



## Radionuclides in Sediments from Port Phillip Bay, Australia

Smith J D, Tinker R A and Towler P H

Marine Chemistry Laboratory, School of Chemistry, University of Melbourne,  
Parkville 3052, Victoria, Australia

Sediment cores were collected from two sites in Port Phillip Bay, Australia, in 1994 and 1995. The concentration of  $^{210}\text{Pb}$  and parameters including water content were measured. The sites chosen were near the centre of the bay where fine sediment accumulates, and towards the northern end of the bay closer to the mouth of the Yarra River. The mid-bay sediment had a high water content (about 1.8 g water per g dry sediment) and a supported  $^{210}\text{Pb}$  activity of about 22 mBq per g of dry sediment. The sediments from further north in the bay were more consolidated, with a lower water content (about 0.6 g water per g dry sediment), and had a supported  $^{210}\text{Pb}$  activity of about 6 mBq per g of dry sediment. Unsupported  $^{210}\text{Pb}$  occurred to depths of about 10 cm in the mid-bay sediment and about 20 cm in sediment from further north in the bay. Models incorporating the water and  $^{210}\text{Pb}$  contents of the sediments were used to calculate possible rates of sediment accumulation and mixing. The distribution of other radionuclides was used as an aid in understanding the sediment behaviour in Port Phillip Bay.