

# DRINKING WATER REGULATIONS AND HEALTH ADVISORIES

by

Office of Water  
U.S. Environmental Protection Agency  
Washington, D.C.

*(these data updated  
every 6 months  
→ BUT HASN'T  
BEEN YET!*


*(PER 11-30-96)*

EPA **822-B-96-002**

October 1996

*Ohio EPA 8/686-8930 - '97 OHIO HOLD BOB NO STATES  
ENACTED TIGHTER REGULATIONS  
Jeff Starke x 6118  
Drinking Water Quality*

*Rec'd 12/11/97 [Signature]*

 Recycled/Recyclable  
Printed on paper that contains  
at least 50% recycled fiber.

where:

- 5 µg/kg/day = cosmetic RfD.
- 70 kg = assumed weight of an adult.
- 2 L/day = assumed water consumption of a 70-kg adult.

The DWEL is derived on the assumption that 100% of the silver intake comes from drinking water. As estimated by the World Health Organization (WHO, 1984), the upper-bound intake of silver from food is 20 to 80 µg/day and is essentially negligible from air. Therefore, the Lifetime HA for the cosmetic effect of silver can be calculated by subtracting the amount of silver obtained in food.

Step 3: Lifetime HA for the Cosmetic Effect of Silver

Lifetime HA for Cosmetic Effect =  $\frac{\text{Food Value}}{2 \text{ L/day (Adult Water Intake)}} - (0.005 \text{ mg/kg/day}) (70 \text{ kg})$

*Handwritten notes:*  
 - Food Value = 80 µg/day  
 -  $\frac{80 \text{ µg/day}}{2 \text{ L/day}} = 40 \text{ µg/L}$   
 -  $40 \text{ µg/L} - 0.08 \text{ mg/day} = 0.135 \text{ mg/L}$  (rounded to 0.1 mg/L)  
 -  $100 \text{ µg/L} = \text{new SMCL}$   
 -  $123.079 \text{ µg/L}$  (actually)  
 -  $326.158 \text{ µg/day}$  (actually)  
 -  $350 \text{ µg/day} = \text{RfD}$   
 -  $123.079 \text{ µg/L}$  (actually)  
 -  $50 \text{ µg/L}$  (previous value)

Thus, a concentration of silver in water of 100 µg/L or 0.1 mg/L is considered protective of the cosmetic effect of silver (argyria) for the general population.

F. Evaluation of Carcinogenic Potential

Applying the criteria described in the U.S. EPA's guidelines for assessment of carcinogenic risk (U.S. EPA, 1986), silver has been classified in Group D: not classified. This category is for agents with inadequate animal evidence of carcinogenicity.

V. OTHER CRITERIA, GUIDANCE AND STANDARDS

- The U.S. EPA had originally regulated silver with an MCL of 50 µg/L. However, since silver caused only argyria, a cosmetic effect, the U.S. EPA (1991) replaced the primary standard of 50 µg/L with a value of 100 µg/L as the secondary standard.

*Handwritten note:* MAXIMUM CONTAMINATION LEVEL (ENFORCEABLE)

VI. ANALYTICAL METHODS

- Most of the methods available for silver analysis involve atomic absorption spectroscopy. In these methods, the metal is dissolved and thermally excited. When excited, the metal absorbs light frequencies characteristic of that element. In addition, colorimetric (dithizone) methods (American Public Health Association, 1976) and inductively coupled plasma atomic emission spectroscopy can be used to analyze silver (CFR, 1987)

*Handwritten notes:*  
 - SMCL  
 - UNENFORCEABLE FEDERAL "GUIDELINE"  
 - (SEE IT @ BOT OF PG 10)  
 - OF DURHA