MANAGEMENT DIVISION USE ONLY RCA Sign/Date 12/17/15

Waste Management Division Storage Location 855 Bay 6 Life # 21150/22132

Waste Category: LLW TRU *MW/RCRA TSCA EPA codes: D008

RCRA Hazard Class: Ignitable Corrosive Reactive Toxic N/A Waste Stream Code: M20

DOT Hazard Class: 7/9 Waste Profile Number(s) 9521-04

*- For MW/RCRA wastes the top of the front of the RWCF must be stamped with the words "MIXED WASTE"

Radioactive Waste Control Form

Serial: R58543 Life Number: 20363 Generator Name: Pavlak Dept: BI

Form Received: 2/5/2016 Account No: 6560 Bldg: 0901 Placed: 1/11/2016 Characterization: NCR

Chem Name: Silver Target from cyclotron Hazards: Date Ent: 2/24/2016

Paper: Plastic: Glass: Metal: 100 Soil: Rubber: Wire:

Biotiss: Water: Sludge: Cloth: Concrete: Resin: Wood: Other:

Container: Bag Number: 1 Liquid: 0 CUB FT: 0.01 Weight: 1.2

State: S Radlev: 0.1 Stream: M20 Suffix: Method: Date Recd: 3/7/2016

Problem Code: Day Sent: Day Ret:

Waste Volumes

Serial:	R58543	Volume:	0.00
Cont #:	R58543-01/01	Cubic ft:	0.01
Pack #:	R16-003B	Weight:	1.20
Percent Full:	100	Stored:	855-8
Process:		Date Proc:	
Manifest:		Dsp_Date:	
Alt Disposal Tracking #:		Sampled	

PrinIsot

Serial	Isotope	Microcurie
R58543	109Cd	0.243

SERIAL	EPA#
R58543	D011

Result Of Spill?

Pickup Attempted:

Radioactive Waste Control Form MIXED WASTE RWCF # 58543

GENERAL Generator (print): Parlak Life/Guest # 20363 Dept. BI Ext. 5445

Dept. Responsible for Waste: BI Acct. # 6540 Accumulation Area Bldg. # 909 Placement Date 1/11/16

WASTE QUANTITY Pkg. Type bag (i.e. 55 gal. drum, B-25, cubic yard box, bag) Pkg. Material Plastic (i.e. plastic, metal, cardboard, glass) Pkg. ID# (bin, intermodal, connex, & BLIP cans ONLY)

Volume of WASTE: Solids 0.01 (ft3) Net Weight of WASTE ONLY: 1.2 (lbs.)

1 ft3.= 7.5 gal. 1 liter = .26 gal. Liquids _____ (gal) *Gross Weight of Package and Waste 1.2 (lbs.)

1 lb. = 454 gm. 1 gm. = .0022 lb. *not required for waste packaged in bags

RAD WASTE CHARACTERIZATION Describe Waste: Silver target from cyclotron

Physical State: Solid ☒ Liquid ☐ Gas ☐

COMPONENTS with their percentages by volume

paper	%	wood	%
plastic	%	soil	%
glass	%	resin	%
metal	100 %	sludge	%
rubber	%	absorbent	%
concrete	%	liquid	%
Other:			%

RADIOACTIVE ISOTOPE(S) and ACTIVITY of each in microcuries (µCi)

~~H3~~	~~1.51~~ µCi	CEB 1-22-16	µC
Cd109	0.243 µC		µC
	µC		µC
	µC		µC
	µC		µC
	µC		µC

For wastes with greater than 12 isotopes, list the nuclides with the greatest activities in the table and attach a supplemental sheet which clearly identifies the remaining isotopes and their activities. If a supplemental sheet is attached, check here ☐

Check all applicable methods used to determine the radioactive content of the waste. Supporting documentation (i.e. calculations, analytical reports, label photographs, basis documents, etc.) **MUST** be submitted with the RWCF before it will be reviewed and processed.

