World Health Organization

Protection of the Human Environment

Water and Sanitation

.Guidelines for drinking water quality

Silver

Summary information extracted from:

Guidelines for drinking-water quality, 2nd ed. Vol. 1. ***Recommendations.*** Geneva, World Health Organization, 1993. pp. 54-55.

Silver occurs naturally mainly in the form of its very insoluble and immobile oxides, sulfides, and some salts. It has occasionally been found in ground, surface, and drinking-water at concentrations above 5 µg/litre. Levels in drinking-water treated with silver for disinfection (see Protection and improvement of water quality) may be above 50 µg/litre. Recent estimates of daily intake are about 7 µg per person.

Only a small percentage of silver is absorbed. Retention rates in humans and laboratory animals range between 0 and 10%.

The only obvious sign of silver overload is argyria, a condition in which skin and hair are heavily discoloured by silver in the tissues. An oral NOAEL for argyria in humans for a total lifetime intake of 10 g of silver was estimated on the basis of human case reports and long-term animal experiments.

The low levels of silver in drinking-water, generally below 5 µg/litre, are not relevant to human health with respect to argyria. On the other hand, special situations exist where silver may be used to maintain the bacteriological quality of drinking-water. Higher levels of silver, up to 0.1 mg/litre , this concentration gives a total dose over 70 years of half the human NOAEL of 10 gram, could be tolerated in such cases without risk to health.

No health-based guideline value is proposed for silver in drinking-water.