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Bioavailability of Cadmium and its Human Consequence

N. W. Revis

Oak Ridge Research Inst., TN (USA). Research and Development Dept.

Subject

63 RADIATION, THERMAL, AND OTHER ENVIRON. POLLUTANT EFFECTS ON LIVING ORGS. AND BIOL. MAT.; CADMIUM; TOXICITY; DATA COMPILATION; DIET; DISEASES; DOSE-RESPONSE RELATIONSHIPS; HUMAN POPULATIONS; INTESTINAL ABSORPTION; KIDNEYS; TOBACCO SMOKES; ABSORPTION; AEROSOLS; BODY; COLLOIDS; DATA; DISPERSIONS; ELEMENTS; INFORMATION; METALS; NUMERICAL DATA; ORGANS; POPULATIONS; RESIDUES; SMOKES; SOLS; UPTAKE

Description/Abstract

Cadmium intake for the average adult in the USA from water, air and food is approximately 43 ..mu..g/day. This value does not include intake from cigarette smoking or industrial exposure. Intake from these sources would add significantly the total Cd body burden because, Cd absorption via the respiratory track is approximately 10 times the value observed for the gastrointestinal tract. Renal tubular damage is the only human disease in which a dose-response has been established for Cd intake. For renal tubular damage an intake of 200 to 440 ..mu..g/day for 50 years would be necessary to induce this disease in 50% of the exposed population. Thus a safety margin of 10 exists between present intake levels and the amount required to induce renal tubular damage. If animal studies, which show the induction of hypertension following the long-term exposure to drinking water containing 100 ppB Cd, were related to present human intake values of 43 ..mu..g/day the safety margin level would be considerably lower than 10. In contrast, to relate the data from animal studies on cadmium-induced tumors to present human intake values suggest a safety margin greater than 10. 59 references, 4 tables.