May 21, 1973

TO: W. E. Nervik, Division Leader, Radiochemistry

FROM: R. W. Hoff, Radiochemistry Division

SUBJECT: Eniwetok sample analytical program. Progress Report No. 8. Status as of 18 May 1973.

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This progress report summarizes the laboratory analytical effort being carried on at LLL by members of the Radiochemistry Division, Biomedical Division, and Hazards Control Department, at the University of Washington (Dr. Allyn Seymour, Dr. Victor Nelson, Dr. William Schell), at McClellan Laboratory (Col. R. McBryde, Maj. W. Myers), at LFE Environmental (Mr. Leon Leventhal, Mr. William Major), and at Eberline Instrument Corporation (Mr. Eric Geiger, Mr. Ernest Sanchez).



I. Initial processing.

Soil, sediment, and core samples:*

Estimate 2,925 soil samples to be processed.

Collected 224 sediment samples - initial processing complete.

Collected 165 core samples - initial processing complete.

Initial processing (LLL, Bldg. 412) - samples in process or completed; cumulative number includes soil, sediment, and core samples,

as of 18 May 1973 - 3,300
as of 4 May 1973 - 3,020
as of 20 April 1973 - 2,700

Current rate for completed samples: 180 samples per week.
This effort is close to completion. However, we need to check carefully that all necessary samples have been given initial preparation. In addition, there will be a number of duplicate samples canned for gamma analysis.

*The sediment and core samples were collected from the lagoon floor.

Fish samples (441 samples to be processed; breakdown - 407 fish, 28 seawater filters, 3 algae, 2 sediment, 1 coral):

Initial processing phase at UW, Seattle, complete as of 23 February 1973.

Dried samples subsequently dry-ashed at LLL - 20.

Terrestrial animals, eggs, etc. (estimate 200 samples to be processed):

Initial processing (LLL) - 52 samples completed as of 18 May 1973.

Seawater (58 samples collected):

Chemical separation (LLL) - initial separation chemistry completed as of 18 May 1973.

Initial processing completed on the following samples prior to 20 April 1973:

Vegetation (208 samples)

Plankton (16 samples)

Air filters (61 samples).

II. Gamma counting, precision Ge(Li) detector spectroscopy:

Samples counted and data in computer bank (LLL)

| | 20 April 1973 | 4 May 1973 | 18 May 1973 | |
|---|---|---|---|---|
| Soils | 1387 | 1726 | 2073 | |
| Sediments | 224 | 224 | 224 | complete |
| Cores | 4 | 16 | 51 | |
| Fish | 384 | 401 | 407 | complete |
| Algae | 1 | 2 | 2 | |
| Seawater (Hydroxide fraction) | 0 | 28 | 52 | |
| Plankton | 6 | 16 | 16 | complete |
| Coral | 1 | 1 | 2 | |
| Vegetation | 89 | 158 | 208 | complete |
| Air Filters | 27 | 61 | 61 | complete |
| Animals, birds, eggs, etc. | 0 | 0 | 24 | |
| TOTAL | 2123 | 2633 | 3120 | |

III. Chemical analyses, samples dissolved and elements isolated chemically:

McClellan Laboratory (MCL) - The analytical work at MCL was begun in December 1972.

| | 20 April 1973 | 4 May 1973 | 18 May 1973 |
|---|---|---|---|
| Samples received (18 May - 943 soils, 208 sediments, 20 fish, 55 air filters) | 1086 | 1224 | 1226 |
| Data reported on $^{90}Sr$ and Pu (18 May - 582 soils, 208 sediments, 24 air filters) | 662 | 703 | 814 |
| Chemistry complete, samples counting | 244 | 263 | 248 |
| In process | 180 | 258 | 164 |

LFE Environmental Analysis Laboratory (LFE) - The analytical work at LFE was begun on March 5, 1973.

| | 20 April 1973 | 4 May 1973 | 18 May 1973 |
|---|---|---|---|
| Samples received | | | |
| Soils | 615 | 615 | 615 |
| Sediments | 3 | 3 | 3 |
| Fish | 4 | 4 | 5 |
| TOTAL | 622 | 622 | 623 |
| Pu data reported | | | |
| Soils | 64 | 123 | 289 |
| Fish | 4 | 4 | 4 |
| Sr data reported | | | |
| Soils | 47 | 101 | 250 |
| $^{55}Fe$ data reported (analyses required only on fish samples) | | | |
| Fish | 0 | 4 | 4 |

Eberline Instrument Company (EIC) - The analytical work at EIC was begun on April 2, 1973.

The plutonium results reported by EIC look quite reasonable. Eight control samples gave results which agree well (within 20%) with values measured at other labs.

| | 18 May 1973 |
|---|---|
| Samples received - soils | 220 |
| Pu data reported | 54 |
| Sr data reported | 0 |

University of Washington, Seattle (UW) -

Analysis of a set of 12 selected fish samples for $^{239}Pu$, $^{90}Sr$, and $^{55}Fe$ is in progress at UW and MCL. Data will be compared to assure accurate calibration of tracers, etc. Ashing has been completed on many of the 188 fish samples to be handled at UW; $^{55}Fe$ analyses have been performed on these samples. Analysis for plutonium has presented some problems with chemical yield. These problems have been worked out and they will proceed with the calibration samples.

A progress report will be issued every two weeks.

Richard W. Hoff

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