Coastal and marine ecosystems, biology and ecology

Radioactivity Of Organisms By The Fdnps Accident

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The wide area of the eastern Japan was contaminated by the radioactive nuclides released from the FDNPS accident. The radioactive nuclides precipitated on the surface and it transported through water system to aquatic environment. In this study, the radioactive pollution of fish in coastal sea and pond in eastern Japan was investigated in order to reveal the behavior of the radioactive nuclides in the aquatic ecosystem. The radiocesium (Cs134 and Cs137) in fishes collected from Tokyo Bay were analyzed. The radiocesium in goby were detected from 0.2 to 31.3 Bq/kg. Trace amounts of a short half-life nuclide Ag110m were also found in shellfish. The radiocesium in the Tokyo Bay sediment were ranged from 90 to 870 Bq/kg. Though the radioactive pollution was spread in Tokyo Bay, the fishes were not yet contaminated. The radiocesium derived from the FDNPS accident was also detected in tuna collected from Tsugaru Channel between Aomori and Hokkaido. The radiocesium were ranged from 0.4 to 9.8 Bq/kg. The radiocesium was found in spite of Tsugaru Channel separating 450 km from FDNPS, it means that the radioactive pollution widely diffuses. The fishes were collected in Kejo-numa which was a small pond (about 140 km away from FDNPS). In this pond, the relation between the radioactive concentration and age and species of the fishes was analyzed. Despite the same exposure period (15 months), the concentration of radiocesium in the bluegill was increased with the fish age. The radiocesium in the 1-year-old bluegill were 39 Bq/kg, and in the 5-year-old were 85 Bq/kg. Further, the radiocesium in the 5-year-old bass were 129 Bq/kg. It is considered that the difference of the radiocesium concentration by the fish species is because the food habits differ in the carnivorous bass and the omnivorous bluegill. The results suggested that the food chain affected the behavior of radiocesium released from FDNPS in the environmental ecosystem. We would like to thank the staff of Ecopal Kejo-numa for their help with the sampling.