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The purpose of this study was to establish the background of petroleum hydrocarbons dispersed and dissolved in the surface waters of the Eastern Aegean Sea and Turkish shoreline. The average dissolved and dispersed petroleum hydrocarbons concentrations for the limited numbers of surface waters samples from the Aegean Sea were reported as 0.67 $\mu\text{g/l}$ by SAKARYA (1985). Samples were collected during 1986-1989 for four seasons in the Aegean Sea. IOC/UNEP (1984) manual for monitoring oil and dissolved/dispersed petroleum hydrocarbons in marine waters was used for sampling, extraction and the overall analytical procedure.

Samples were taken at depth of 1 m using a sampler and kept in a dark and cool place on board of the ship, until delivered to the shore laboratory for analysis. The Sea water samples was extracted twice in a separatory funnel with 2x25 ml CCl_4 . The combined extracts were dried with the addition of anhydrous Na_2SO_4 in rotary evaporator. Care was taken to remove all of the carbon tetrachloride (CCl_4) which quenches fluorescence. The residue was dissolved in 5 ml of aromatic free n-hexane and fluorescence measured on a Turner, Model 430 Fluorescence Spectrometer, with 1 cm quartz cell. The intensity of fluorescence was measured at 360 nm (excitation at 310 nm). Chrysene was chosen as an intercomparison chemical for intercalibration of the procedure. The working standards were in the same range as the sea water samples. Blanks and chrysene standards were prepared using the same procedure as that for the samples.

Study area and positions of the sampling stations are given in Fig.1. The coastal and open surface waters showed a concentration range of 0.09 - 25.5 $\mu\text{g/l}$ but most of the results are within 0.09-1.92 $\mu\text{g/l}$ range only a few samples had above 10 $\mu\text{g/l}$ values. Frequency distribution of petroleum hydrocarbons concentrations in samples is given in Fig.2. It was observed during these cruises that the relatively large quantities of dissolved oils were found at the Aegean entrance region of Dardanelles in the northern Aegean Sea. In this area, debalasting, release of wash waters and bilges from tankers and other ships were permitted in the past and has probably still been practiced by many boats today. Dardanelles strait is one of the main navigation route for the Black Sea.

The levels of dissolved dispersed petroleum hydrocarbons at near Aliaga Bay which encloses a large refinery and petrochemicals complex, are relatively high and fluctuate widely. Deliberate oil spill from ships and tankers in addition to the wastes coming from the oil refinery can be considered as the possible cause of the high oil concentrations in the waters of Aliaga Bay.

Therefore, the Aegean waters may be considered unpolluted by dissolved and dispersed petroleum hydrocarbons when compared with the other seas of the world. The petroleum hydrocarbons concentration levels of all obtained results from the investigated area can be considered in the safely limit with respect to National Academy Report (1975).

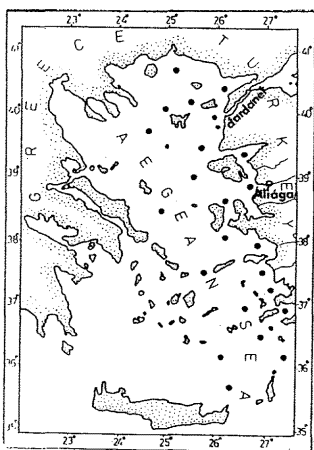


Fig:1 Sampling stations

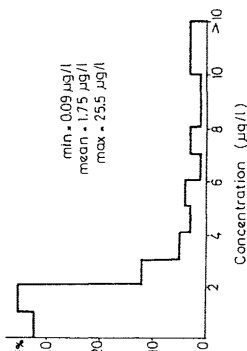


Fig:2 Frequency distribution of DDPH

REFERENCES

- IOC/UNEP, 1984.- Manual for monitoring oil and dissolved/dispersed petroleum hydrocarbons in marine waters and on beaches. *Manual and guide* Nr.13, Unesco Paris.
- SAKARYA M., 1985.- Petroleum Hydrocarbons in the Marine Environments. M.Sc Thesis, *Ins. of Mar. Sci. METU, Erdemli.*