

S01-02 Hair Mercury: Current Methylmercury Exposure in Japan

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Hair mercury concentration is an excellent biomarker to estimate the methylmercury (MeHg) exposure level. To determine the current exposure level in Japan we analyzed total mercury concentrations in hair samples above 20,000 collected from people in 14 districts and from visitors to NIMD. On hair sampling, we collected information about gender, age, fish consumption (species and amount), artificial waving and coloring. Total mercury concentrations were analyzed according to the oxygen combustion-gold amalgamation method using atomic absorption mercury analyzer. Hair mercury concentration was found to show a significant difference between male and female (male > female). Since no difference was observed in the amount of fish consumption between male and female, some contribution of sex hormone to hair uptake of MeHg was speculated. Hair mercury levels also varied with age and among districts. Variation in fish amount accounts for age variation but not regional variation. Tuna has extremely high mercury content among major fish species consumed in Japan, and its consumption rate varies among districts. Districts with high tuna consumption were found to show high hair mercury concentrations. Safe exposure levels, PTWI (provisional tolerable weekly intake), have been suggested by the Japanese Government. Our result showed that about 10% (14% of males, 3% of females) of Japanese were exposed to MeHg above PTWI (3.4 microg/kg/week) for adult. Since the developing fetus has a high susceptibility against MeHg toxicity, the tolerable exposure level has recently been discussed with the focus on pregnant women. We also found that 15% of Japanese females at a child-bearing age (15-49 y) were exposed to MeHg above PTWI (2 microg/kg/week) for pregnant women. Current MeHg exposure in Japan will be discussed with reference to PTWI.

Keywords: Hair mercury; Fish consumption; PTWI