

HUMAN HEALTH EFFECTS OF METHYL MERCURY INCLUDING EXPOSURE FROM FISH CONSUMPTION

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Methyl mercury is neurotoxic. Human poisoning differs depending upon the developmental stage of the brain when exposure occurs. Postnatal exposure causes focal damage to the cerebellum, occipital and Rolandic cortex and presents clinically as paresthesias, ataxia, concentric visual constriction, hearing loss, motor disability and in severe cases death. However, the developing brain is considered especially sensitive since there are reported cases of pregnant women who had either no symptoms or very mild one and whose babies were severely affected by methyl mercury. Prenatal exposure presents as cerebral palsy, mental retardation, seizures and microcephaly. Although multiple episodes of postnatal human poisoning have occurred, only a limited number of prenatal poisonings have been documented. Following the poisoning episode in Iraq, a dose-response curve for prenatal exposure was developed. That curve suggested that peak exposures in the range of 10-20 ppm (measured in maternal hair growing during pregnancy) might adversely affect a child's neurodevelopment. Exposures in this range can be achieved by fish consumption. However, there was no fish consumption in Iraq.

Postnatal and prenatal poisoning by fish consumption has only been documented from Japan (Minamata and Niigata). All of the individuals with documented methyl mercury poisoning had serious neurological disability. No children with mild developmental problems were documented in Japan. Subsequently, several studies have looked for a spectrum of minor neurological findings following prenatal exposure from fish consumption. Some have reported finding associations with low level exposure and others have not. These epidemiological studies are difficult to carry out and to interpret. They and require a great deal of attention to detail. It is presently not clear whether exposures to methyl mercury that are regularly achieved by fish consumption lead to disability or not. The evidence from poisonings in Japan and Iraq and subsequent epidemiological studies from New Zealand, Canada and the Faeroe and Seychelles Islands will be reviewed.