STATISTICAL BREAKDOWN OF INCIDENTS AT ORNL

2/1/56 to 5/13/60

I. Breakdown by Severity of Incident

A. Near Misses (Potentially serious accidents) ---------- 7

Incident No.	Division or Group Involved
25	ORSORT Lab (3017)
27	Operations (3042)
94	Chemical Technology (4501)
109	Chemical Technology (3019, Cell 6)
115	Electronuclear Research (9204-3)
128	Isotope (9204-3)
129	Chemistry (3026-C)

B. Contamination

Number of Incidents in which area contamination was involved---------- 102

84 involved contamination that could be handled by the Division's regular work staff with no appreciable departmental program loss.

15 required interdepartmental assistance with minor departmental program loss.

3 resulted in halting or temporarily deterring parts of the Laboratory program.

This document has been approved for release to the public by:

David R Hamrin 11/16/95
Technical Information Officer Date
ORNL Site

C. Personnel Exposure

Number of Incidents involving personnel exposure --- 20

17 resulted in nonreportable overexposures with minor work restrictions imposed.

3 resulted in reportable overexposures with work restrictions imposed.

D. Contamination and Personnel Exposure

Number of Incidents involving both recorded overexposure and at least minor area contamination ----- 14

ChemRisk Document No. 2672

II. Breakdown by Divisions or Groups Responsible

Analytical Chemistry ---------- 7

Incident #	2	Bldg. 3019 (HPP)
	32	3019 (HRLAF)
	54	3019 (HRLAF)
	61	3019 (Rm. 209)
	78	3019 (West End)
	28	4500
	8*	4501

Biology ---------- 1

Incident #106 Bldg. 9207

Chemical Technology ---------- 41

Incident #	111	Bldg. 2528 (Thorium Oxide Bldg.)
	11	3019 (HPP)
	18	3019
	19	3019
	21	3019
	31	3019
	35	3019
	38	3019
	56	3019
	60	3019
	62	3019
	70	3019 (Penthouse)
	71	3019
	85	3019 (Thorex Room)
	103	3019
	109	3019 (Cell 6)
	110	3019 (Cell 6)
	127	3019
	48	3027, 4500 Roadway
	3	3505 (Metal Recovery)
	46	3505
	57	3505
	59	3505
	67	3505
	86	3505 (Metal Recovery)
	4	3508 (Isotope)
	33	3508
	122	3508
	16	3550 (Semiworks)
	45	4500
	65	4500 (Lab B-5)
	75	4500 (Lab B-1)
	49	4501
	94	4501 (Basement)
	121	4501

*Responsibility shared with another group

Chemical Technology (Cont'd.)

Incident #	5	Bldg. 4505
	6	4505
	40	4505
	95	4505 (Lab 28)
	96*	Disposal Area near Burial Ground #3
	98	White Oak Creek and White Oak Dam

Chemistry ---------- 4

Incident #	129	Bldg. 3026-C
	51	4500 (Lab B-25)
	66	4501 (Staff Shop)
	104	4501 (Rm. 119)

E & M ---------- 5

Incident #	50	Bldg. 3074 (Maintenance Shop)
	7	Parts of several buildings
	96*	Disposal Area near Burial Ground #3
	100	Retention Ponds
	119	Burial Ground #5

Electronuclear Research ---------- 2

Incident #	108	Bldg. 9201-2
	115	9204-3

Health Physics ---------- 5

Incident #	9	Bldg. 2001
	22	3019, 3001, and 2001
	34	Carryall Truck
	26	4500
	55	5500

Isotope ---------- 22

Incident #	77	Bldg. 3028(e)
	69	3029
	73	3029, 3030, and 3031
	101	3029
	116	3029
	93	3030, 3028
	13	3038
	14	3038
	24	3038
	42	3038
	79	3038, 3029
	72	3517
	76	3517
	90	3517

*Responsibility shared with another group

Isotope (Cont'd.)

Incident # 120	Bldg. 3517	
123	3517	
64	9204-3	
83	9204-3	
87	9204-3	
92	9204-3	(Pumphouse)
124	9204-3	
128	9204-3	

Metallurgy ---------- 1

Incident # 125 Bldg. 2000 (Rm. 39)

Neutron Physics ---------- 1

Incident # 91 Bldg. 9213 (Criticality Lab)

Operations ---------- 11

Incident # 39	Bldg. 3001	
113	3001	
15	3005	(LITR)
53	3005	
81	3005	
52	3030, 3020	
27	3042	(ORR)
89	3042	(ORR)
10	Tank Farm	
97	Isotope Stack Area	
102	Laboratory parking lot	

Physics ---------- 7

Incident # 99	Bldg. 3010	(1st Floor)
26	4500	
44	4500	
63	4500	
58	5500	
38	5500	
1	9213	

REED ---------- 21

Incident # 3*	Bldg. 4501	
12	4501	
17	4501	
36	4501	
37	4501	
68	4501	(Vault Room)
80	4501	(Rm. 212)
105	4501	
23	7500	(HRE)
30	7500	
107	7500	

*Responsibility shared

REED (Cont'd.)

