

DOSE TO MAN FROM THE CONSUMPTION OF MARINE SEAFOODS:  
A COMPARISON OF NATURALLY-OCCURRING AND ARTIFICIAL  
RADIONUCLIDES IN FISH AND SHELLFISH

R.J. Pentreath  
MAFF, Directorate of Fisheries Research  
Pakefield Rd., Lowestoft, Suffolk, England

ABSTRACT

The consumption of above average quantities of marine seafoods has for a long time been a characteristic of critical groups associated with the authorised discharge of low-level liquid radioactive wastes into UK coastal waters. Such consumers are also of special interest in other countries discharging low-level radioactive wastes into the sea. The concentrations of artificial radionuclides in these seafoods are routinely monitored, and the resultant committed effective dose equivalent calculated for the purposes of radiological protection.

There is an increasing interest in the epidemiological aspects of risk and dose associated with identified critical groups and those living in the neighbourhood of nuclear facilities, but little attempt is made to consider their total exposure to radiation. In this respect it is of interest to compare such dose assessment with those which could arise from naturally-occurring radionuclides present in seafoods. For example, the concentrations of  $^{210}\text{Po}$  in fish alone could result in about  $0.1 \text{ mSv a}^{-1}$ , depending on the species eaten. In addition there are contributions from, in particular,  $^{226}\text{Ra}$  and the uranium isotopes. The dose resulting from shellfish consumption is less readily calculated. Shellfish have higher concentrations of  $^{210}\text{Po}$  than fish, but the quantities and range of species consumed is much more variable. These factors are discussed in relation to the committed dose equivalents which have been estimated for transuranium and fission product nuclides ingested in the neighbourhood of major nuclear establishments in the UK.