

Abstract

We have developed a bioaccumulation model to estimate the concentration of hazardous chemicals accumulated in marine organisms. In this study, we applied this bioaccumulation model to estimate the concentration of radioactive materials in coastal fish. Target substances were radiocesium (^{134}Cs , ^{137}Cs) and the target fish were Japanese whiting (*Sillago japonica*) in Tokyo Bay. The radiocesium concentrations in sediments and fish were examined by field sampling on July 3 and August 9, 2012 in Tokyo Bay. The time course of radiocesium concentrations in Japanese whiting after the Fukushima Daiichi nuclear disaster was simulated using the model. Our model showed that good results were obtained by using the assimilation efficiency parameter of 10–20%, and radiocesium concentrations in Japanese whiting were about same as the levels recorded in the field sampling (517 days after the disaster). In the Edogawa River and the Arakawa River estuary, where high radiocesium concentrations were observed in sediments, Japanese whiting showed accumulations of ^{134}Cs and ^{137}Cs estimated at 5.0 Bq/kg-wet and 6.5 Bq/kg-wet, respectively.