Incident #	29	Bldg. 9204-1
	41	9204-1
	43	9204-1
	47	9204-1
	74	9204-1
	82	9204-1
	84	9204-1
	114	9204-1
	117	9204-1
	118	9204-1

Solid State ---------- 2

Incident #	20	Bldg. 3025
	126	3025

Construction ---------- 1

Incident # 112 Bldg. 4500

ORSORT ---------- 1

Incident # 25 Bldg. 3017

III. Breakdown by Buildings

Bldg. No.	2000	1
	2001	2
	2528	1
	3001	3
	3005	3
	3010	1
	3017	1
	3019	23
	3025	2
	3026-D	1
	3028	2
	3029	4
	3030	3
	3031	1
	3038	6
	3042	2
	3074	1
	3505	6
	3508	3
	3517	5
	3550	1
	4500	9
	4501	13
	4505	4

III. Breakdown by Buildings (Cont'd.)

Bldg. No. 5500	3
7500	3
9201-2	1
9204-1	10
9204-3	7
9207	1
9213	2
Miscellaneous (Parts of several buildings; tank farm; Carryall truck; Roadway at Bldgs. 3027 and 4500; Disposal area near Burial Ground #3; Isotope stack area; White Oak Creek and White Oak Dam; Retention Ponds; Laboratory parking lot; and Burial Ground #5.)	10

BUSINESS-CONFIDENTIAL

SEVERITY OF INCIDENT (KEY)

Area Clean Up Effort	Personnel Exposures
A - None required	1 - No overexposure recorded
B - Handled internally by the regular work staff with no appreciable departmental program loss	2 - Non-reportable overexposures with minor work restrictions imposed
C - Inter-department assistance required with minor department program loss	3 - Reportable overexposures with work restrictions imposed
D - Parts of the Laboratory program halted or deterred temporarily	* - Remarks
* - Remarks	

ident mber	Date	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
1	Feb. 1, '56	9213	Physics	A power excursion occurred in an assembly of U-235, accidentally made prompt critical by over addition of solution.	C	1
2	May 18, '56	3019 (HPP)	Anal. Chem.	An attempt was made to recover Pu from resin by dissolving in an open flask in a hood in Laboratory 209.	B	1
[illegible]	Jul. 30, '56	3505 (Metal Recovery)	Chem. Tech.	Hands contaminated while replacing a gasket on a carrier removed from canal.	A	1
[illegible]	Aug. 5, '56	3509 [illegible]tope	Chem. Tech.	When heat was cut off to an auto-clave bomb containing 1/2 grams of Pu, an explosion occurred blowing 6" hole in glass side of a wall in hood.	B	

BUSINESS - CONFIDENTIAL

[illegible]	[illegible]	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean	Effort	Personnel Exp.
5	Aug. 7, '56	4505	Chem. Tech.	The dry UF4 was removed from dryer to plastic bags. During this operation the dust spread over floors and equipment.	B		1
6	Aug. 14, '56	4505	Chem. Tech.	A five millicurie liquid sample of Po^{210} nitrate was accidentally dropped on the second level floor of Building 4505.	C		1
7	Aug. 28, '56	Parts of several buildings	E and M	Sometime during trash pick up material was spilled in bed of truck. Driver and helpers had tracked material on loading dock of several buildings.	B		1
8	Nov. 1, '56	4501	Reed and Anal. Chem.	The contamination occurred sometime during handling of Zr in pile loop sample. The contamination was not the result of a single known operation.	C		1
[illegible]	Dec. 16, '56	2001	Health Physics	Ruptured container on a Pu foil being used for counter calibration allowed some Pu oxide to be spread to several areas in the Laboratory.	C		1
10	Jan. 21, '57	Tank Farm	Operations	Two employees became contaminated while removing a pump from W-10 waste tank.	A		1
11	Feb. 1, '57	3019 (HPP)	Chem. Tech.	Fumes issuing from leak in a line connection at product receiving tank.	B		1
12	Feb. 1[illegible], '57	4501	Reed	Two employees became contaminated while performing routine work, Rm. 127, Building 4501.	A		1
[illegible]	June 1[illegible], '57	3038	Isotope	A solution containing I^{131} was spilled while being transferred from product carrier to barricade.	B		1

