

A yellow fog water collector is mounted on a metal pole. A white plastic bottle is being filled with water from the collector's spout. A hand is holding a blue plastic bottle, which is also being filled with water. The background shows a hazy, mountainous landscape.

FOG WATER IS DRINKING WATER

The water samples appear colourless, clear and odourless. pH levels are normal, in the range 7.1 to 7.7; only the hail net produces a slightly alkaline result (pH = 8.5). Conductivity, as a general parameter for the salt content of the water, is very low, ranging from 83 to 99 S/cm. This is due to low concentrations of chloride (8.9 - 11 mg/l), sulphate (11 - 12 mg/l) and nitrate (5 - 6.4 mg/l).

The water from all the nets contains low concentrations of the heavy metals chromium, copper, zinc, cadmium and nickel, and of arsenic. However, the levels are far below the limits imposed by European drinking water regulations; a toxic effect can therefore be excluded. Concentrations at this level can in fact act as physiologically valuable trace elements. TOC concentrations of 2.2 - 2.8 mg/l indicate that the amount of organic matter is relatively low. Organic contamination can be introduced into the water from the atmosphere and via the collectors. An explanation has yet to be found for the higher levels of ammonium nitrogen (1.1 - 1.9 mg/l); further research will be needed to determine the causal factors. Low concentrations of calcium and magnesium mean that the water is very soft, corresponding to less than 2° of average water hardness in Germany. Regular samples are taken, showing concentrations nearly identical to those from previous test series. Fog water is suitable as drinking water for villages located in valleys, where it can be added to groundwater from lower-lying wells.

ANALYSIS OF FOG WATER

Relevant values compared to threshold values under the German Drinking Water Ordinance (DWO) of 21 May 2001 and the standards of the WHO.

| Parameter | Unit | Limit WHO | Limit DWO | Hail net | Spacer fabric | Enkamat | Slubbed fabric | Raschel net | Shade net |
|----------------------|-------|-----------|-------------|----------|---------------|----------|----------------|-------------|-----------|
| pH value | - | - | 6,5-9,5 | 8,5 | 7,7 | 7,2 | 7,2 | 7,2 | 7,1 |
| Conductivity (20°C) | µS/cm | - | 2790 (25°C) | 84,0 | 83,0 | 89,0 | 99,0 | 88,0 | 93,0 |
| Chloride | mg/l | - | 250,0 | 9,5 | 9,9 | 9,7 | 11,0 | 8,9 | 10,0 |
| Sulphate | mg/l | - | 250,0 | 11,0 | 11,0 | 12,0 | 12,0 | 11,0 | 12,0 |
| Nitrate | mg/l | 50,0 | 50,0 | 5,0 | - | 6,4 | 6,4 | 6,1 | 6,3 |
| Ammonium-N | mg/l | - | 0,65 | 1,1 | 1,5 | 1,2 | 1,2 | 1,8 | 1,9 |
| Iron | mg/l | - | 0,2 | 0,0084 | 0,014 | 0,0083 | 0,0044 | 0,016 | 0,013 |
| Manganese | mg/l | 0,4 | 0,05 | 0,012 | 0,011 | 0,067 | 0,0083 | 0,013 | 0,012 |
| Lead | mg/l | 0,01 | 0,01 | 0,00015 | 0,0002 | 0,000094 | <0,00005 | 0,00014 | 0,00013 |
| Arsenic | mg/l | 0,01 | 0,01 | 0,00033 | 0,00037 | 0,00042 | 0,0083 | 0,00043 | 0,00045 |
| Chromium total | mg/l | 0,05 | 0,05 | <0,0005 | <0,0005 | <0,0005 | <0,0005 | <0,0005 | <0,0005 |
| Copper | mg/l | 2,0 | 2,0 | 0,003 | 0,0049 | 0,0042 | 0,0029 | 0,002 | 0,0077 |
| Zinc | mg/l | - | - | 0,064 | 0,065 | 0,097 | 0,066 | 0,079 | 0,071 |
| Cadmium | mg/l | 0,003 | 0,003 | 0,000095 | 0,00011 | 0,000092 | 0,000052 | 0,00008 | 0,000091 |
| Nickel | mg/l | 0,07 | 0,02 | 0,0013 | 0,0012 | 0,0016 | 0,00092 | 0,0014 | 0,0012 |
| Uranium | µg/l | 15,0 | 10,0 | 0,013 | 0,013 | 0,01 | 0,012 | 0,033 | 0,024 |
| Calcium | mg/l | - | - | 3,1 | 2,9 | 3,6 | 5,7 | 4,0 | 4,3 |
| Magnesium | mg/l | - | - | 0,99 | 0,92 | 1,0 | 1,1 | 1,1 | 1,1 |
| Total organic carbon | mg/l | - | - | 2,4 | 2,8 | 2,4 | 2,3 | 2,2 | 2,6 |