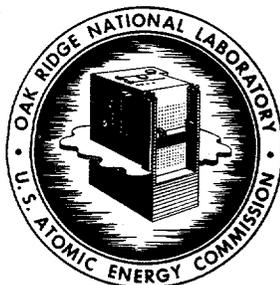


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COPY NO. 38

DATE: August 7, 1963

SUBJECT: LABORATORY FACILITIES - WASTE DISPOSAL
Report for the month of June 1963

TO: Distribution

FROM: L. C. Lasher

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

David R. Hamm 8/9/95
 Technical Information Officer Date
 ORNL Site

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INVENTORY OF TOTAL ACTIVITY DISCHARGED

Table No. 1 gives a summary of the data collected from the sampling stations which monitor the Laboratory waste effluents. Figure 1 shows the physical locations of these stations. The data pertaining to White Oak Dam was provided by the Health Physics Division.

A continued downward trend of ruthenium released from the disposal pit area resulted in a slightly lower total discharge of radioactivity into White Oak Creek (See Figure 2). The strontium release of 0.1 curie was lower than that of the previous month mainly because of a lower discharge from the process waste system. The strontium activity discharged from the Sewage Treatment Plant, Decontamination Laundry, burial grounds, storm sewers and other miscellaneous sources indicated by the difference between the total activity measured at station No. 1 and 2 and the activity measured at station No. 3, was essentially the same as last month.

PROCESS WASTE TREATMENT AND DISCHARGE TO WHITE OAK CREEK

A total of 15.6 million gallons of low-level waste was treated this month. The Process Waste Treatment Plant capacity was exceeded for the third consecutive month, and approximately 0.4 million gallons were discharged to the creek without chemical treatment. The decontamination efficiency of the plant itself improved this month; however, as a result of the discharges of untreated waste to the creek the over-all efficiency of the process waste operation was lower than normal (See Table 2). The main sources of discharges into the process waste system are given in Table 3.

TABLE 1
SUMMARY OF TOTAL LIQUID AND GASEOUS ACTIVITY DISCHARGED

SOURCE	MONITORING STATION NUMBER ¹	ACTIVITY (Curies)			TOTAL ²
		Total Sr	Ru ¹⁰⁶	Cs ¹³⁷	
Liquid Waste					
Process waste to White Oak Creek	1	0.3	< 0.03	< 0.1	0.3
Miscellaneous discharges into White Oak Creek from east end of plant	2	0.05	No Analysis		0.05
Total discharge from Bethel Valley area to White Oak Lake	3	0.5	0.04	0.03	0.6
Total discharge from Melton Valley area to White Oak Lake	4	0.01	0.002	0.002	0.01
East waste pit seepage to White Oak Lake	5	0.0003	49.	< 0.002	50.
West waste pit seepage to White Oak Lake	6	0.0003	13.	< 0.002	13.
Total discharge to White Oak Lake	3,4,5,6	0.5	62.	< 0.1	64.
White Oak Dam to Clinch River	7	0.47	14.07	0.09	15.81
Gaseous Waste ³					
3039 Stack	8				13.7
3020 Stack	9				0.1
3018 Stack	10				< 0.1
Total gaseous waste discharged to environment					13.8