Direct Method
- Gamma Ray Spectroscopy ☐
- Scintillation Counter ~~☒~~ NA
- Off-site Analysis* ☐ CEB 1-22-16

Indirect Method
- Dose Rate to Activity Conversion ☒
- Material Balance ☐
- Scaling Factors ☐

For sealed sources, attach photos showing markings & provide applicable source ID numbers below:

BNL ID#: _____

Mfg. Serial#: _____

*- Laboratory COC#'s _____

MIXED WASTE CHARACTERIZATION Does the waste contain or has it come in contact with hazardous chemical substances? ☐ NO ☒ YES, IF YES COMPLETE BACK

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature _____ Date 1/11/16

FOR FACILITY SUPPORT USE ONLY List the RADIATION levels for WM handling and transport

Radiation Levels (mR/hr)	Waste Container		Shielded Transport Container (or Lead Pig)	
	<0.1 @ contact	<0.1 @ 12"	N/A @ contact	N/A @ 12"

Note: The shielded transport container and the outside of the waste container should meet contamination release criteria or arrangements must be made in advance of pickup with WM Facility Support

Internal (waste) Contamination levels (as applicable): α <20 ~~N/A~~ dpm βγ <1000 dpm **ATTACH ALL SURVEYS**

Do any items within the package exceed a dose rate of 5oo mR/hr? ___ yes X no

Surveyor's Sig. _____ Life # 21813 Date 01/18/16

BNL F 2975D 10/12

58543

MIXED WASTE CHARACTERIZATION Complete this section if the waste contains or has come in contact with hazardous chemical substances:

List CHEMICAL CONSTITUENTS with their percentages by volume

silver	90%		%		%
	%		%		%
	%		%		%
	%		%		%
	%		%		%

		YES	NO
CORROSIVITY	Is the pH less than or equal to 2.0 or greater than or equal to 12.5?	☐	☒
GENERAL	Is the waste an unused chemical or spill clean-up?	☐	☒
	Was the waste used as a solvent or degreaser? If so which?	☐	☒
IGNITABILITY	Is the flashpoint less than 140 F (60 C)?	☐	☒
	Is the waste an oxidizer or pyrophoric?	☐	☒
REACTIVITY	Is the waste unstable, water reactive, or explosive? If so which?	☐	☒
	Does the waste contain cyanide or sulfide? If so which?	☐	☒
TOXICITY	Based on your knowledge, does the waste contain any of the following?	YES ☒ (If yes, check all that apply)	NO ☐

State Regulated Materials	
Asbestos	
Carcinogens	
Chelating Cmpds	
Infectious Agents	
Halogenated Organics	
Oils	
Organic Solvents	
PCB's	
Polycyclic Aromatics	

RCRA Regulated Materials							
Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p-Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	X
Cadmium		2,4-D		Lead		Tetrachloroethylene	
Carbon Tetrachloride		1,4-Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2-Dichloroethane		Mercury		Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6- Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5-TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature [signature] Date 1/11/16

FOR WASTE MANAGEMENT DIVISION USE ONLY RCA Sign/Date C. Schroeder 2/26/16

Waste Management Division Storage Location 855-104 Rad Shelf Life # 21150

Waste Category: LLW TRU *MW/RCRA TSCA EPA codes: D011

RCRA Hazard Class: Ignitable Corrosive Reactive Toxic N/A Waste Stream Code: M20

DOT Hazard Class: 7 or 9 Waste Profile Number(s) 9521-04

*- For MW/RCRA wastes the top of the front of the RWCF must be stamped with the words "MIXED WASTE"

Radioactive Waste Control Form

Serial: R58544 Life Number: 20363 Generator Name: Pavlak Dept: BI

Form Received: 2/5/2016 Account No: 6560 Bldg: 0901 Placed: 1/11/2016 Characterization: NCR

Chem Name: cyclotron Target w/ Silver Hazards: Date Ent: 2/24/2016

Paper: Plastic: 2 Glass: Metal: 98 Soil: Rubber: Wire:

Biotiss: Water: Sludge: Cloth: Concrete: Resin: Wood: Other:

Container: Bag Number: 1 Liquid: 0 CUB FT: 0.1 Weight: 5

State: S Radlev: 0.1 Stream: M20 Suffix: Method: Date Recd: 3/7/2016

Problem Code: Day Sent: Day Ret:

Waste Volumes

Serial:	R58544	Volume:	0.00
Cont #:	R58544-01/01	Cubic ft:	0.10
Pack #:	R16-003B	Weight:	5.00
Percent Full:	100	Stored:	855-8
Process:		Date Proc:	
Manifest:		Dsp_Date:	
Alt Disposal Tracking #:		Sampled	

PrinIsot

Serial	Isotope	Microcurie
R58544	109Cd	0.35

SERIAL	EPA#
R58544	D011

Result Of Spill?

