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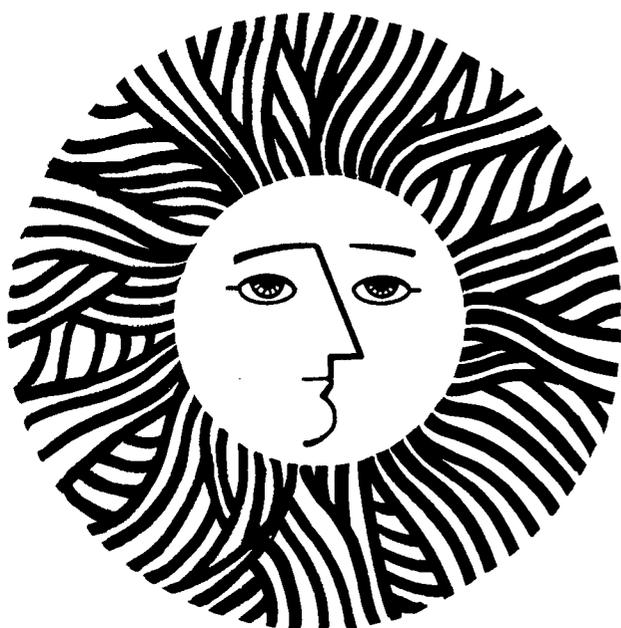
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LBID-334
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January 14, 1981

TO: Charles Grua

FROM: Amos Newton and Phyllis Fox

RE: December Monthly Progress Report
Environmental Effects and Controls for Coal-Water Systems
LBID-334

EFFECTS OF TYPE OF COAL

Previous reports have shown that there are significant differences in the absorption of phenols and polynuclear aromatic hydrocarbons by coal in slurries made with different types of coal. Whether these differences are due to different rates of sorption by the various types of coal, or whether they are due to differences in the absorptive capacities of different coals for various compounds has not been determined.

Black Mesa coal was slurried with water spiked with added phenolic compounds and polynuclear aromatic hydrocarbons. Some slurries were centrifuged immediately after preparation and other slurries were allowed to stand overnight in the presence of slurried coal before separation of the coal slurry water by centrifugation. In all cases an internal standard of perdeuterophenol was added to the slurry water before methylation and extraction. No differences were observed in the results. The experiments were ambiguous in that no PNA's or methylated phenols were observed in any of the waters. The lack of a positive signal of phenol or of the internal standard, perdeuterophenol, indicates that the method for determining phenols was not under control. These and further experiments showed that the system was generating methyl esters of mixed fatty acids. These were traced to the use of glassware which had been washed in a soap solution. It was not, however, confirmed that the traces of soap were the cause of the failure to methylate any phenols, including the perdeuterophenol internal standard, which might have been present.

These experiments to evaluate the effect of contact time between coal and the slurry water will be repeated.

Experiments are being planned to separate and determine by head-space analysis, any volatile compounds which might be products of coal slurry formation.

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