¹ Refers to Fig. 1

² Includes other nuclides not listed here

³ Activity primarily I¹³¹ as noted in text

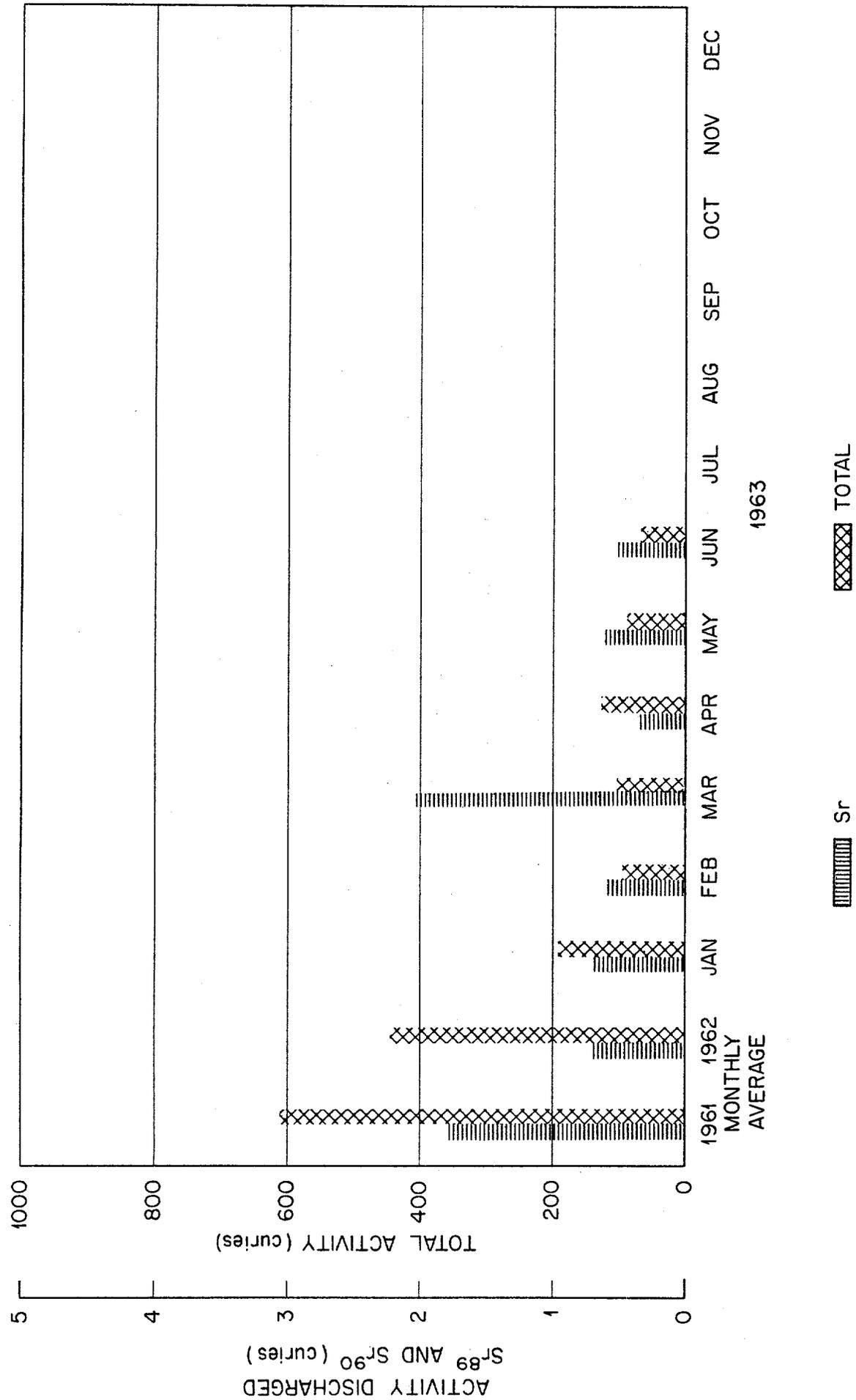


Fig. 2. Liquid Activity Discharge to White Oak Creek.