BUSINESS-CONFIDENTIAL

Incident Number	Date	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
14	Jun. 13, '57	3038	Isotope	Employee became contaminated while preparing the barricade behind loading window to be sand blasted.	A	1
15	Jun. 18, '57	3005	Operations	In the preparation for removal of a rocking bomb experiment from HB-6 fission gas was released to west room.	A	1
16	Jun. 25, '57	3550 (semi-works)	Chem. Tech.	Two employees became contaminated while working in Cell 4 of semiworks.	A	1
17	July 10, '57	4501	Reed	Contamination was tracked from cell in room 127 throughout first level of 4501.	B	1
18	Oct. 4, '57	3019	Chem. Tech.	Employee entered Cell 4, Building 3019 by mistake. *Employee removed from work with radioactive materials.	A	3*
19	Nov. 6, '57	3019	Chem. Tech.	Employee entered Cell No. 7, Building 3019 in order to drain a filter. *Assigned to non-operational duties in Building 3019.	A	3*
20	Dec. 4, '57	3025	Solid States	Removal of thorium source from aluminum containers contaminated Cell No. 1 with α activity.	B	1
21	Feb. 10, '58	3019	Chem. Tech.	Decontamination of II B Column resulted in an overflow of material onto basement floor.	B	2
22	[illegible]	[illegible] and [illegible]	H. P. Division	Failure to make personnel check resulted in some contamination spread in 2001, 3001, and 3019.	B	1

BUSINESS-CONFIDENTIAL

	Date	Area Involved	Div. Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
23	Feb. 25, '58	7500	HRE	Personnel loosening connections in loading pit were sprayed with reactor fuel.	B	2
24	Mar. 21, '58	3038	Isotope	Removing pipette from loading corner spread Au-198 contamination.	B	1
25	Mar. 29, '58	3017	ORSORT Lab	Employee working with small water moderated exponential pile for use by ORSORT students. *Possible near miss.	A	1*
26	May 10, '58	4500 Physics Wing	Physics Division	A source holder contaminated with P^{32} resulted in room and personnel contamination.	B	1
27	May 12, '58	3042 ORR	Operations	Surveys were made in chase tunnel for inspection engineers where it was thought reactor was in operation. *Possible near miss.	A	1*
28	May 23, '58	4500 Lab C-1	Anal. Chem.	Contamination was spread over lab. area while dumping old samples in hot can.	B	1
29	May 23, '58	9204-1	Roed	A pipe fitting gave way releasing 2 KG of thorium slurry to the loop area.	B	1
30	May 28, '58	7500 HRT	HRE	An accidental release of a small quantity of fission products to evaporator area.	B	2
31	Jun. 1, '58	3019	Chem. Tech.	A person became grossly contaminated while preparing for a weld in line to evaporator cubicle of Cell No. 6.	B	2

BUSINESS-CONFIDENTIAL

[illegible]	Date	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposure
[illegible]	Jun. 25,'58	3019 HRLAF	Anal. Chem.	HRT fuel sample accidentally spilled on floor in front of cells. *Some of floor tile had to be replaced.	C*	1
33	July 8, '58	3508	Chem. Tech.	Possibility that punctured rubber glove from glove box caused area and personnel contamination.	B	1
34	July 10,'58	Carry all Car	H. P. Div.	Glass, ampule containing .1 mg of radium ruptured and contaminated glove compartment and personnel.	B	1
35	July 16,'58	3019	Chem. Tech.	Personnel contamination when removing pump heads from Cell No. 3.	B	2
36	Aug. 8, '58	4501	Reed	Contamination came from lab. coat and shoes that had been worn in cell, Room 127.	B	1
37	Aug. 13,'58	4501	Reed	Radio-activity tracked from Room No. 127 throughout first floor level. How contamination got on floor could not be determined.	B	1
38	Aug. 21,'58	3019	Chem. Tech.	When entering Cell III solution dripped on arm and hands of employee.	B	2
39	Aug. 26,'58	3001	Operations ✓	Co^2 pressure had been left on pneumatic tube system forcing activity from system.	A	1
40	Aug. 28,'58	4505	Chem. Tech.	F. P. spilled from flask in hood to floor. Parts of 4505 floor became contaminated.	B	1

