

Elemental concentration in the hair taken from healthy people  
for the past 20 years  
-1. Long-term changes over 20 years -

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## Abstract

We developed a standard-free method for untreated hairs and the method has been applied to quantitative analysis of more than 30000 hairs taken from the people concerned in order to evaluate exposure to some toxic elements and intakes of essential elements. Besides these analyses, we have measured nearly 2000 hairs collected from healthy people in Japan over the past 20 years. It was found that concentrations of some elements, such as vanadium, chromium, manganese, copper and mercury, keep increasing up to the present. Such tendencies were particularly notable for female, while not clearly observed for male. Concentrations of some essential elements, such as calcium, magnesium and zinc, show no obvious long-term variations. On the other hand, iron and selenium show slightly decreasing tendencies. With regard to toxic elements, it was found that arsenic, chromium and mercury are tending to increase every year.