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### **Author's Reply**

First of all, a very important misconception concerning the sampling material should be clarified. The sampling material of this study was bottom-surface sediment samples, not water samples, as mentioned in the Comments. Surface sediments covering the very top of the sea bottom are mainly composed of materials which derive from land (both from riverine input and anthropogenic discharges), atmosphere, biological activities (dead and living organisms) occurring in the water column and from sediment-water interaction (authigenically). Erosion-transportation-deposition-resuspension-reworking processes constitute the continual sediment dynamics and sedimentation cycle in the marine environment. On the whole, the Sea of Marmara and the Turkish Strait System, oceanographically (chemical, physical, geological and biological oceanography) represent both the Black Sea and Mediterranean marine realm. However, the implications of this complex exchange system cannot be simply detected from the depth of the surface sediments. From this point of view, surface sediment samples collected in this study are not “uppermost water samples representing the chemical composition of the Black Sea”, and hence their depth and “sampling period” cannot be simply related to the Black Sea waters. The seasonal variations in the oceanography of the Sea of Marmara and Strait of İstanbul are much more complicated, compared to simple precipitation information (Ünlüata et al., 1990; Beşiktepe et al., 1994; Özsoy et al., 1996).

The replicated sample measurements have been shown in Table 1 under the “Sampling and Analytical Methods” subsection, to show the precision of the analyses, not for comparison with other studies. The mean values in Table 3 clearly denote the results of

the two different sampling periods. The comparisons with “four previous studies” in Table 4 (in fact, six studies) were based on their range, not mean values, with the exception of those of Ergin et al. (1991). This previous study in the same area was also discussed in page 44, for agreements and disagreements between the results.

The two sets of measurement results belonging to the same sampling localities were compared by F-test and were also shown in Figure 4, after normalizing with aluminium. In this sense, the “sub-samples” criticism may possibly have arisen from another misunderstanding, and therefore is not relevant here. Similarly, the criticism concerning the lack of “sampling randomisation” appears to be strictly statistical and irrelevant to the content of this study.

It is important to stress that this was a geochemical study based on the spatial and temporal distributions of some geochemical parameters of the sediments, using some necessary statistical tools, but not a statistical study on analytical technique. The main objective in the selection of sampling locations (Figure 1) was to represent the natural characteristics of the study area and the effect of effluent discharges, in order to detect the natural-marine-geochemical and anthropogenic signals. Several similar geochemical studies can be found in international journals (Baker & Harris, 1991; Brady et al., 1994; Carlota & Vale, 1995; Balls et al., 1992). As it appears in the title of the manuscript, the study mainly concentrated on İstanbul Metropolitan area and no assertion has been made about the pollution of the Black Sea coasts. In addition, there were enough sampling locations in the Black Sea to detect the metal content of the sediments from the Black Sea entrance of the İstanbul Strait.

Reference materials used in this study were di-

gested in the same procedure as that applied to the sediment samples and were measured in AAS in order to determine the accuracy of the measurements. In geochemical experiments, comparison of the measured and certified values of a reference material is the essential way to check the accuracy of analyses (Thompson, 1992). As for the material composition concerns, soil and lake sediment samples are comparable with marine sediments in terms of texture and composition.

The construction and maintenance of effluent discharges are of course under the control and interest of the Municipality of İstanbul. In this case, selection of effluent discharges is not our subject; we can only

show them on the map. Likewise, Figure 1 shows the available effluent discharges in 1996-1998.

From this commentary response, one can easily notice that the criticism in the Comments entirely arise from misconceptions. Pollution studies in the marine environment require knowledge, experience and understanding of the naturally occurring processes. Analytical and statistical techniques are essential tools in scientific research, as long as they are used with proper and sufficient knowledge. Moreover, comments on published studies are more useful if they provide better or different findings in the same study area and/or topic.

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