TABLE 2

PROCESS WASTE TREATMENT AND DISCHARGE TO WHITE OAK CREEK

WASTE VOLUME TREATED THIS MONTH: 15.6×10^6 gal

TOTAL WASTE VOLUME DISCHARGED
TO WHITE OAK CREEK THIS MONTH: 16.2×10^6 gal

NUCLIDES	PLANT INFLUENT	PLANT EFFLUENT AND SETTLING BASIN DIS- CHARGE	PERCENT REMOVED BY TREATMENT PLANT AND SETTLING BASIN
Total Sr ¹	1.3 curies	0.3 curies	77
Ru ^{103,106}	< 0.3 curies	< 0.03 curies	--
Co ⁶⁰	None detected	--	--
Cs ¹³⁷	0.3 curies	< 0.1 curies	--
TRE	Not significant	--	--
Gross Beta	34 c/m/ml	9 c/m/ml	74

¹Past analyses indicate that "Total Sr" is greater than 90% Sr⁹⁰

TABLE 3
PROCESS WASTE DISCHARGES

SOURCE	GROSS BETA ACTIVITY AVERAGE, c/m/ml	GROSS BETA ACTIVITY*		VOLUME	
		CURIES	% OF TOTAL	GAL x 10 ⁶	% OF TOTAL
1. Reactor Operations and Decontamination Facility	6	0.246	47	3.0	20
2. Radioisotopes Processing Area	8	0.056	11	0.5	3
3. Buildings 3503 and 3508	6	0.114	22	1.4	9
4. Buildings 3025, 3026 and 3550	3	0.066	13	1.6	10
5. Building 3019	3	0.021	4	0.5	3
6. Fission Products Development Laboratory	5	0.015	3	0.2	1
7. 4500 Area	None detected	--	--	7.9	51
8. Building 3525	None detected	--	--	0.4	3

*Approximation - The method of analysis in determining gross beta activity is not sensitive to energies below that of Sr⁹⁰.

Figure No. 3 compares waste volumes on a monthly basis.

INTERMEDIATE-LEVEL WASTES

A total of 408,000 gallons of waste was pumped to the disposal areas. This abnormally high volume (See Figure 3) resulted primarily from process operations initiated at Building 3019. An excessive volume of waste was also received from the Radioisotopes Processing Area. The distribution between the trenches was as follows:

1. Trench No. 7-A	109,200 gallons
2. Trench No. 7-B	120,000 gallons
3. Trench No. 5	178,800 gallons

Major contributors to the system are enumerated below:

1. Building 3019	107,910 gallons
2. Radioisotopes Processing Area	48,746 gallons
3. Fission Products Development Laboratory	31,697 gallons
4. 4500 Complex	24,375 gallons
5. Reactor Complex	19,545 gallons

An inventory of radioactivity transferred to the disposal area is recorded on Table No. 4.

CREEK MONITORING

There was no accidental discharge of radioactivity into White Oak Creek during the period.