Pickup Attempted:

MIXED WASTE

Radioactive Waste Control Form RWCF # 58544

GENERAL Generator (print) Partak Life/Guest # 20363 Dept. BI Ext. 5645

Dept. Responsible for Waste: BI Acct. # 6560 Accumulation Area Bldg. # 901 Placement Date 1/11/16

WASTE QUANTITY Pkg. Type 1 (i.e. 55 gal. drum, B-25, cubic yard box, bag) Pkg. Material bag (i.e. plastic, metal, cardboard, glass) Pkg. ID# (bin, intermodal, connex, & BLIP cans ONLY)

Volume of WASTE: Solids 0.1 (ft3) Net Weight of WASTE ONLY: 5 (lbs.)

1 ft3.= 7.5 gal. 1 liter = .26 gal. Liquids _____ (gal) *Gross Weight of Package and Waste _____ (lbs.)

1 lb. = 454 gm. 1 gm. = .0022 lb. *not required for waste packaged in bags

RAD WASTE CHARACTERIZATION Describe Waste: Cyclotron target with silver

Physical State: Solid ☑ Liquid ☐ Gas ☐

COMPONENTS with their percentages by volume

paper	%	wood	%
plastic	2 %	soil	%
glass	%	resin	%
metal	98 %	sludge	%
rubber	%	absorbent	%
concrete	%	liquid	%
Other:			%

RADIOACTIVE ISOTOPE(S) and ACTIVITY of each in microcuries (µCi)

Cd-109	0.35 µCi		µC
	µC		µC
	µC		µC
	µC		µC
	µC		µC
	µC		µC

For wastes with greater than 12 isotopes, list the nuclides with the greatest activities in the table and attach a supplemental sheet which clearly identifies the remaining isotopes and their activities. If a supplemental sheet is attached, check here ☐

Check all applicable methods used to determine the radioactive content of the waste. Supporting documentation (i.e. calculations, analytical reports, label photographs, basis documents, etc.) **MUST** be submitted with the RWCF before it will be reviewed and processed.

Direct Method
- Gamma Ray Spectroscopy ☐
- Scintillation Counter ☐
- Off-site Analysis* ☐

Indirect Method
- Dose Rate to Activity Conversion ☒
- Material Balance ☐
- Scaling Factors ☐

For sealed sources, attach photos showing markings & provide applicable source ID numbers below:

BNL ID#: _____

Mfg. Serial#: _____

*- Laboratory COC#'s _____

MIXED WASTE CHARACTERIZATION Does the waste contain or has it come in contact with hazardous chemical substances? ☐ NO ☑ YES IF YES COMPLETE BACK

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature [signature] Date 1/11/16

FOR FACILITY SUPPORT USE ONLY List the RADIATION levels for WM handling and transport

Radiation Levels (mR/hr)	Waste Container		Shielded Transport Container (or Lead Pig)	
	0.1 <Lost Do 1/15/16	@ contact <0.1 @ 12"	N/A	@ contact N/A @ 12"

Note: The shielded transport container and the outside of the waste container should meet contamination release criteria or arrangements must be made in advance of pickup with WM Facility Support

Internal (waste) Contamination levels (as applicable): α <20 dpm βγ <1000 dpm **ATTACH ALL SURVEYS**

Do any items within the package exceed a dose rate of 5oo mR/hr? ___ yes X no

Surveyor's Sig [signature] Life # 21813 Date 01/15/16

BNL F 2975D 10/12

58544

MIXED WASTE CHARACTERIZATION Complete this section if the waste contains or has come in contact with hazardous chemical substances:

