

CHRONIC EFFECTS OF A PCB (DP5) UPON Nereis diversicolor
IN SPIKED MEDITERRANEAN SEDIMENTS

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- ABSTRACT -

The results of two long-term experiments carried out at Monaco during 128 and 218 days respectively, showed that the toxic effects (expressed as LD50) of DP5 in the polychaetes occur at a concentration of about 15 ppm DP5 in the sediment (dry weight), and increase with increasing DP5 concentration. The possible ecological significance of these data is discussed.

- RESUME -

Les résultats de deux expériences de longue durée effectuées à Monaco pendant 128 et 218 jours respectivement, montrent que les effets toxiques (exprimés en DL50) du DP5 sur les polychaètes apparaissent à partir d'une concentration d'environ 15 ppm de DP5 dans le sédiment (poids sec) et augmentent avec la concentration en DP5. La signification écologique possible de ces données est considérée.

The polychaetes accumulated DP5 as both a function of time and of its concentration in the sediment. The concentration factors of DP5 in worms (wet weight basis) were much higher than 1 for naturally occurring levels (CF = 6.6) and for the lowest experimental DP5 concentration (CF = 7.2), but they were approximately 1 or less at higher DP5 concentrations.

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Experimental concentrations of DP5 in the first experiment decreased by 15% during the 128 days period and they all caused toxic effects. LD50 values for worms were 48.5, 45.0, 38.5, 35.0 and 31.5 days for the following DP5 concentrations: 18.7, 40.4, 57.9, 66.8 and 89.6 ppm (dry weight of sediment) respectively. In the control experiment (natural level of DP5 = 0.19 ppm) the equivalent LD50 was 62.5 days. The toxic effects of the DP5 were not found to be a function of worm body weight.

The second experiment, where Lower DP5 concentrations were used, confirmed the previous results. For example, 1.7 ppm DP5 in the sediment produced no toxic effects when compared with the control; 3.9 and 6.5 ppm were slightly if at all toxic. An obvious effect was observed at 14.7 ppm. Again, the body weight of the worms was not a useful indicator of damage to the worm populations.

A comparison of these data with the PCB levels occurring in different parts of the seashore was made, and the ecological significance of the results in this respect is discussed.

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"Chronic effects of a PCB (DP5) upon Nereis diversicolor in spiked mediterranean sediments"

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