The Radioactivity Levels in Rapana Thomasiana thomasiana from the Bosphorus and Black Sea after the Tchernobyl Accident

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Some papers have been published on the occurrence of Tchernobyl radionuclides in the marine environment of the Black Sea (Topcuoglu et al., 1988a; Guven et al., 1990). Radioactivity measurements in some bioindicator marine organisms, particularly those living beneath the sediments were made in order to correlate radionuclides concentration in the organisms with those in the sediments.

The shellfish Rapana thomasiana thomasiana (Gross) was collected from the Bosphorus and Black Sea during the period 1986-1988. The wet weight was determined for all samples. Prior to radioactivity analysis, the soft parts of the animals were dissected. All samples were pooled, freeze-dried for several days to a constant weight and counted.

Table 1. Radioactivity levels in the soft parts of R.thomasiana thomasiana (Bq g^{-1} dry weight). To convert these units to wet weight divide by 4.

Coll. date	Location	^{134}Cs	^{137}Cs	^{106}Ru	^{110m}Ag	Tot.ß
1986						
July	Fatsa	0.009±0.005	0.029±0.003	0.143±0.030	0.005±0.004	0.160
Dec.	Sinop	ND	0.002±0.001	0.019±0.008	0.003±0.002	0.168
Dec.	Fatsa	0.007±0.003	0.027±0.004	0.126±0.043	0.007±0.006	0.157
Dec.	Bosp.	ND	0.005±0.003	ND	ND	0.147
1987						
Feb.	Fatsa	0.006±0.004	0.029±0.015	0.065±0.023	0.013±0.010	0.165
June	Fatsa	0.003±0.002	0.009±0.005	0.041±0.012	0.004±0.003	0.185
June	Bosp.	ND	0.003±0.002	ND	0.003±0.002	0.171
July	Sinop	ND	ND	0.015±0.009	0.005±0.004	0.190
Aug.	Bosp.	ND	ND	ND	ND	0.185
1988						
Feb.	Fatsa	ND	0.007±0.006	ND	ND	0.178
Mar.	Sinop	ND	ND	ND	0.002±0.001	0.163
Mar.	Bosp.	ND	ND	ND	ND	0.167

All samples were counted in February and January 1988.

ND: Not Determined

^{134}Cs activity was detected only in Fatsa samples during 1986 and 1987. ^{134}Cs activity was also detected in Black Sea algae during 1987 (Guven et al., 1990). ^{137}Cs activity in July 1986 was 0.029 Bq g^{-1} in the Fatsa sample, decreasing slightly at the same site in June 1987. At the same time, the ^{137}Cs activity was found at very low levels in both Sinop and Bosphorus samples in 1986. It should be noted that the ^{134}Cs and ^{137}Cs activities were found to be higher in Fatsa samples than at other locations. These results were also in good agreement with our prior work (Topcuoglu et al., 1988b). The deposition of the Tchernobyl radionuclides in hazelnut product was found to be higher in the eastern Black Sea region than in the western Black Sea.

The ^{106}Ru activity in the Fatsa sample in July 1986 was 0.143 Bq g^{-1} and decreased to 0.065 Bq g^{-1} level in February 1987 at the same location. ^{106}Ru was also detected in Sinop samples during 1986 and 1987.

After the Tchernobyl accident, ^{110m}Ag was also measured in marine organisms. In the present work, we also detected ^{110m}Ag activity at low levels, in all samples collected during 1986 and 1987 except in those from the Bosphorus.

^{90}Sr activity was below $1x10^{-4}$ Bq g^{-1} in all samples.

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