List CHEMICAL CONSTITUENTS with their percentages by volume

Silver	40 %		%		%
870 grams	%		%		%
	%		%		%
	%		%		%
	%		%		%

		YES	NO
CORROSIVITY	Is the pH less than or equal to 2.0 or greater than or equal to 12.5?	☐	☑
GENERAL	Is the waste an unused chemical or spill clean-up?	☐	☑
	Was the waste used as a solvent or degreaser? If so which?	☐	☑
IGNITABILITY	Is the flashpoint less than 140 F (60 C)?	☐	☑
	Is the waste an oxidizer or pyrophoric?	☐	☑
REACTIVITY	Is the waste unstable, water reactive, or explosive? If so which?	☐	☑
	Does the waste contain cyanide or sulfide? If so which?	☐	☑
TOXICITY	Based on your knowledge, does the waste contain any of the following?	YES ☑ (If yes, check all that apply)	NO ☐

State Regulated Materials	
Asbestos	
Carcinogens	
Chelating Cmpds	
Infectious Agents	
Halogenated Organics	
Oils	
Organic Solvents	
PCB's	
Polycyclic Aromatics	

RCRA Regulated Materials							
Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p-Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	☑
Cadmium		2,4-D		Lead		Tetrachloroethylene	
Carbon Tetrachloride		1,4-Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2-Dichloroethane		Mercury		Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6- Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5-TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature _____ Date 3/1/16

FOR WASTE MANAGEMENT DIVISION USE ONLY RCA Sign/Date _____ 3/1/16

Waste Management Division Storage Location 855-104 Rack Shelf Life # 22132

Waste Category: LLW TRU (*MW/RCRA) TSCA EPA codes: D011

RCRA Hazard Class: Ignitable Corrosive Reactive Toxic N/A Waste Stream Code: M20

DOT Hazard Class: 7 or 9 Waste Profile Number(s) 9521-04

*- For MW/RCRA wastes the top of the front of the RWCF must be stamped with the words "MIXED WASTE"

Radioactive Waste Control Form

Serial: R58545 Life Number: 20363 Generator Name: Pavlak Dept: BI

Form Received: 2/5/2016 Account No: 6560 Bldg: 0901 Placed: 1/11/2016 Characterization: NCR

Chem Name: Metal Foil targets w/ Silver & Platinum Hazards: Date Ent: 2/24/2016

Paper: Plastic: Glass: Metal: 100 Soil: Rubber: Wire:

Biotiss: Water: Sludge: Cloth: Concrete: Resin: Wood: Other:

Container: bag Number: 1 Liquid: 0 CUB FT: 0.01 Weight: 0.2

State: S Radlev: 0.1 Stream: M20 Suffix: Method: Date Recd: 3/7/2016

Problem Code: Day Sent: Day Ret:

Waste Volumes

Serial:	R58545	Volume:	0.00
Cont #:	R58545-01/01	Cubic ft:	0.01
Pack #:	R16-003B	Weight:	0.20
Percent Full:	100	Stored:	855-8
Process:		Date Proc:	
Manifest:		Dsp_Date:	
Alt Disposal Tracking #:		Sampled	

PrinIsot

Serial	Isotope	Microcurie
R58545	109Cd	0.211
R58545	192Ir	0.065
R58545	195Au	0.43

SERIAL	EPA#
R58545	D011

Result Of Spill?

Pickup Attempted:

MIXED WASTE

Radioactive Waste Control Form RWCF # 58545

GENERAL Generator (print) Rental Life/Guest #: 20363 Dept. BI Ext. 5445

Dept. Responsible for Waste: BI Acct. # 6560 Accumulation Area Bldg. # 901 Placement Date 1 / 11 / 16

WASTE QUANTITY Pkg. Type Box (i.e. 55 gal. drum, B-25, cubic yard box, bag) Pkg. Material ~~box~~ PLASTIC (i.e. plastic, metal, cardboard, glass) Pkg. ID# (bin, intermodal, connex, & BLIP cans ONLY)

Volume of WASTE: Solids 0.01 (ft3) Net Weight of WASTE ONLY: 0.2 (lbs.)

1 ft3.= 7.5 gal. 1 liter = .26 gal. Liquids _____ (gal) *Gross Weight of Package and Waste 0.2 (lbs.)