BUSINESS-CONFIDENTIAL

No.	Date	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposure
1	Aug. 29, '58	9204-1	Reed	Flexible line burst in the high pressure loop releasing thorium slurry to loop area.	B	1
2	Sept. 5, '58	3038	Isotope ✓	Personnel and floor contamination resulted from opening returned broken isotope shipment.	B	1
3	Sept. 9, '58	9204-1	Reed	Pipe line became plugged releasing approximately 2KG of slurry.	B	1
44	Sept. 10, '58	4500	Physics	Quantity of I-130 was accidentally spilled from hood.	B	1
45	Sept. 12, '58	4500 (S. side of Building)	Chem. Tech.	While transporting carrier containing U-238 solution to tank farm, approximately 8 liters spilled onto street. *Required personnel and outside aid to clean streets.	C*	1
46	Sept. 20, '58	3505	Chem. Tech.	Solution blew back through instrument line and contaminated employee.	B	1
47	Oct. 6, '58	9204-1	Reed	Sample valve gave way releasing thorium slurry inside wooden enclosure.	B	1
48	Oct. 14, '58	3027, 4500, Roadway	Chem. Tech.	A Pu shipping container drippled activity on floor of Building 3027. This was tracked over roadway. *Road crew removed sections of pavement.	C*	1
49	Oct. 31, '58	4501	Chem. Tech.	Contaminated UO2 and Zr pins dumped out on blotter papers on floor in crane bay area.	B	1

BUSINESS - CONFIDENTIAL

	[illegible]	[illegible] Involved	[illegible]	[illegible]	Severity of [illegible] Area Clean Up Effort	Personnel Exposure
	[illegible]	307[illegible] Maint. Shop	[illegible] and M ✓	Solution from pump head contaminated work benches and hands of worker. *Part of work bench replaced.	C*	1
[illegible]	Nov. 4, '58	4500 Lab. E-[illegible]	Chem	While removing furnace from lab., contamination spread on floor.	B	1
[illegible]	Nov. 13, '58	3030 and 3038	Operations ✓	A contaminated graduate was used and person subsequently tracked and spread contamination to other areas.	B	1
53	Nov. 28, '58	3005 (LITR)	Operations ✓	During an attempt to vacuum clean two facilities at HE-5, the room became contaminated.	B	1
54	Dec. 16, '58	3019 (HRLAF)	Anal. Chem.	In removing an HRT sample holder from Cell II, contamination spread to floor.	B	1
[illegible]	Jan. 1, '59	5500	Health Physics	The attempt to change foil rings without adequate containment for disposal resulted in tracking tritium throughout building. *Two days required to clean up area.	C*	1
[illegible]	Jan. 4, '59	3019	Chem. Tech.	Contaminated wire penetrated rubber glove and pierced finger of employee. *urinalysis results indicated some internal exposure due to wound.	A	2*
57	Jan. 8, '59	3505	Chem. Tech.	Flange was loosened on line to pump allowing M. F. Products to spill on floor.	B	1
[illegible]	Jan. 1[illegible], '59	5500	Physics	While removing old filters from vacuum pump employee contaminated hands with H_2. *Reported to Medical for check of hands.	A	2*

BUSINESS - CONFIDENTIAL

[illegible]	[illegible]	Area Involved	Dept. Division	Description of Incidents	Incident Rating [illegible] Area Clean Up Effort	Personnel Exposure
[illegible]	Jan. 28, '59	3505	Chem. Tech.	A drop of Pu fell on head of employee entering "G" Cell. *Medical for clean up of hair and hands.	A	[illegible]
60	Feb. 6, '59	3019	Chem. Tech.	Dissolver in Cell V pressurized causing solution to back up in lines to make up room. *Entry into area restricted during clean up over week-end.	C*	1
61	Feb. 7, '59	3019	Room 209 Anal. Chem.	A sample of P-32 was heated to the point of boiling over container. *Sent to Medical for clean up.	B	2*
62	Feb. 14, '59	3019	Chem. Tech.	In attempting to obtain sample from Cell V, employee became contaminated with mixed F. P.	B	1
63	Mar. [illegible], '59	4500 Lab. H-17	Physics	Some I-131 was released in laboratory because a cold trap was not being kept cool enough.	B	1
64	Mar. [illegible], '59	9204-3	Isotope ✓	Salvage paper which was being burned in ruffle furnace produced contaminated smoke.	B	1
65	Mar. 11, '59	4500 Lab. B-5	Chem. Tech.	A glass beaker containing uranyl nitrate was dropped resulting in area contamination.	[illegible]	1
[illegible]	[illegible]	4500 Graff Shop	Chem.	While turning some uranium [illegible] Shop some of shavings [illegible]	[illegible]	1

