Regulatory Implications Low pH Coal Combustion Products Australian Perspective

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ABSTRACT

Low pH coal combustion products (CCPs) of less than 7 pH units are considered unsuitable for land application in civil projects. Traditional methods used to determine pH in CCPs could provide misleading risk assessments. Using acid sulfate soil (ASS) methodologies we quantified net acidity and therefore risk, and submit this is a valid proposition with which to interpret risk with use of CCPs for land applications. We propose that risk of acidity potential to the surrounding environment when quantified by values derived from either a chromium reducible suite or a SPOCAS assessment can confirm a low risk or no risk. We suggest that identifying sulfur-based acidity identifies the low risk of sulfidic acidity for coal ash materials generally, which is a correct representation for the oxidation process of coal combustion. By SPOCAS analysis, we identified that a low pH CCP of less than pH 7 was not generally indicative of a net acidic risk potential. The implication of this method of assessment to regulatory exemptions, in the context of application to land under various state regulations and approvals, is this is more informative than a determination of pH value. Another investigation mixed low pH CCPs with acidic and alkaline quarried materials to evaluate the overall pH of the combined materials at various percentages. The results confirmed that low pH CCPs when blended with alkaline road base it remained alkaline. Where CCPs were blended with commercially used acidic road base it remained acidic. It can be concluded that the pH nature of a road base was the key determining factor, suggesting low pH CCPs had little or no influence on the resultant pH of the road base material. This paper discusses these risks in the context of application to land as part of general approvals granted under various state regulations and approvals.