

## Understanding the major sources of microplastic pollution in Victorian inland waters helps to develop effective management strategies

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Litter, such as plastic disposal bags, packaging and bottles (macroplastics), are common pollutants in our inland waters and oceans. They can be ingested and kill seabirds and other marine animals. Smaller sized plastics (<1mm) or microplastics (MPs) are less visible to the public, but they are ubiquitous throughout the oceans and pose a serious threat to marine ecosystems. Some MPs are present in personal care products and their presence in treated sewage and biosolids has been of concern to regulators and water authorities. Macroplastics can also fragment into MPs and can be a significant source of pollution. Rivers receive MP pollution from the catchments and transport it to bays and oceans. Until recently, little was known about the amount and major sources of MP pollution in Australian inland waters. Our research has described the amount and types of MPs present in surface waters and sediments in rivers, wetlands and estuaries in the Melbourne area. They have also been found in freshwater fish and shrimp, the latter which has been used as a biomonitor of MPs in rivers and wetlands. A mixture of MP types was detected in roadside dust, indicating many diffuse sources of pollution. Dust from urban areas contain more MPs than those present in agricultural areas. Furthermore, industrial estates are a larger source of this pollution compared to residential areas. The amount of MP pollution in Victoria is generally low compared to what has been reported in other countries. Recent actions to reduce the use of MP beads in personal care products and the use of disposable plastic bags will reduce MP pollution in Australia. Greater efforts to reduce littering of plastics and more programs to remove litter will also substantially reduce MP pollution in our freshwater and marine environments.