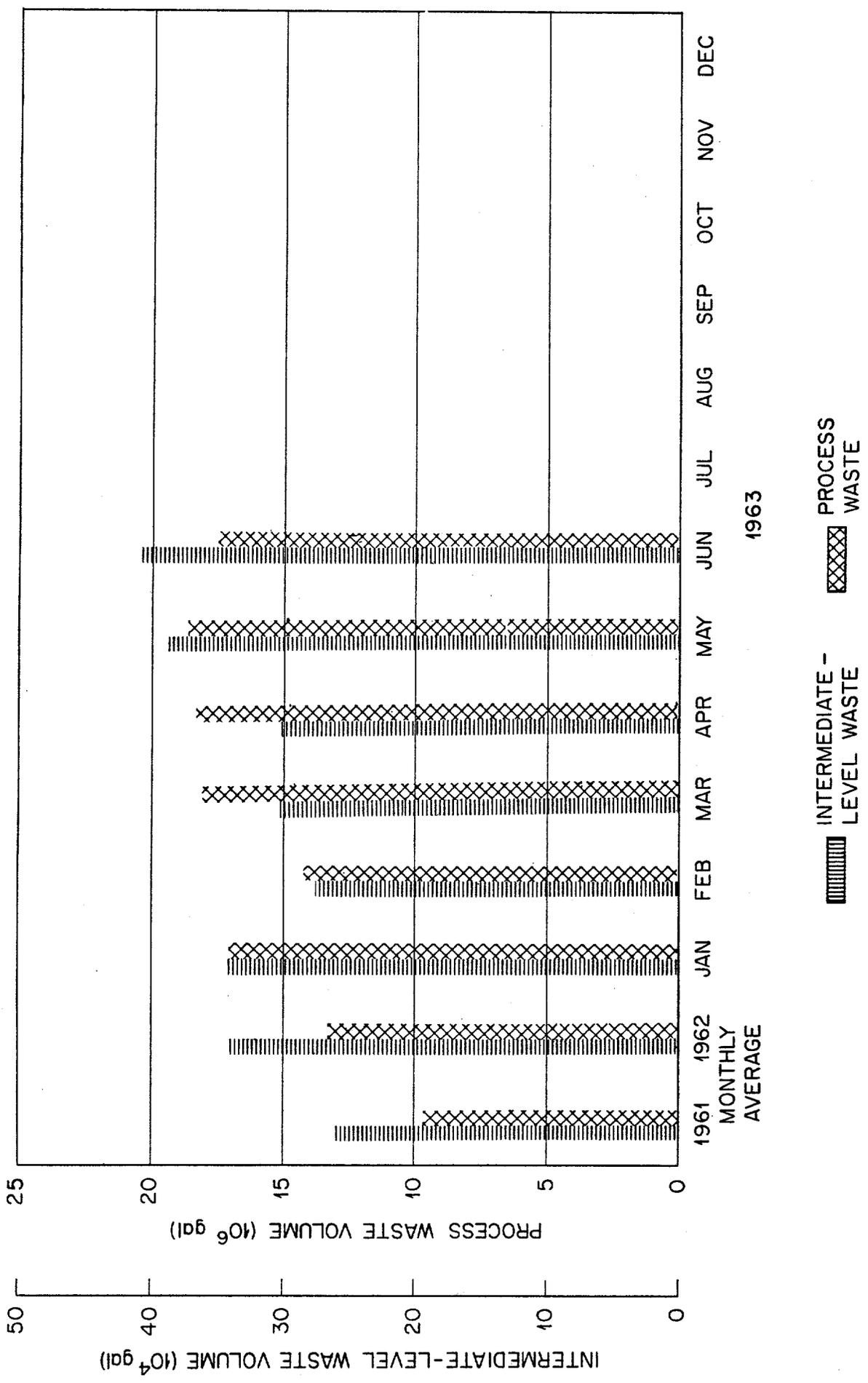


Fig. 3. Liquid Waste Volumes .

TABLE 4

ACTIVITY TRANSFERRED TO PITS AND TRENCHES

Nuclide	Trench No. 5, Curies			Trench No. 7-A, Curies			Trench No. 7-B, Curies		
	This Month	Year to Date 1962	Total to Date	This Month	Year to Date 1962	Total to Date	This Month	Year to Date 1962	Total to Date
Total Sr	360	1,354	2,020	397	714	752	418	798	830
Ru ¹⁰⁶	24	1,274	1,622	17	234	592	18	258	307
Cs ¹³⁷	2,130	16,312	31,061	1,691	10,238	11,826	1,780	11,460	13,128
Co ⁶⁰	36	433	586	37	222	233	39	256	265
TRE	--	608	608	--	--	6	--	--	5
Totals	2,550	17,759	35,897	2,142	11,408	13,409	2,255	12,772	14,793

GASEOUS WASTE SYSTEM

The total release of radioactivity from the stack systems during this month was 13.8 curies, the highest experienced this year to date (See Figure 4). The 3039 Stack discharged 13.7 curies (See Table No. 1); of this amount, 13.6 curies were gaseous I^{131} , released from the Radioisotopes Processing Area. The remainder was particulate activity identified as I^{131} (81 millicuries) and Cs^{137} (55 millicuries).

