

Seasonal variation of some heavy metals in the zooplankton of Izmir Bay

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At the first step in the trophic level of marine environment planktonic organisms absorb pollutants, coming in to the environment from different sources, by being suspended in the medium and by having wide total surface. Directly or indirectly accumulated dissolved materials were then transferred to the human body through food chain as the plankton being prey to the carnivorous organisms (UYSAL, 1975).

Some heavy metals are well-known to be a treat for human life which may consequently be a cause of death (ENGEL *et al.*, 1981; COOPER, 1980; I.R.P.T.C., 1980; MEDINA *et al.*, 1988).

Therefore it had been decided to determine the levels of pollutants accumulated in zooplankton. The samples were collected from 9 stations where the areas effected by domestic and industrial discharges (UYSAL and TUNCER, 1982), in Izmir Bay, by means of plankton nets of 0.5 m diameter and 200 μ m mesh-size (Fig.1). All samples dominantly contain Copepods, Cladocera, obtained in throughout 1989 had been analysed for the Hg, and Cd by using "Atomic Absorption flame spectrophotometer Varian Techtron Model 1250" and calculated as μ g.g⁻¹ wet weight basis (BERNHARD, 1976; UYSAL and TUNCER, 1982).

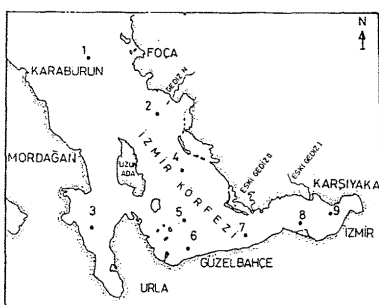


Figure 1. Sampling stations

According to the results of the analysis, it can be seen some changes from Table 1. Hg concentration varied between 0.012 and 1.896 μ g.Hg.g⁻¹ and Cd concentration varied between 0.054 and 16.790 μ g.Cd.g⁻¹. As a result of accumulation levels in these metals, it has been found out that Cd>Hg.

In general, heavy metal concentrations in marine organisms are tending to increase during summer period. Also, considerably high heavy metal concentrations of zooplanktonic organisms during summer period was possibly due to the increased metabolic activity of these organism. As conclusion; it has been necessary to determine the accumulated levels in planktonic organisms because of their importance as first step marine food chain organisms longing up to the human being continuously and periodically.

Table 1. Cd and Hg concentrations of zooplankton samples collected from Izmir Bay.

| Sta. | Metal | Winter | Spring | Summer | Autumn |
|------|-------|--------|--------|--------|--------|
| 1 | Hg | - | 0.646 | 1.896 | 0.235 |
| | Cd | - | 0.984 | 0.214 | 0.790 |
| 2 | Hg | 0.106 | - | 0.207 | 0.024 |
| | Cd | 0.271 | - | 0.237 | 0.622 |
| 3 | Hg | 0.366 | 1.105 | 0.721 | 0.089 |
| | Cd | 0.419 | 4.210 | 0.329 | 0.245 |
| 4 | Hg | 0.272 | 0.078 | 0.630 | 0.035 |
| | Cd | 0.484 | 0.158 | 0.320 | 0.265 |
| 5 | Hg | - | 0.195 | 0.440 | 0.035 |
| | Cd | - | 0.248 | 16.790 | 0.336 |
| 6 | Hg | 0.080 | 0.071 | 0.239 | 0.121 |
| | Cd | 0.122 | 0.180 | 0.182 | 0.278 |
| 7 | Hg | 0.105 | 0.052 | 0.213 | 0.012 |
| | Cd | 0.160 | 0.411 | 0.054 | 0.077 |
| 8 | Hg | 0.140 | 0.082 | 0.229 | 0.066 |
| | Cd | 0.106 | 0.126 | 0.174 | 0.416 |
| 9 | Hg | 0.140 | 0.065 | 0.538 | 0.022 |
| | Cd | 0.106 | 0.049 | 0.205 | 0.071 |

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