TABLE 10

MISCELLANEOUS RADIOACTIVE WASTE IN SOIL

Most of the locations of miscellaneous waste disposal listed here are marked with pylons or are within posted or controlled areas. An active program is under way to mark the remaining sites or, if analyses warrant, to remove them from the list.

Table 10 lists all plantsite locations containing radioactivity resulting from spills, equipment failure, etc. Locations containing radioactivity from ongoing operations, such as seepage basins and stream beds, are not included.

TABLE 10. MISCELLANEOUS RADIOACTIVE WASTE IN SOIL

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	200F						
11/54	Building 221-1F, A-line hydrate evaporator uranyl nitrate spill over the graveled area west of A-line, Uranium partially recovered	10^3	Covered with crushed rock	200	<1	Uranium	Controlled Area
12/54	Contaminated water overflow from 281-3F Basin	<500	Covered with dirt	-	<1	βγ	Pylon Markers
12/54	Plutonium solution released thru the F-Area sanitary sewer system from Building 221-FB Line	$2X10^3$	Residue from treated sewage (Building 607-1F) deposited outside F Area fence in trench and covered.	10^3	<0.02	Pu	Pylon Markers
1/55	A recycle sump in Building 211-F overflowed, contaminating graveled area. Earth and gravel removed to Building 643G.	500	Covered with crushed rock	20	<1	βγ	Controlled Area
4/56	Area between Building 221-F railroad cut fence and A-line fence contaminated with wind blown particles from repair work on 9.2E jumper. A large number of particles were removed.	10^3	Ground turned under	-	<1	βγ	Controlled Area
5/57	Asphalt and ground area north west of Building 241F diversion box contaminated from solvent trailer.	125	Ground turned under	-	<1	βγ	Controlled Area

* It is not always feasible to specifically quantify small amounts of radioactive waste in soil. Usually contaminated soil zones are defined and representative samples are taken for analyses of radionuclide concentration. When this method indicates any quantity less than one curie, it is reported in that manner to avoid the implication of a precise measurement.

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area (ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
5/57	Liquid overflowed from the low level solvent trailer at Building 211F contaminating the ground area.	100	Ground turned under	-	<1	βγ	Controlled Area
6/57	Area adjacent to the 200-F Area regulated equipment storage slab contaminated with particles.	10^4	Particles picked up and ground turned under		<1	βγ	Pylon Markers
7/57, 8/57	An area south of Building 292-F stack contaminated with ammonium nitrate particles from the stack.	10^5	Ground turned under	-	<1	βγ	Pylon Marker
11/57	An area around Building 292-1F bldg. contaminated during work on vessel vent fans.	800	Ground turned under	-	<1	βγ	Controlled Area
3/59	Primary 200F Area effluent stream bed contaminated from routine operation.	10^4	Contaminated earth removed from stream bed and deposited on South bank along Road E. Covered with clean dirt.	15000	<1	βγ	Pylon Markers
1/59	Leakage from a ruptured fire hose contaminated the ground while transferring water from the Building 904-42G to Building #904-43G seepage basin.	$5X10^3$	Ground turned under	-	<1	βγ	Posted Area

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
6/59	Overflow of a sump in Building 211-F segregated solvent facility contaminated the concrete pad and graveled area. Most of contamination removed.	600	Ground covered with soil and gravel	-	<1	βγ	Controlled Area
4/61	Drainage ditch east of Building 221-1F A-line was contaminated from Nash exhauster leak.	500	Contamination fixed with asphalt spray	-	<1	βγ	Controlled Area
4/61	Subsurface soil mass extending from 12 ft below ground surface down to 28 ft below the surface; near the fill line entry point of Tank 8.	300	Area under study. Surface is covered with asphalt paving which minimizes water movement	6000	5000 100-5000[a] <250[a] < 10	^{137}Cs ^{90}Sr ^{147}Pm Other α,β,γ	Controlled Area
2/63	Area north of and adjacent to the burial ground, Building, 643C) contaminated during burial of obsolete Bldg.221-F canyon jumpers.	10^5	Ground turned under	-	<1	βγ	None
4/63	Area outside the east burial ground, Building 643-C fence was contaminated following emptying an open dumpster into high level trench.	500	Ground turned under	-	<1	βγ	None
Startup to 1973	Algae routinely flushed from the walls & floor of the Building 281-5F delaying basin and collected in earthern retention basin Building 281-3F. Also receives contaminated cooling water from equipment failure.	$2X10^4$	Herbicide used to prevent vegetation growth on sides of basin.	-	5-10	βγ, α	Controlled Area

a. 5000 Ci of ^{90}Sr and 250 Ci of ^{147}Pm are upper limits based on the estimate of 5000 Ci of ^{137}Cs from radiation measurements. Investigation and monitoring of the contaminated zone are being continued.