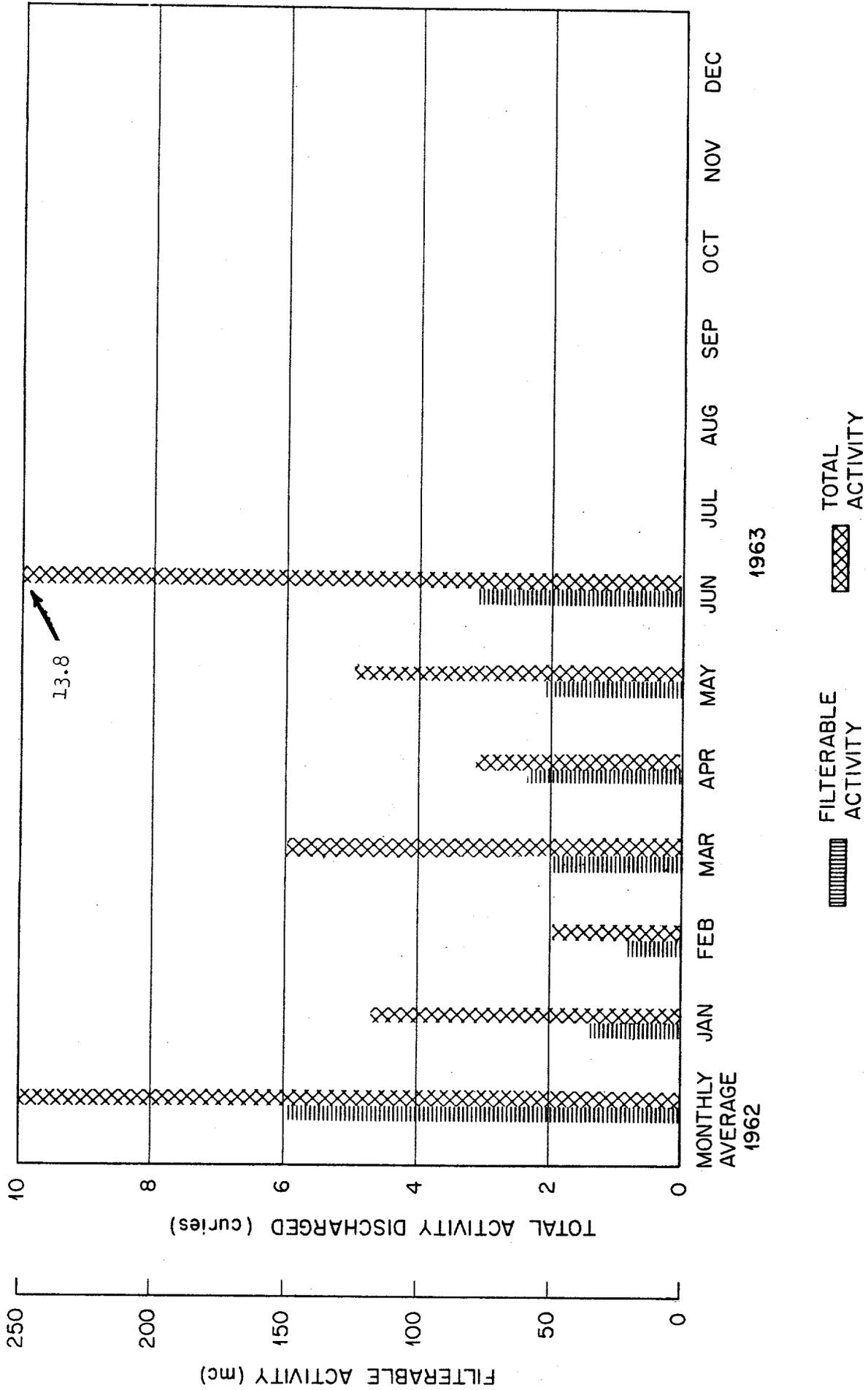


Fig. 4. Gaseous Activity Discharged to Environment.