

CHARACTERIZATION OF BRAZILIAN COALS

¹R. B. FINKELMAN, ²W. KALKREUTH, AND ¹J. C. WILLETT. ¹U.S. Geological Survey, M. S. 956, Reston, VA 20192, USA; ²Departamento de Geologia, Universidade Federal do Rio Grande do Sul, Av. 91501-970 Porto Alegre, RS, Brasil.

We have undertaken a comprehensive characterization of Brazilian coals from active mines in the state of Rio Grande do Sul, Brazil. The petrographic, chemical and mineralogical characteristics of the coals were determined. Preliminary data indicate that these typically high ash (40-45 wt % ash on an as received basis) coals do not have exceptionally high concentrations of elements of environmental, technologic, or economic interest. X-ray diffraction analysis indicates that kaolinite is the dominant mineral in the low temperature ash with subordinate quartz, minor pyrite and illite, and trace amounts of other minerals. Selective leaching results indicate that many elements (Li, Be, Mg, Al, K, Sc, V, Cr, Rb, Sn, and U) are primarily (50%) associated with silicates such as the clays. Fe, Cu, Zn, As, Se, Sb, Tl, and Pb are associated with the sulfides (pyrite and chalcopyrite were observed by SEM). Ca and Mn are associated primarily with the carbonate minerals (calcite and siderite). Several elements (Co, Ni, Mo, Ba, Sr, Cs, and Rb) have multiple associations. Accessory minerals such as rare-earth bearing phosphates (monazite, xenotime, and others), zircons, and titanium oxides are common. Sodium is in ion-exchangeable sites. Note - This is a preliminary abstract intended only as a placeholder. I will return to my office on September 21 and send you the final version shortly thereafter.