TABLE 10. (Continued)

Date	Location and Brief Description	Disposal Area (ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
2/68	Contamination released from Building 772-F stack to the surrounding grounds.	5×10^5	Contamination removed	-	<1	α β γ	Controlled Area
5/71	Leaking underground pipe line to 200-F Area seepage basin contaminated adjacent soil.	3 x 10	Some contaminated dirt removed and area back filled	7×10^3	<1	β, γ	None
Startup to 1955	200-F Area North Seepage Basin	4×10^4	-	-	~1	α, β, γ	Posted Area
4/66	Flush of feed pump to 242-F spilled water on ground	50	-	10	<1	β, γ	Controlled Area
2/63	Seq solvent sump 221-F overflowed to north drainage ditches.	1200	Sand bag retention and pump to north seepage basin contaminated soil removed	10^3	<1	β, γ	Controlled or posted area
8/60	Overflow hydrate evaporator 221-F A-Line contaminated north area storm sewer (Ref. 9.1E contamination of recirculating cooling water).	500	Sand bag retention and pump to north seepage basin.	500	<1	β, γ	Posted Area
7/75	Soil 7-22 feet below grade on E and W side of Concentrate-Transfer-System Pump Pit contaminated due to leakage of piping.	210*	Contamination removed and pump pit being repaired	-	**	β, γ	Controlled Area
8/75	Soil 2-3 feet below grade near Riser 6 on Waste Tank 3 contaminated by seepage through cracks in concrete around jet piping.	40*	Contamination to be removed and area returned to normal	40**	50**	β, γ	Controlled Area

* Below-grade values are given in cubic feet of contaminated soil.

** Volume and curie content of contaminated soil not well defined. Intent is to remove contamination to Burial Ground so that less than 1 Ci of ^{137}Cs will remain in soil at these sites.

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	200-H						
Startup to 1973	Algae routinely flushed from the walls and floor of the Building 281-5H delaying basin and collected in earthern retention basin Building 281-3H. Also receives contaminated cooling water from equipment failures.	$2X10^4$	Herbicide used to prevent vegetation growth on sides of basin.		10-30	α,β,γ	Controlled Area
7/56	Contamination released from Building 291-H stack.	$2X10^3$	Ground turned under	-	<1	β γ	None
9/56	Water leaked around Building 281-3 retention basin discharge gate.	$2X10^3$	Holding Pond was constructed	-	<1	β γ	Posted Area
4/58	Uranium solution and contaminated solvent leaked from tank car loading apron in Building 211-H to a storm sewer which drains east of 200-H Area.	$2X10^5$	150 ft of the drainage ditch was backfilled	-	~1	β γ	Pylon Markers
11/58	A recycle sump in Building 211-H overflowed carrying contaminated water and solvent via storm sewer to an Area NE of 200H Area. A dam was built to retain water.	10^6	Ditch backfilled Retention pond back filled	-	<1	β γ	Pylon Markers

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area (ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	200-H						
12/59	Railroad right-of-away in the 200H Area and the railroad connecting F*H Areas were contaminated as the result of transfer of a box of Building 221-H jumpers in route to Building (643-G).	$2X10^6$	Accessible areas turned under	-	<1	β,γ	Pylon Markers
9/60	Fission product activity was detected in samples of water from wells around Tank 16 Building 241-H.	$3X10^4$	Water pumped from soil shrinkage system for an extended period.	-	10 - 500	β,γ - Primarily ^{137}Cs	Controlled Area
9/56, 5/60, 11/65	Activity released from Building 221-H segregated cooling water to area effluent.	10^5	Holding Pond constructed. Area later backfilled with 2' soil. (Road E & Road 4)	-	≈5	β,γ	Pylon Markers
2/67	High level waste transfer hose ruptured during transfer of waste from tank 10 to 13 (Building 241-H)	1000	Contaminated earth removed & area sprayed with asphalt	-	<1	β,γ	Controlled Area
5/67	Building 242-H evaporator bottoms line overflowed on top of waste tank #9, Building 241-H.	1000	Contaminated soil excavated and clean soil replaced	$15X10^3$	75-100	β,γ; primarily ^{137}Cs	Controlled Area
5/67, 2/69	200-H Area storm sewer outfall #52 south of area contaminated from Building 241-H waste tank #9 spill. Additional .5 curie ^{137}Cs released 2/69 from Building 241-H ruptured backflush line.	$5X10^5$	Two holding ponds constructed, majority of contaminated soil excavated. New banks of ditch asphalted.	Several hundred feet contaminated soil along streambed	5-10	β,γ, primarily ^{137}Cs	Pylon Markers

