Title

MONTHLY PROGRESS REPORT FOR JULY. ENVIRONMENTAL EFFECTS AND CONTROLS FOR COAL-WATER SYSTEMS

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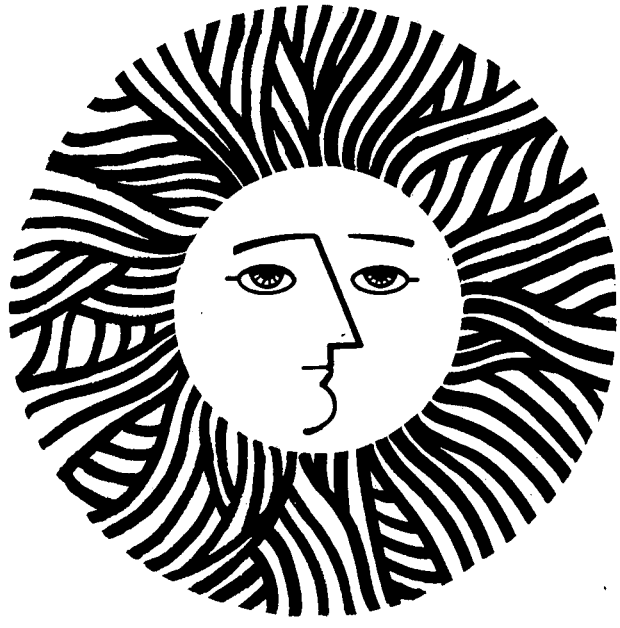

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August 25, 1981

TO: Charles Grua

FROM: Amos S. Newton

RE: Monthly Progress Report for July
Environmental Effects and Controls for Coal-Water Systems
LBID-434

Effect of coal slurry water standing over slurried coal for 1 month.

Coal slurry water from Wyodak coal has been found to contain about 5 ppb phenol and no other organic compound detectable by GC/MS at a concentration of 1 ppb. Coal slurry water was allowed to stand in contact with coal for 1 month under reducing conditions. It was then analyzed for phenols and total organics using perdeuterophenol, perdeuterohexadecane and perdeuteropyrene as internal standards. As shown in Table 1, in addition to phenol, small quantities of cresols (methyl phenols), dimethyl phenols and ethyl phenol were found in the slurry water. No other compounds were found in the water which could be attributed to the coal.

The alkyl phenols have not been observed in coal slurry water previously. The phenol does not differ significantly from previous reported values in coal slurry water made with Wyodak coal.

Gases in coal slurry water.

Gaseous compounds formed during the formation of coal slurry with Wyodak coal were once again studied. No product except H_2 was found. Some methane should be expected as it is a constituent of most coal seams. No methane was observed but the background of N_2 and Ar (from the air in the rodmill) is large and traces of methane are difficult to observe.

Table 1. Organic compounds found in coal slurry after storage in contact with coal for 30 days.

Compound	Concentration in Water ppb
phenol	4
o-cresol	1.5
m-cresol	1.7
dimethyl phenol[a]	0.7
dimethyl phenol	1.5
ethyl phenol	0.7

[a] Structure 4 of the dimethyl phenol isomers could not be determined

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