1 lb. = 454 gm. 1 gm. = .0022 lb. *not required for waste packaged in bags

RAD WASTE CHARACTERIZATION Describe Waste: Metal foil targets with silver and platinum

Physical State: Solid ☑ Liquid ☐ Gas ☐

COMPONENTS with their percentages by volume

paper	%	wood	%
plastic	%	soil	%
glass	%	resin	%
metal	100 %	sludge	%
rubber	%	absorbent	%
concrete	%	liquid	%
Other:			%

RADIOACTIVE ISOTOPE(S) and ACTIVITY of each in microcuries (µCi)

Cd-109	0.211 µCi		µC
Ir-192	0.065 µC		µC
Au-195	0.43 µC		µC
	µC		µC
	µC		µC
	µC		µC

For wastes with greater than 12 isotopes, list the nuclides with the greatest activities in the table and attach a supplemental sheet which clearly identifies the remaining isotopes and their activities. If a supplemental sheet is attached, check here ☐

Check all applicable methods used to determine the radioactive content of the waste. Supporting documentation (i.e. calculations, analytical reports, label photographs, basis documents, etc.) **MUST** be submitted with the RWCF before it will be reviewed and processed.

Direct Method
- Gamma Ray Spectroscopy ☐
- Scintillation Counter ☐
- Off-site Analysis* ☐

Indirect Method
- Dose Rate to Activity Conversion ☒
- Material Balance ☐
- Scaling Factors ☐

For sealed sources, attach photos showing markings & provide applicable source ID numbers below:

BNL ID#: _____

Mfg. Serial#: _____

*- Laboratory COC#'s _____

MIXED WASTE CHARACTERIZATION Does the waste contain or has it come in contact with hazardous chemical substances? ☐ NO ☐ YES, IF YES COMPLETE BACK

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature [signature] Date 1/11/16

FOR FACILITY SUPPORT USE ONLY List the RADIATION levels for WM handling and transport

Radiation Levels (mR/hr)	Waste Container		Shielded Transport Container (or Lead Pig)	
	<0.1 @ contact	<0.1 @ 12"	N/A @ contact	N/A @ 12"

Note: The shielded transport container and the outside of the waste container should meet contamination release criteria or arrangements must be made in advance of pickup with WM Facility Support

Internal (waste) Contamination levels (as applicable): α <20 dpm βγ <1000 dpm **ATTACH ALL SURVEYS**

Do any items within the package exceed a dose rate of 5oo mR/hr? ___ yes X no

Surveyor's Sig. [signature] Life # 21813 Date 01/19/16

BNL F 2975D 10/12

58545

MIXED WASTE CHARACTERIZATION Complete this section if the waste contains or has come in contact with hazardous chemical substances:

List CHEMICAL CONSTITUENTS with their percentages by volume

Silver	10 %		%		%
	%		%		%
	%		%		%
	%		%		%
	%		%		%

		YES	NO
CORROSIVITY	Is the pH less than or equal to 2.0 or greater than or equal to 12.5?	☐	☒
GENERAL	Is the waste an unused chemical or spill clean-up?	☐	☒
	Was the waste used as a solvent or degreaser? If so which?	☐	☒
IGNITABILITY	Is the flashpoint less than 140 F (60 C)?	☐	☒
	Is the waste an oxidizer or pyrophoric?	☐	☒
REACTIVITY	Is the waste unstable, water reactive, or explosive? If so which?	☐	☒
	Does the waste contain cyanide or sulfide? If so which?	☐	☒
TOXICITY	Based on your knowledge, does the waste contain any of the following?	YES ☒ (If yes, check all that apply)	NO ☐

State Regulated Materials	
Asbestos	
Carcinogens	
Chelating Cmpds	
Infectious Agents	
Halogenated Organics	
Oils	
Organic Solvents	
PCB's	
Polycyclic Aromatics	

RCRA Regulated Materials							
Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p-Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	X
Cadmium		2,4-D		Lead		Tetrachloroethylene	
Carbon Tetrachloride		1,4-Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2-Dichloroethane		Mercury		Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6- Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5-TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

PRECAUTIONS Note any special hazards _____

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature _____ Date 1/11/16

FOR WASTE MANAGEMENT DIVISION USE ONLY RCA Sign/Date C Arnaya 2/26/16

Waste Management Division Storage Location 855-104 Rad Shelf Life # 21150

Waste Category: LLW TRU *MW/RCRA TSCA EPA codes: D011

RCRA Hazard Class: Ignitable Corrosive Reactive Toxic N/A Waste Stream Code: M20

DOT Hazard Class: Toxic 9 Waste Profile Number(s) 9521-04

*- For MW/RCRA wastes the top of the front of the RWCF must be stamped with the words "MIXED WASTE"

