COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT

COT statement on the potential risks from lead in the infant diet: lay summary

1. The Committee on Toxicity (COT) were asked by the Scientific Advisory Committee on Nutrition (SACN) to review the risks of toxicity from chemicals in the infant diet. This statement focuses on possible risks from lead.

2. People are exposed to lead through food, drinking water, air, soil and dust. Food and water are the major sources of exposure to lead, although in infants and small children, ingestion of soil and dust can also be an important contribution. In addition, lead can be transferred to the infant from the mother in breast milk. Exposure to lead in the UK has decreased substantially over recent decades.

3. The proportion of ingested lead which is absorbed into the body is higher in children than in adults. Inadequate intakes of calcium, iron and zinc have been shown to increase lead absorption, and higher levels of fat in the diet may lead to higher blood levels of lead.

4. Absorbed lead is transported in the blood, and then deposited in soft tissues and bone, where it tends to accumulate with age. During pregnancy and breastfeeding, calcium in the mother's bones is released to meet the needs of her baby, and this result also in the release of lead from the bone.

5. Concerns about adverse effects from lead in the diet and environment relate principally to long-term cumulative exposures. The kidney and cardiovascular systems of adults can be adversely affected by lead exposure. However, effects on the brain have been demonstrated at lower levels of exposure, indicating the infant brain is more vulnerable than the adult brain. In particular, there is strong evidence that lead can impair intelligence (as measured by IQ). It has not been possible to demonstrate a threshold level of exposure below which adverse effects on the infant brain are absent.

6. The Committee concluded that assessment of the potential risks from infants' exposure to lead should be made by reference to an exposure value of 0.5 micrograms per kilogram body weight per day, which the European Food Safety Authority (EFSA) had estimated would produce less than a 1 point decrement in IQ. Exposure below this value indicates that the health risk is low.

7. The Committee calculated estimates of exposure of UK infants to lead from different sources and compared them to the exposure value identified by EFSA. Adverse effects will depend on long-term cumulative expousres, which tend to

average out at a lower level (because later exposures are lower). Taking into account the maximum concentrations of lead in drinking water in the UK, the average exposure of infants to lead via drinking water, does not represent a health problem. Similarly, based on the maximum concentration of lead measured in breast milk in a study in UK women published in 2004, exposure of babies to lead via mothers' milk is considered to not represent a health risk.

8. Toxicity will depend on total exposure to lead from all sources so it is important to consider combined exposures from food, water, and also non-dietary sources. Exposures from air are considered negligible, however, there might be some risk from ingestion of soil and house dust where lead concentrations are relatively high.

9. There are uncertainties in the assessment of risks to infants from exposure to lead from epidemiological studies since they may not have accurate exposure assessments, may not have fully taken into account other factors which influence IQ, and may have studied populations not representative of the UK. Moreover, the contribution to exposure from foods not specifically marketed for infants is currently unknown, although information on this may be available soon.

10. Even when allowance is made for these uncertainties, it appears that total exposure to lead is unlikely to pose a material risk to the health of the large majority of UK infants. However, there remains a concern that adverse effects could occur where concentrations of lead in water or soil and house dust are unusually high.

The full COT statement can be found at: http://cot.food.gov.uk/pdfs/cotstatlead.pdf

Lay Summary to COT Statement 2013/02

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