ChemRisk Document No. 1680

WET FLUORIDE PROCESS
- WASTE DISPOSAL -
Basis: 670 lbs. of Metal
(Reacted at 25 Kw./Ton for 30 Days and Cooled for 25 Days)
or Approximately .25 Grams Product
4-23-43

CENTRAL FILES NO. 43-4-241

[redacted]

Remarks	Radioactive Heat B.T.U./Hr.	Material		Total	Product (%)	By-Product (%)	$UO_2(NO_3)_2 \cdot 6H_2O$	$Al(NO_3)_3$	H_2O	HF (NH_4F)	LaF_3 ($La(OH)_3$)	H_2SO_4 ($(NH_4)_2SO_4$)	$ZrO(NO_3)_2 \cdot 2H_2O$ ($ZrO(OH)_2$)	ZrO_2	NaOH	Minor Contaminants	$(NH_4)_2SO_4$	$BaSO_4$
Waste Metal Solution from Extraction - Neutralize with caustic to pH 8 ± 0.5. Cool during neutralization. Jet to waste storage tanks (Adiabatic heat rise approximately 40°.) Slurry is fluid and readily handled by gravity flow or pumping.	2	WASTE METAL NEUTRALIZER (CELL 5)	←Filtrate from Second Product Precipitation (from Cell 3)	# 17029 % 1950 Gal.	1	20.	1409.	483.	14686.	243.		38.	4.	134.		32.		
			←30% NaOH Solution	# 3150 % 284 Gal.					2205. 70.						945. 30.			
			←Neutralized Waste	# 20179 % 2234 Gal.			(960.)* (4.8)	(1505.) (7.5)	16831. 83.6	(510.) (2.5)		(55.) (0.3)	2.	86. 0.4	145. 0.7	32. 0.2		
		To Waste Storage Tanks																
		*Uranium precipitate composed of uranium peroxide, sodium uranate, and sodium fluouranate.																
By-Product Cake from Extraction - Slurry cake in 40 gallons water, using plows in centrifuge bowl for agitation. Jet slurry to by-product neutralizer. Wash bowl with two 25 gallon portions of water and jet to neutralizer. Neutralize to pH 7.5 or higher and jet to by-product storage tank. Slurry extremely fluid. $BaSO_4$ settles rapidly; the lanthanum precipitate settles slowly.	12	CENTRIFUGE BOWL (CELL 2)	←Cake and Hold-Up	# 96 % 10 Gal.	3	78.	3.9 4.2	2.8 3.0	80. 86.9	0.9 1.0	4.5 4.9							3.6
			←Wash Water	# 750 % 90 Gal.					750. 100.									
		BY-PRODUCT NEUTRALIZER (CELL 2)	←30% NaOH Solution	# 23 % 2 Gal.					16. 70.						7. 30.			
			←Neutralized By-Product Waste	# 869 % 102 Gal.			(2.6) (0.3)	(4.) (0.4)	849. 97.6	(4.8) (0.6)	(4.4) (0.5)				0.2 0.02			3.6 0.4
		To By-Product Waste Storage Tanks																
By-Product Cake from Decontamination - Dissolve cake in zirconium solution and jet to neutralizer tank. Wash centrifuge bowl, with two 25 gallon portions of water and jet to neutralizer. Neutralize to pH 7.5 or higher and jet to waste storage. Slurry extremely fluid with precipitate flocculant and slow settling.	Neg.	CENTRIFUGE BOWL (CELL 5)	←Cake and Hold-Up	# 87 % 10 Gal.	1	1.58		2.5 2.9	79.5 91.4	0.8 0.9	4.1 4.7							
			←Complexing Solution	# 202 % 22 Gal.				34.7 17.2	145. 71.8				22.3 11.0					
			←Bowl Wash	# 416 % 50 Gal.					416. 100.									
		WASTE METAL NEUTRALIZER (CELL 5)	←30% NaOH Solution	# 110 % 10 Gal.					77. 70.						33. 30.			
			←Neutralized Decontamination By-Product Waste	# 818 % 92 Gal.	1	1.58		(64.) (7.9)	731. 89.8	(4.2) (0.5)	(4.0) (0.4)		(12.) (1.4)		0.2 ----			
		To Waste Storage Tanks																
Waste Solution from Decontamination - Jet waste solution to waste tank neutralizer. Neutralize to pH 7.5 or higher and jet to waste storage tanks. Slurry extremely fluid with precipitate flocculant and slow settling.	Neg.	WASTE METAL NEUTRALIZER (CELL 5)	←Filtrate from Product Precipitation (Cell 5)	# 1301 % 151 Gal.	1	0.40		71.8 5.5	1172. 90.1	15.4 1.2		3.6 0.3	22.2 1.7	11.0 0.8			4.9 0.4	
			←30% NaOH Solution	# 330 % 30 Gal.					231. 70.						99. 30.			
			←Neutralized Waste	# 1631 % 181 Gal.				(119.) (7.3)	1439. 88.2	(32.) (2.0)		(5.) (0.3)	(12.) (0.7)	11. 0.7	8. 0.5		4.9 0.3	
		To Waste Storage Tanks																

CLASSIFICATION CANCELLED
DATE SEP 17 1963
For The Atomic Energy Commission
H. F. Carroll
Chief, Declassification Branch

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David R Hamrin 5/24/95
Technical Information Officer Date
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