Drum R56625

Copper with lead solder

Bldg. 855 Received 1/15/16

Radioactive Waste Control Form

Serial: R56625 Life Number: 21767 Generator Name: Campione Dept: WM

Form Received: 12/14/2015 Account No: 18214 Bldg: 0960 Placed: 11/14/2015 Characterization: NCR

Chem Name: Clean - up Copper, Lead solder Hazards: Date Ent: 12/14/2015

Paper: Plastic: Glass: Metal: 100 Soil: Rubber: Wire:

Biotiss: Water: Sludge: Cloth: Concrete: Resin: Wood: Other:

Container: 55 Gal. Drum Number: 1 Liquid: 0 CUB FT: 7.5 Weight: 442

State: S Radlev: 0.05 Stream: M20 Suffix: Method: Date Recd: 1/15/2016

Problem Code: Day Sent: Day Ret:

Waste Volumes

Serial:	R56625	Volume:	0.00
Cont #:	R56625-01/01	Cubic ft:	7.50
Pack #:	R56625-01/01	Weight:	442.00
Percent Full:		Stored:	855-8
Process:		Date Proc:	
Manifest:		Dsp_Date:	
Alt Disposal Tracking #:		Sampled	

PrinIsot

Serial	Isotope	Microcurie
R56625	003H	1.43
R56625	054Mn	1.43
R56625	060Co	7.17
R56625	063Ni	1.43
R56625	065Zn	7.17
R56625	097Nbm	7.17
R56625	110Agm	43.01
R56625	124Sb	5.02
R56625	207Bi	0.72

SERIAL	EPA#
R56625	D008

Result Of Spill?

Pickup Attempted:

*Mixed WA

Radioactive Waste Control Form

MIXED WASTE

RWCF # 66625

GENERAL Generator (print) Lenny Campione Life/Guest# 21767 Dept. C-AD Ext. 8802

Dept. Responsible for Waste: C-AD Acct. # 18214 Accumulation Area Bldg. # 960 Placement Date 11/14/15

WASTE QUANTITY Pkg. Type 55 Gal. Drum (i.e. 55 gal. drum, B-25, cubic yard box, bag) Pkg. Material Steel (i.e. plastic, metal, cardboard, glass) Pkg. ID# (bin, intermodal, connex, & BLIP cans ONLY)

Volume of WASTE: Solids 7.5 (ft3) Net Weight of WASTE ONLY: 442 (lbs.)

1 ft3.= 7.5 gal. 1 liter = .26 gal. 1 lb. = 454 gm. 1 gm. = .0022 lb.

Liquids _____ (gal) *Gross Weight of Package and Waste 490 (lbs.)

*not required for waste packaged in bags

RAD WASTE CHARACTERIZATION Describe Waste: (clean up) Copper Lead solder

Physical State: Solid ☑ Liquid ☐ Gas ☐

COMPONENTS with their percentages by volume

paper		%	wood		%
plastic	5	%	soil		%
glass	15	%	resin		%
metal	80	%	sludge		%
rubber		%	absorbent		%
concrete		%	liquid		%
Other:					%

RADIOACTIVE ISOTOPE(S) and ACTIVITY of each in microcuries (µCi)

MN-54	1.43	µCi	Sb-124	5.02	µC
CO-60	7.17	µC	H-3	1.43	µC
Zn-65	7.17	µC	Ni-63	1.43	µC
Ag-110m	43.01	µC			µC
Bi-207	0.72	µC			µC
Nb-97m	7.17	µC			µC

For wastes with greater than 12 isotopes, list the nuclides with the greatest activities in the table and attach a supplemental sheet which clearly identifies the remaining isotopes and their activities. If a supplemental sheet is attached, check here ☐

Check all applicable methods used to determine the radioactive content of the waste. Supporting documentation (i.e. calculations, analytical reports, label photographs, basis documents, etc.) **MUST** be submitted with the RWCF before it will be reviewed and processed.