BUSINESS-CONFIDENTIAL

		Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposure#
[illegible]	Mar. 3, '59	3505	Chem. Tech.	Above normal external exposure received as result of returning to cell after dose meter indicated off scale. *Film read: D_m 2,200; D_1 2,200; D_2 2,200.	A	2*
68	Mar. 24, '59	4501 Vault room	Reed	While working on manipulator hands from Room No. 127 personnel and area became contaminated.	B	1
69	Mar. 25, '59	3029	Isotope	While attempting to transfer Cs^{137} from underground storage, bottle was broken.	B	1
70	Mar. 30, '59	3019 Pent house	Chem. Tech.	Hot solution had gotten into water line to the S-1 and S-2 Jet. Also fitting leaked solution to floor.	B	1
[illegible]	Mar. 30, '59	3019	Chem. Tech.	Two slugs dropped from slug carrier to floor of penthouse.	A	1
[illegible]	Apr. 3, '59	3517	Isotope	Probable cause was shutting down of cell ventilation system resulting in contamination to parts of building.	B	1
[illegible]	Apr. [illegible], '59	3029, 3030 3031	Isotope	Hot material drained into [illegible] lines in buildings 3029, 3030, and 3031.	[illegible]	1
[illegible]	Apr. [illegible]	9204-1	Reed	Dismantling of water line [illegible] concentration of [illegible] in the [illegible]. *All water lines [illegible]	[illegible]	1

[illegible]	[illegible]	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
[illegible]	May 22, '59	4500 Lab. B-1	Chem. Tech.	A fire occurred in Laboratory B-1 as a result of the ignition of a quantity of isopropyl alcohol. *Laboratory B-1 out of operation several weeks.	C*	1
76	Jun. 14, '59	3517	Isotope	General building contamination as the result of a hot spot found on floor near south wall of manipulator area. Reason for floor contamination unknown.	~~A~~ B	1
77	Jul. 11, '59	3028(a)	Isotope	Personnel and area became contaminated as the result of broken vacuum line.	B	1
78	Jul. 13, '59	3019 West End	Anal. Chem.	The floor surfaces in analysis side of 3019 generally contaminated. Source remained undetermined.	B	1
[illegible]	[illegible]	3038 and 3029	Isotope	While removing P-32 equipment from west cell in Building 3029, contamination spread to area and personnel.	B	1
[illegible]	[illegible]	[illegible]	Reed	A beaker containing U-238 alloys exploded causing cuts on employee's neck, chest, and arm. *Sent to medical for wound check.	B	2*
81	[illegible]	[illegible]	Operations	In removing sample of elemental iodine from B tube of LITR, contamination to personnel and area resulted. *Reported to Medical for clean up.	B	2*

BUSINESS-CONFIDENTIAL

	Date	Area Involved	Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposure
	Jul. 9, '59	9204-1	Reed	A valve in loop failed resulting in personnel contamination. No area contamination.	A	1
83	Aug. 17, '59	9204-3	Isotope	During transfer of solution containing Pu, tygon tube burst causing area contamination.	B	1
84	Aug. 18, '59	9204-1	Reed	Valve gave way on slurry blanket mock up. ThO_2 slurry contaminated floor surfaces.	B	1
85	Aug. 31, '59	3019 Thorex Room	Chem. Tech.	Incident was caused by dissolver tank pressurizing during de-jacketing process.	B	1
86	Sept. 2, '59	3505 (Metal Recovery)	Chem. Tech.	Tank overflowed through open flange to the stainless steel floor of the corridor.	B	1
	Sept. 4, '59	9204-3	Isotope	When removing Pu contaminated carbon from glove box, a tear in plastic bag resulted in area contamination.	B	1
	Sept. 11, '59	3500	Physics	Build up of H^3 waste in target room led to contamination being tracked throughout area.	[illegible]	1
	Sept. 23, '59	[illegible]	Operations	Release of gas through partially opened valve between [illegible] beam hole liner and [illegible]	[illegible]	1
[illegible]	[illegible]	[illegible]	[illegible]	Line coming [illegible]	[illegible]	[illegible]

