FLUORIDE ACCUMULATION IN BARNACLES AND MUSSELS IN THE LAGOON OF VENICE.

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As some industries are likely to discharge fluoride into the Lagoon of Venice, especially in the area of Porto-marghera, a survey was undertaken of the environmental levels of this element. Fluoride concentrations in the waters surrounding the industrial area ranged from 1.53 mg l^{-1} (chlorinity: 16.6‰) to 3.14 mg l^{-1} (15.1‰) and all values exceeded the levels considered normal for seawater having the same chlorinity.

However determination of the fluoride content of water alone tells little about the entrance of this element into food chains. It therefore seemed appropriate to monitor the environment by examining organisms for their ability to accumulate fluoride in tissues. The organisms chosen for this purpose were the crustacean Balanus amphitrite (barnacles) and the mollusk Mytilus gallo-provincialis (mussels). Both species were found to accumulate fluoride in their soft tissues to above-ambient levels. Maximum fluoride concentrations found for barnacles and mussels were 81 $\pm$ 6 $\mu g\ g^{-1}$ and 85 $\pm$ 20 $\mu g\ g^{-1}$ (dry weight) respectively; the concentration factor, calculated as the ratio of mean concentration of

fluoride in dry soft tissue of the animal to mean concentration in water, was of the order of 10^2 for both species. Moreover seasonal variations in soft tissue fluoride concentrations were recorded. These seasonal variations are probably related to the reproductive cycle; in both species the highest fluoride levels were found during the spawning periods, that is in summer in the case of the barnacle and in winter and spring in the case of the mussel.

These species, especially during their spawning periods, are indirectly or directly included in the human diet. Since fluoride can be toxic, more attention should be paid to levels in environments, like the Lagoon of Venice, in the vicinity of highly industrialized comunities in which a large amount of local seafood is included in the diet.