

Date Nov. 29, 1963R. F. Foster

MONTH OF November, 1963  
 MONTHLY REPORT  
ENVIRONMENTAL STUDIES AND EVALUATION

A. Organization and Personnel

REPOSITORY PNL  
 COLLECTION I-131 Atmosphere  
 BOX No. J Soldat  
 FOLDER N/A

B. Activities1. Environmental Experience

Concentrations of fallout materials in the air of the Pacific Northwest have decreased slowly since August, 1963. The average value for November,  $1 \mu\text{c } \beta/\text{m}^3$ , is the lowest monthly average observed since the USSR resumed testing in the fall of 1961.

Only ~0.2 curie of I-131 was emitted from the Purex stack on November 6, 1963, during dissolution of the remainder of the metal in C-cell dissolver. This metal had been held for decay of the I-131 content since September 2, 1963, when it was inadvertently charged after only eighteen days cooling. The fraction of the metal actually dissolved on September 2, 1963, had also been held for I-131 decay (as a solution in D-cell). Blending of later solution with current process solutions had begun on November 5, 1963, with no noticeable increase in I-131 emission from the Purex stack.

A fire occurred in the Redox Final Concentration Facility (233-S) at about 0130, November 6, 1963 and burned for several hours before being extinguished. In spite of the large amount of plutonium in the facility, no significant environmental contamination resulted outside of the immediate vicinity of the facility. Ground surveys performed outside of the Redox exclusion area and between 200 West Area and the Prosser barricade revealed no detectable contamination (<500 d/m on a portable poppy survey meter). The routine air

filter samples operated in 200 West and 200 East area were changed immediately after the fire. Only the three at the 200 West Area atmospheric monitoring stations (614 Buildings) indicated any increased activity above normal. The laboratory results on these three filters are summarized below.

RESULTS OF 200 WEST AREA AIR FILTERS CHANGED  
ON THE MORNING OF NOVEMBER 6, 1963

<u>Location</u>	<u>Hours of Operation</u>	<u>pc/m<sup>3</sup></u>		<u>Pu</u>
		<u>Gross β</u>	<u>Gross α</u>	
200 West Normal		2-5	0.2-2	<1
Redox	17	19	6.3	5.4
Gate	22	14	1.9	-
West Center	16	15	1.6	-

Nearly 100 vegetation samples were collected in the vicinity of the 200 West Area and along roads between 200 West and the Prosser barricade. Four samples indicated concentrations of gross alpha emitters, 5 to 10 times normal. These were analyzed for plutonium content and the results are summarized below.

<u>Location</u>	<u>Gross α</u>		<u>Plutonium</u>
	<u>Normal</u>	<u>11-6-63</u>	<u>11-6-63</u>
<u>200 West Area</u>			
East End of 10th	0.2-0.7	7	26
Beloit and 13th	0.2-0.7	7	8
<u>Route 4S</u>			
Mile 7 1/2	0.1-0.2	0.8	0.9
Mile 8	0.1-0.2	0.4	0.3

Ground surveys were performed at 200 East Area on November 18, 1963 in connection with the discovery that contaminated tumbleweeds had blown from the vicinity of the B-Plant retention basin outlet ditch to the north 200 East Area fence. The results of these surveys were summarized by G. E. Backman in his monthly report for November.

Approximately 35 millicuries of I-131 and I-132 were emitted from the 325-B stack during day shift on Friday, November 15, 1963. Ground surveys performed around the 325 Building revealed no contamination attributable to the emission. The work responsible for the stack emission was the ignition at 200° C of an irradiated PuO fuel sample from PRTR containing a total of ~2 curies of I-131. A saturated BaOH scrubber had been installed in the off-gas line within the cell and apparently had prevented all but ~5% of the inventory from escaping to the ventilation duct and filters and stack. Radioiodine emission from this stack continued over the week end. A total of 64 mc was emitted between 1730, November 15 and 0930, November 18. Two of the ventilation filters were changed on the morning of November 18, 1963, in an attempt to reduce the

stack emission. A sample of one of these filters, submitted to the laboratory for gamma spectrometric analysis, indicated a total of  $\sim 10$  mc of I-131 had been trapped by the absolute filters.

Environmental Monitoring revised its stack sampling facilities on November 18, 1963, to include a caustic scrubber radioiodine sampler. Charcoal filters will be installed in the 325-B Building ventilation system before any more work of this nature is undertaken.

2. Studies and Improvements

Changes made in the milk and pasture grass sampling schedule this month included the following:

- a. Drop the farm near ~~DELETED~~ due to inadequate milk production.
- b. Drop the farm near Mesa because the owner has sold his herd.
- c. Change the farm near West Richland from daily to weekly.
- d. Drop all fresh pasture grass sampling except the daily location in Riverview because of the onset of cold weather.

3. Research and Development Programs

~~Effect of Reactor Effluent on the Quality of Columbia River Water~~

Mechanisms of Environmental Exposure

~~Nuclear Facilities Monitoring Guide~~

~~DELETED~~ participation in the thyroid uptake experiment ceased on November 5, 1963 when the final count was taken. Between October 10 and November 5 the I-131 burden of ~~DELETED~~ thyroid had decreased from ~2500 picocuries to ~300 pc with about an 8 day half life. ~~DELETED~~ is summarizing the data from this test.

4. Other Items of Interest

Work began on revising the draft of Appendix material submitted last month by A. P. Keene to the IEAE panel on environmental monitoring in emergencies. ES&EO is responsible for furnishing Annex IV on sampling and field evaluation of air, water, soil, milk, crops, etc. and for making suggestions on contamination surveys.

I reviewed the manual of Radiological Design criteria prepared by H. J. Paas, PDCO. My few comments were relayed to the author for consideration.

I submitted material for the ES&EO 1964 goals and advanced planning.

BEST COPY AVAILABLE

*Handwritten notes:*  
J. K. Soldat  
in [unclear]  
7/1

C. Technical Interchange

1. Speeches Given

2. Articles Published

3. Visits and Visitors



J. K. Soldat