

Cadmium in New Zealand's Agriculture and Food Systems

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We summarise up-to-date data on the management of cadmium in New Zealand's agriculture and food systems, including: cadmium concentrations reported in phosphate fertilisers since 2003, with a comparison to agreed voluntary limits; soil cadmium concentrations from soil samples collected by the fertiliser industry, regional councils and other researchers between 2006 and 2015 from across a broad range of land uses and soil types; trends in soil cadmium accumulation from the long-term fertiliser trials at Winchmore Research Station in Canterbury, New Zealand; and cadmium concentrations in food from the 2009 New Zealand Total Diet Study, with a comparison to international standards. The analysis showed that the monthly averaged concentration of cadmium (Cd) in phosphate (P) fertiliser, ready for dispatch, has remained below the voluntary limit of 280 mg Cd/kg P, with a long-term average of 184 mg Cd/kg P. The soil cadmium data showed that for many New Zealand territorial authorities (32 of the 62 that have been sampled), there were no farms with soil cadmium concentrations beyond the range that naturally occurs in New Zealand. In four districts in the Waikato region (Matamata-Piako, Waipa, Waitomo, and Otorohanga), over 5% of the farms had soil cadmium concentrations that require active management to prevent accumulation above the voluntary soil cadmium limit of 1.8 mg Cd/kg. Of the 1980 farms sampled to date, four (0.37%) had soil cadmium concentrations that exceed this limit. Data from the long-term trials at Winchmore Research Station showed that accumulation of cadmium has slowed since the early 1990s, with modelling of cadmium concentration in an irrigated treatment suggesting a recent decline in soil cadmium concentrations. The 2009 New Zealand Total Diet Study found that cadmium intake by different age and gender groups was 50% or less of the Provisional Monthly Tolerable Intake recommended by the World Health Organisation.