BUSINESS - CONFIDENTIAL

	[illegible]	Involved	[illegible]	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
[illegible]	Sept. [illegible], '59	9213 (Criticality)	[illegible]	Laborer walked past red light leading into controlled area. *Permanent chain and marker put up.	A	1*
92	Sept. 28, '59	9204-3 (Pump house)	Isotope	Packing flange leaked on the pump in a glove box in the pump house. Area and personnel contamination.	B	1
93	Oct. 1, '59	3030, 3028	Isotope	During the sampling of Pm^{147}, a drop spilled on floor resulting in area and personnel contamination.	B	1
94	Oct. 22, '59	4501 (Basement)	Chem. Tech.	10,000 curie cobalt source became disengaged in shield assembly. *This was a "near miss."	A	1*
95	Oct. 29, '59	4505 Lab. 28	Chem. Tech.	Glass tubing used in work with therium was broken causing personnel and area contamination. *Employee had cut checked at Medical. No contamination found.	B	2*
96	Oct. 29, '59	Disposal area near burial ground No. 3.	K and M Chem. Tech.	Personnel and area contamination from material dumped from bags outside burial ground fence.	B	1
97	Oct. 31, '59	Isotope stack area	Operations	A drain pipe from the isotope stack hot off gas line was being [illegible] with water. Hose slipped out of [illegible] and contaminated street. [illegible]	[illegible]	1

BUSINESS-CONFIDENTIAL

		Area Involved					Personnel Exposure
	Nov. 1, '59	White Oak Creek and White Oak Dam	Chem.	During process run at Building 3019 it is believed that a negative pressure developed on the steam side of the heat exchanger allowing some of product to be transferred into condensate. *Restricting flow of hot liquids into White Oak Creek.			1
99	Nov. 2, '59	3010 1st floor	Physics	Soldering operation on a H_3 target source resulted in personnel and area contamination.	B		1
100	Nov. 3, '59	Retention Ponds	E and M	Area and personnel contamination as the result of overflow of east pond into west pond.	B		1
101	Nov. 5, '59	3029	Isotope	It was thought that Cs^{137} had been forced out of cell by fall in pressure.	B		1
102	Nov. 11, '59	Laboratory, Parking lot	Operations	Ruthenium fall out over Laboratory area as the result of start up of isotope area stack fan. *Employees allowed to leave Laboratory early for shoe checks at portals.	[illegible]		1
	[illegible]	3019	[illegible]	[illegible]			2
[illegible]	[illegible]	3501	[illegible]	[illegible]			1

BUSINESS-CONFIDENTIAL

[illegible]	[illegible]	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Efforts	Personnel Exposures
106	Dec.10,'59	9207 BT Accelerator	Biology	While repairing H^3 target, personnel and area contamination resulted.	B	1
107	Jan. 6,'60	7500	HRT	While leak testing a feed pump in the cutting tanks, M. F. Products were spread in high bay area. *Employees to Medical for nasal decontamination.	B	2*
108	Jan. 8,'60	9201-2, Y-12	Elect. Fuc.	During clean up of ruptured target at the 86" cyclotron, area became contaminated.	B	1
109	Jan.13,'60	3019 (Cell 6)	Chem. Tech.	Entries of employees into an unknown field of radiation. *Possible near miss.	A	1*
110	Jan.15,'60	3019 (Cell 6)	Chem. Tech.	Installing metal frame door at Cell 6 resulted in area and personnel contamination.	B	1
111	Jan.18,'60	8528 Thorium Oxide Bldg.	Chem. Tech.	Area became contaminated as result of valve on off gas line not being fully open.	B	1
112	Jan.22,'60	4500 (south side of bldg.)	Construction	The main process line servicing the 4500 was broken by construction workers.	B	1
113	Feb. 8,'60	3001	Operations	A removal of a sample from the [illegible] tube resulted in air and area contamination.	B	1
[illegible]	Feb. [illegible],'60	9204-1	Feed	An autoclave fitting burst, [illegible] thorium oxide slurry inside [illegible]	[illegible]	1

Incident Number	Date	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
115	Feb. 9, '60	9204-3	Elect. Nuc.	Employee entered track area above the 63" cyclotron while machine was in operation. *Possible near miss.	A	1*
116	Feb.10, '60	3029	Isotope	Personnel and photographic equipment became contaminated while taking pictures.	B	1
117	Feb.10, '60	9204-1	Reed	A valve that had not been completely closed dumped thorium slurry on floor.	B	1
118	Mar. 1, '60	9204-1	Reed	Hredge lock connector gave way releasing thorium oxide slurry on the floor.	B	1
119	Mar. 1, '60	Burial ground No. 5	M and M	A fire occurred in an open trench in the burial ground.	A	1
120	Mar. 8, '60	3517	Isotope	Employee received high exposure while cleaning scrap from drain trough Cell 11, in Building 3517. *Work restrictions imposed.	A	3*
121	Mar.18, '60	4501	Chem. Tech.	Routine repair of pump in Room [illegible] of Building 4501 resulted in contamination of open bay floor area.	[illegible]	1
122	Mar.23, '60	3508	Chem. Tech.	A glove to a glove box containing [illegible]48 ruptured causing personnel and floor contamination.	[illegible]	1
123	Apr.21, '60	3517	Isotope	Employees became contaminated while [illegible] in Cell No. 19. *Possible [illegible] contamination.	[illegible]	1

