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MONTHLY PROGRESS FOR JUNE. DISTRIBUTION OF As, Cd, Hg, Pb, Sb, AND Se DURING SIMULATED IN-SITU OIL SHALE RETORTING

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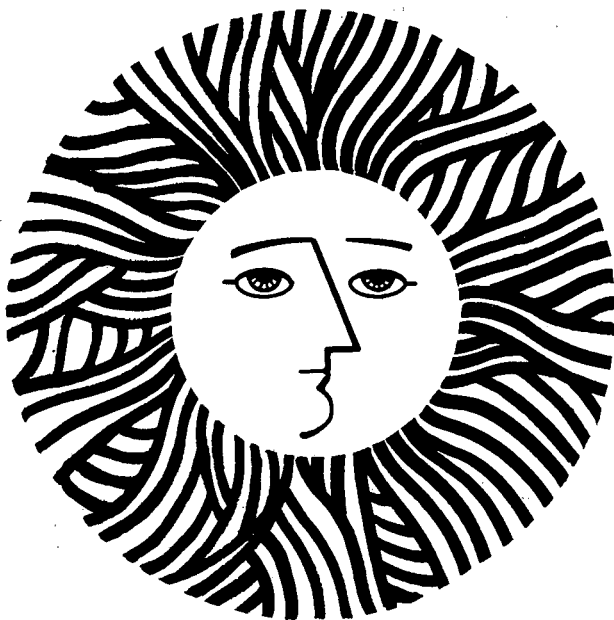
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July 23, 1981

TO: Pat Fair
FROM: Al Hodgson
RE: Monthly Progress for June
Distribution of As, Cd, Hg, Pb, Sb, and Se During Simulated
In-Situ Oil Shale Retorting
LBID-421

TASK 4. LABORATORY PARTITIONING STUDIES

The second retort experiment to investigate Cd partitioning was conducted in June. The primary objective of this experiment, LBL-09, was to further evaluate the atomic absorption apparatus used for the direct determination of Cd in retort offgas. The secondary objective was to evaluate several bubbler solutions for collection of Cd and other trace elements from retort offgas. The starting material for LBL-09 was spent shale from LBL-06 which had been retorted to 500°C in N₂. The use of this material reduced the time required for the experiment and for cleanup and did not interfere with the objectives.

Offgas flow rate to the burner of the atomic absorption spectrometer was determined by pressure drop along a length of heated capillary tubing. Offgas Cd was quantified by the method of additions used in experiment LBL-08. Cadmium was detected in the offgas as a single peak which evolved over a retorting temperature range of approximately 775 to 885°C. This peak accounted for only 2% of the total Cd in the starting material. Washing the stainless steel lines between the retort and the spectrometer with dilute acid resulted in the recovery of 14% more of the original Cd, leaving 77% unaccounted for.

The strategy for the next retort run is being developed. In this experiment, we plan to determine the quantity of offgas Cd in particulate form at the immediate exit of the retort.

The report of the results of the Hg retort experiments is complete. It will be circulated for review in July.

TASK 5. FIELD STUDIES

Preparations are in progress for taking the Hg gas monitor to the Rio Blanco development site on lease tract C-a for use during the burn of retort 1. This work is being done in collaboration with Jon Fruchter's chemical characterization group from Battelle Pacific Northwest Laboratory. Our plans are to monitor retort offgas during the final weeks of the burn to determine if elevated offgas Hg levels occur during this period. The gas monitor results will be compared with results obtained with Au amalgamation columns.

PROJECTED WORK

Retort experiment LBL-10 is currently scheduled for late July or early August. The EPA quality assurance samples will be analyzed in July. Preparations for the Rio Blanco Field Trip will begin to require increased effort while the overall effort during July and August will be reduced due to staff vacations.

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