TABLE 10. (Continued)

Date	Location and Brief Description	Disposal Area (ft^2)	Treatment of Are After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
6/70	A layer of contaminated soil 1' deep was excavated from the Building 281-7H basin floor and piled W of Building 281-3H basin.	1200	Spoil pile covered with asphalt	7000	<1	β, γ	Posted Area
4/69 6/70	Particles released from the Building 291-H stack were found in a radius of 400 feet of the stack.	5×10^5	Ground turned under	-	<1	β, γ	None
8/75	Soil below grade on E side of Concentrate-Transfer-System Pump Pit contaminated due to leakage of piping	10*	Contamination to be removed and pump pit repaired	10**	**	β, γ	Controlled Area

* Below-grade values are given in cubic feet of contaminated soil.

** Volume and curie content of contaminated soil not well defined. Intent is to remove contamination to Burial Ground so that less than 1 Ci of ^{137}Cs will remain in soil at these sites.

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	100 Areas						
1955	Low level radioactive waste buried in area South of road G. (100-R Area)	$2X10^4$	Backfilled	-	<1	β,γ	Pylon Markers
1957	Burial trench 643-2G & 643-3G received low level contaminated waste from the Bingham outage. (100-L Area)	$2X10^4$	Backfilled	$2X10^5$	<1	β,γ	Pylon Markers
11/57	Disassembly basin water pumped to seepage basins following failure of experimental fuel element. Basins Building #'s 904-56, 57, 58, 59, 60G. (100R)	$8X10^5$	Basins backfilled clay capped or diked, and blacked topped except 904-60G.	-	$2-3X10^3$	β,γ Primarily, 89, ^{90}Sr, and ^{137}Cs	Pylon Markers
1957	Burial trench 643-1G was used for burial of low level contaminated waste during Bingham outage. (100-K Area)	$2X10^4$	Backfilled.	$2X10^5$	<1	β,γ	Pylon Markers
1957	Area due West of 100-K Area NE of and adjacent to Road B, contaminated from transfer area floor drain, Building 105-K.	$2X10^5$	None	-	<1	β,γ	Posted Area
1957	Contaminated storage areas (2) in NW corner and the SW corner of Building 105-L exclusion area.	$3X10^4$	Covered with clean soil	-	<1	β,γ	Posted Area

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	100 Areas						
8/65	Disassembly basin water spilled to area storm sewer while pumping to $50X10^6$ gallon basin.(100-K)	$1X10^4$	None, activity decayed.	-	<1	β,γ Primarily ^{32}P	Posted Area
1958	Three trenches received radioactive waste from Bingham Pump outage (100-R Area), Building 643-8, 9, 10G.	$2X10^4$	Burial Trenches backfilled.	$2X10^5$	<1	β,γ	Pylon Markers
1958	Burial Trench 643-4G received low level contaminated waste from the Bingham outage, (100-P Area).	$1X10^4$	Backfilled	$1X10^5$	<1	β,γ	Pylon Markers

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	SRL					β,γ	
12/53	Explosion of hydrate evaporator, Building 677-G, spread contamination to a ground area. Decontamination water and debris contained in a trench and holding pond Northeast of Building 677-G.	$5X10^4$	Hold pond built - area backfilled	-	<1	Natural Uranium	Posted Area
6/69	Curium-244 aerosol released from Building 773-A cell #12 exhaust stack of the High Level Caves.	$1X10^5$	None	-	0.02	α, primarily ^{244}Cm	None
12/71	Curium-244 released from the High Level Caves separator pit to the ground area underneath E-Wing Building 773-A.	$1X10^3$	None	-	6	α,γ,primarily ^{244}Cm	Posted Area

TABLE 10. (Continued)

Date	Location & Brief Description	Disposal Area(ft^2)	Treatment of Area After Release	Remaining Volume (ft^3)	Remaining Curie Content	Type Waste	Site Identification
	300 Area						
Startup 1965 (est)	Uranium contaminated 300 Area process liquids, primarily caustic, routinely disposed of in a borrow pit and holding pond near intersection of Road A & Road 6.	$4X10^3$	None	-	<1	Uranium	Posted Area