

Iodine-131 and technetium-99: sewerage plume tracers?

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The radioisotopes ^{131}I and $^{99\text{m}}\text{Tc}$ are frequently used in diagnostic and therapeutic medical procedures. Waste products associated with these procedures are typically discharged to the sewer. Gamma spectrometry of passive bioaccumulators collected in the vicinity of a local sewerage treatment plant outfall have shown that the concentration of these, plus other medical radionuclides, is significant (e.g. ^{131}I in macro algae, $1\text{ kBq}\cdot\text{kg}^{-1}$). A pilot study based in Brisbane, Australia suggests that the discharge of these waste products and their progeny into the Brisbane River may provide a sensitive means of mapping the sewerage plume distribution within the river and nearby Moreton Bay.