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Polychlorinated biphenyls (PCBs) in sediments of four harbours in Guam

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Although polychlorinated biphenyls (PCBs) were only commercially manufactured for about 50 years, their unusual versatility for certain purposes coupled with widespread use and improper disposal have resulted in global contamination (Hutzinger et al., 1974; Atlas et al., 1986). PCBs can enter the marine environment from leakages, urban runoff, dumped sewage sludge and industrial discharges (Connell and Miller, 1984). Once in the aquatic environment, PCBs, by virtue of their low water solubility, quickly become associated with particulate matter and ultimately end up in bottom sediments. PCBs, as hydrophobic compounds, are readily accumulated in the fatty tissues of

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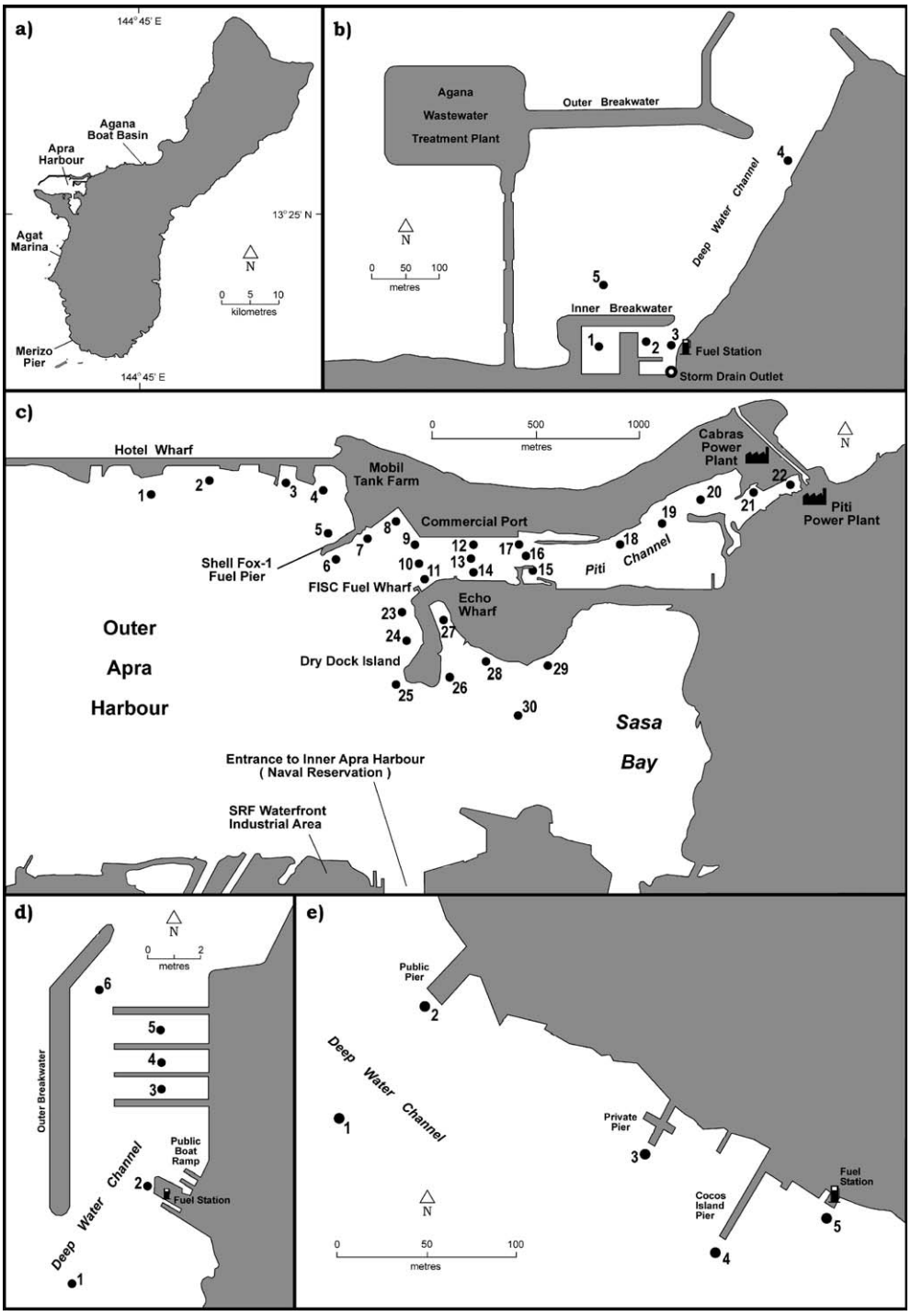

Fig. 1. (a) Locations of harbours studied on Guam and sediment sampling sites at (b) Agana Boat Basin, (c) Outer Apra Harbour, (d) Agat Marina and (e) Merizo Pier.

many organisms often reaching alarming concentrations in predatory species at the head of food chains (Wasserman et al., 1979). Concern over the immunosuppressive and endocrine disruptor effects of PCBs has promoted widespread interest in the extent of pollution caused by this group of compounds.

Guam (13°28′N, 144°45′E) has been the major shipping centre in Micronesia for about 400 years, but there have been few studies of the impacts on the coastal environment of such activities. This paper reports on the first major study of PCBs in the sediments in four harbours in Guam. The four harbours (Fig. 1a) were selected on the following

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