Incident Number	Date	Area Involved	Dept. or Division	Description of Incident	Severity of Incident (Refer to Key) Area Clean Up Effort	Personnel Exposures
124	Apr.21,'60	9204-3	Isotope	Personnel contamination of uranium alphas while moving sample between buildings.	A	1
125	Apr.22,'60	2000 R-39	Metallurgy	Oxidizing uranium fell behind steel plate onto exhaust hood causing it to smoulder.	B	1
126	Apr.26,'60	3025	Solid States	A quantity of β and α dust was expelled from Cell 1, Building 3025. *Area shut down for clean up.	D*	2
127	May 1,'60	3019	Chem. Tech.	It is believed that contamination resulted from personnel tracking material from 3rd cycle make-up room.	B	1
128	May 12,'60	9204-3	Isotope	Electrician broke 440 V-circuit to exhaust system in the Pu area. Fans were off for period of two hours. *Possible near miss.	A	1*
129	May 13,'60	3026-C (W. H. Dykes)	Chem.	Container reading 7 r/hr at 4" fell from carrier on trip to burial ground. Employee pushed container into carrier with gloved hand. *Possible near miss.	B	1*

Selected U. S. Radiation Incidents

Site	Date	Incident	Over Exposure
Ames	7/51 8/52	Po release	No over exposures serious enough for hospitalization.
"	"	Th release to sewer	None
Argonne	6/52	Manual Control rod withdrawal	190, 160, 70 r
Argonne	7/52	Ra capsule broke	None
Attleboro	6/58	U fire	None
Berkeley	2/57	Exposure during chemical purifications	(Leukemia fatality)
California	5/58	Source unbeknowest in area was handled by 2 men	Max 81 r (body), 3900 r (hand)
Carnegie Tech	12/56 1/57	Handling irradiated fluorides	30 r total
Connecticut	1/56	Handled source	Max 26 r (body), 3600 r (2 small skin areas)
Eniwetok	5/48	β-ray hand burns	4 burned
Eniwetok	6/56	PuO_2 release from source	None
Hanford	?	Pu contamination from steaming plugged line	None
"	11/51	Chain reaction	None
"	12/51	Pu contaminated waste fire	1-4 g Pu released
"	2/53	HNO_3 contacted solvent and fumes left cell	No over exposure
"	5/53	Handled irradiated Al	Max 3.5 r (body), 330 r (hand)
"	5/54	Pu turnings pot explosion	Slight Pu body burden (4 men)
"	"	Pu turnings fire	($20,000)

Site	Date	Incident	Over Exposure
Hanford	7/54	Pu turnings fire	None
"	12/54	UNH spilled from tank trailer overturning	($59,000)
"	2/55	Pu-contaminated maintenance	1.5 times allowable internal deposition
Hanford	11/55	Ruptured slug fire	None
"	1/56	Rubber gloves deteriorated by Pu solution	100 mg Pu to hands
"	6/56	Pu escape into control room	40,000 d/m α
"	9/56	Pu solution splashed on man	Slight Pu body burden
"	4/57	Torn glove contaminated hand	15 mc Pu
"	2/58	Ag Reactor explosion	($80,000)
"	4/60	Dissolver exploded	?
Hilac	7/59	10^{11} d/m Cm blew out of burst window	2-3 times tolerance
Illinois	1/58	Thumb on source	47 r (thumb)
Kansas City	10/52	U pieces fire	None
KAPL	3/51	N_2 asphyxiation	Fatality (not due to radiation)
"	2/53	Waste drums ruptured	None
"	6/55	Radioactive Na fire	1.7 r max
Kellogg	3/57	Ir-192 pellets dusted	Burned finger
KEWB	1/57	Volatile activity release	None
Los Alamos	6/45	Chain reaction	2 men 66.5 r
"	8/45	"	590 r (fatality), 32 r

