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Variation in the transfer of radionuclide to freshwater fish: phylogeny or feeding strategy?

For both terrestrial vascular plants and marine organisms it has been demonstrated the differences in radionuclide transfer between species can be related to their evolutionary history or phylogeny. Relationships between phylogeny and radionuclide transfer offer a potential approach to help to derive best estimate values if data for a given species-radionuclide are not available.

In this paper we describe the analyses of data for radionuclide transfer to freshwater fish from a data base recently compiled to support activities of both the IAEA and ICRP. There are sufficient data in the database to test the hypothesis that radionuclide transfer can be related to the evolutionary of freshwater fish for caesium, strontium and uranium. For instance, the database contains 750 entries for caesium considering nearly 70 species of fish. Initial results indicate that phylogeny does explain some of the variation in radionuclide transfer between species of fish. However, feeding strategy also explains variation in radionuclide transfer between species. In this paper we will compare our results to establish if phylogeny or feeding strategy is the most useful predictor of radionuclide transfer to freshwater fish.