## HISTORIES OF GUIDELINE DEVELOPMENT FOR THE FOURTH EDITION

## 12. Chemical fact sheets

*12.1 Chemical contaminants in drinking-water*

## Copper

### *History of guideline development*

The 1958 WHO *International Standards for Drinking-water* suggested that concentrations of copper greater than 1.5 mg/l would markedly impair the potability of the water. The 1963 and 1971 International Standards retained this value as a maximum allowable or permissible concentration. In the first edition of the *Guidelines for Drinking-water Quality*, published in 1984, a guideline value of 1.0 mg/l was established for copper, based on its laundry and other staining properties. The 1993 Guidelines derived a provisional health-based guideline value of 2 mg/l for copper from the PMTDI proposed by JECFA, based on a rather old study in dogs that did not take into account differences in copper metabolism between infants and adults. The guideline value was considered provisional because of the uncertainties regarding copper toxicity in humans. This guideline value was retained in the addendum to the second edition of the Guidelines published in 1998 and remained provisional as a result of uncertainties in the dose–response relationship between copper in drinking-water and acute gastrointestinal effects in humans. It was stressed that the outcome of epidemiological studies in progress in Chile, Sweden and the USA may permit more accurate quantification of effect levels for copper-induced toxicity in humans, including sensitive subpopulations. Copper can also give rise to taste problems at concentrations above 5 mg/l and can stain laundry and sanitary ware at concentrations above 1 mg/l. The third edition of the Guidelines, published in 2004, retained the guideline value of 2 mg/l but removed its provisional designation. This guideline value was brought forward to the fourth edition of the Guidelines, published in 2011.