Site	Date	Incident	Over Exposure
Los Alamos	5/46	Chain reaction	2044 r (fatality), 7 others 35 to 416 r
"	9/48	β-ray ankle burn	1 man
"	2/49	Handled source	40 r hand
"	6/49	U turnings fire	None
"	12/49	Chain reaction	2.5 r
"	3/51	"	None
"	4/52	"	None
"	7/52	β-ray hand burns	1 man
"	12/52	U casting fire	None
"	2/54	Chain reaction	None
"	4/56	β-ray hand burns	1 man
"	6/56	Contaminated blotting paper blown around room	8 involved
"	2/57	Chain reaction	None
"	8/57	Pu processing hood explosion	2 men, 1% of max Pu body burden
"	7/58	Tritium gas release	None
"	12/58	Chain reaction	12,000 r (fatality), 118 r
Massachusetts	10/58	Unshielded source	1.4 r (body), 1000 r (hands)
Miamisburg	12/58	Po inhalation	3.5 times max continuous body burden
Nevada Test	3/55	Entered exclusion area during test	39 r
"	1/56	Sample recovery	28 r max

Site	Date	Incident	Over Exposure
New York	10/57	Calibrated radioactive solution gage	130 r
"	9/58	Surveyed room	0.12 r (body), 162 r (hands)
North Carolina	1/58	Handled source	725 r (beta) arm
NRTS	1/55	Air contamination (ICPP)	324 d/m/5 ml (no serious)
"	7/55	Radioactive particle entered ear	Not detectable
"	11/55	Reactor meltdown (EBR)	None
"	7/56	Exposed Be plug above water (MTR)	21.5 r max
"	11/58	Ruptured diaphragms (ICPP)	? (contaminated access corridor)
"	11/58	Fuel meltdown (HTRE-3)	None
"	10/59	Chain Reaction (ICPP)	50 r max
Ohio	2/58	Handled source	5588 r (fingers)
ORNL	5/54	Chain reaction	No serious exposures
"	1/56	Dust contaminated construction area	None
"	2/56	Chain reaction	1.5 r max
"	10/57	Man entered high level area	63 r
"	8/58	HRT charcoal bed fire	None
"	11/58	Ru fallout from stack	15 curies Ru-106
"	"	3019 explosion	0.6 g Pu left building
"	"	Release to waste discharge system	55 curies to creek
"	3/60	Handled radioactive debris	2000 r (hand)
"	4/60	Solids swept from hot cell	?

Site	Date	Incident	Over Exposure
Rocky Flats	6/57	Explosion in dry box	Pu lodged in finger (amputated)
"	9/57	Pu fire	None
"	2/58	Ingested activity while changing filters	1/2 body burden
Savannah River	1/53	Evaporator exploded	None
"	12/54	Contaminated waste fire	None
"	6/56	Inhalation radioactive gas	7 r
SRE	6/59	Pressure excursinn washing element	?
"	7/59	Several elements, release I_2 to Na	None
Sylvania	7/56	Th explosion	1 fatality 3 others injured
Utah	6/58	Handled source	3 r (body), 1200 r (hand)
WTR	4/60	Fuel meltdown	None
Y-12	6/58	Chain reaction	8 men 29-461 r
?	?	Entered tritium area	None

Oak Ridge Health Study Document Summary Form

DOCUMENT TITLE: Statistical Breakdown of Incidents at ORNL

DOCUMENT NUMBER OR IDENTIFIER: ——

AUTHOR(S): ——

PUBLICATION DATE: 5/60

DATA TIME PERIOD: Start 2/1/56 Stop 5/13/60

LOCATION OF COPY (if one was made): ALA

CLASSIFICATION CATEGORY: UNK (UNC) OUO UCNI CL* *Category & Level: FRD or RD or NSI; CONF or S or TS

SITE(S) DOCUMENT ADDRESSES: K (X) Y S ORR MELT CLIN WOC WOL POPL EFPC PCE BEAR WATT

SOURCE/LOCATION OF DOCUMENT: X-10 ~~DOE~~ DF : 1960 – Health Physics, Radiation Exposure, Accidents Folder

DOCUMENT CATEGORY

(AI) [DL dr dc da] [ED ea ew es ef] EP [HO hp hr hs hw] IN IP [ST sa sw ss] TM WP

Primary category - circle once; Secondary category (optional) - circle twice. Circle only one in a bracketed group.

DATE ENTERED INTO DATABASE: BY: InMagic No.

KEYWORDS:
incident

ABSTRACT:

Listing of incidents at ORNL from February 1, 1956 to May 13, 1960. Includes the date, area involved, department or division, description of incident, and severity of incident in terms of area clean-up effort or personnel exposure.

REVIEWER: GM Bruce DATE REVIEWED: 3/31/96