Direct Method
- Gamma Ray Spectroscopy ☐
- Scintillation Counter ☐
- Off-site Analysis* ☐

Indirect Method
- Dose Rate to Activity Conversion ☑
- Material Balance ☐
- Scaling Factors ☐

For sealed sources, attach photos showing markings & provide applicable source ID numbers below:

BNL ID#: _____

Mfg. Serial#: _____

*- Laboratory COC#'s _____

MIXED WASTE CHARACTERIZATION Does the waste contain or has it come in contact with hazardous chemical substances? ☐ NO ☒ YES, IF YES COMPLETE BACK

PRECAUTIONS Note any special hazards Lead

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature _____ Date 11-14-15

FOR FACILITY SUPPORT USE ONLY List the RADIATION levels for WM handling and transport

Radiation Levels (mR/hr) 0.5 ~~0.05~~ 12-7-15 **Waste Container** @ contact 0.15 @ 12" **Shielded Transport Container (or Lead Pig)** N/A @ contact N/A @ 12"

Note: The shielded transport container and the outside of the waste container should meet contamination release criteria or arrangements must be made in advance of pickup with WM Facility Support

Internal (waste) Contamination levels (as applicable): α N/A dpm βγ N/A dpm **ATTACH ALL SURVEYS**

Do any items within the package exceed a dose rate of 5oo mR/hr? ____ yes ☒ no

Surveyor's Sig. _____ Life # 025251 Date 11-16-15

BNL F 2975D 10/12

Adequate Analytical Data ~~12/7/15~~ 12/15/15

56625

MIXED WASTE CHARACTERIZATION Complete this section if the waste contains or has come in contact with hazardous chemical substances:

List CHEMICAL CONSTITUENTS with their percentages by volume

Lead	100 %		%		%
	%		%		%
	%		%		%
	%		%		%
	%		%		%

		YES	NO
CORROSIVITY	Is the pH less than or equal to 2.0 or greater than or equal to 12.5?	☐	☑
GENERAL	Is the waste an unused chemical or spill clean-up?	☐	☑
	Was the waste used as a solvent or degreaser? If so which?	☐	☑
IGNITABILITY	Is the flashpoint less than 140 F (60 C)?	☐	☑
	Is the waste an oxidizer or pyrophoric?	☐	☑
REACTIVITY	Is the waste unstable, water reactive, or explosive? If so which?	☐	☑
	Does the waste contain cyanide or sulfide? If so which?	☐	☑
TOXICITY	Based on your knowledge, does the waste contain any of the following?	YES ☑ (If yes, check all that apply)	NO ☐

State Regulated Materials	
Asbestos	
Carcinogens	
Chelating Cmpds	
Infectious Agents	
Halogenated Organics	
Oils	
Organic Solvents	
PCB's	
Polycyclic Aromatics	

RCRA Regulated Materials							
Arsenic		m-Cresol		Hexachlorobenzene		Pyridine	
Barium		p-Cresol		Hexachlorobutadiene		Selenium	
Benzene		Cresol		Hexachloroethane		Silver	
Cadmium		2,4-D		Lead	X	Tetrachloroethylene	
Carbon Tetrachloride		1,4-Dichlorobenzene		Lindane		Toxaphene	
Chlordane		1,2-Dichloroethane		Mercury		Trichloroethylene	
Chlorobenzene		1,1-Dichloroethylene		Methoxychlor		2,4,5-Trichlorophenol	
Chloroform		2,4-Dinitrotoluene		Methyl Ethyl Ketone		2,4,6- Trichlorophenol	
Chromium		Endrin		Nitrobenzene		2,4,5-TP (Silvex)	
o-Cresol		Heptachlor		Pentachlorophenol		Vinyl Chloride	

PRECAUTIONS Note any special hazards Lead

CERTIFICATION *I certify that, to the best of my knowledge, the information provided on this form is true and complete. I also certify that I am minimizing all waste generated to the best of my ability.*

Generator's Signature [signature] Date 11-14-15

FOR WASTE MANAGEMENT DIVISION USE ONLY RCA Sign/Date [signature] 11/14/15

Waste Management Division Storage Location 855-Bay 8 Life # 20132

Waste Category: LLW TRU *MW/RCRA TSCA EPA codes: D008

RCRA Hazard Class: Ignitable Corrosive Reactive Toxic N/A Waste Stream Code: M20

DOT Hazard Class: 7/9 Waste Profile Number(s) 9521-04

*- For MW/RCRA wastes the top of the front of the RWCF must be stamped with the words "MIXED WASTE"