FACTS ABOUT DRINKING WATER AND LIMIT VALUES

Swiss drinking water is of high quality

The quality of Swiss drinking water is continuously monitored by a dense network of measuring points. Various authorities and experts rate the quality of drinking water as high. 80 percent of drinking water is obtained from groundwater. Half of this can be fed directly into the mains without treatment. For the other half, simple disinfection with chlorine or UV is sufficient. The statements on quality are supported by a 2019 study by the Federal Food Safety and Veterinary Office (FSVO) and the Federal Office for the Environment (FOEN). The study examined drinking water from 20 cantons, which supplies around 80 percent of the population. According to the study, Swiss groundwater is of good quality. The latest results of the national groundwater monitoring NAQUA, published by the FOEN, also point in the same direction. Switzerland has "safe drinking water in sufficient quantities". The Association of Cantonal Chemists also rates the quality of Swiss drinking water as good. [1] [2] [3]

Limit values for plant protection products are strict

In Switzerland, very strict limits apply to the degradation products of plant protection products. A distinction is made between relevant and non-relevant metabolites (degradation products). Relevant means that the active substance is biologically active and could have an impact on drinking water quality. For non-relevant metabolites, a maximum concentration of 10 micrograms per litre applies; for relevant metabolites, a maximum value of 0.1 micrograms per litre applies (see box). These limits are very strict. For comparison - this corresponds to one millimetre in 10,000 kilometres. These limit values are extremely low and do not per se allow any statement as to whether exceeding these limit values leads to damage to health, because the limit value was not derived from health data. Rather, the limit of 0.1 micrograms per liter was set about 40 years ago when analytical methods could not measure lower concentrations. Thus, water with a foreign substance concentration of up to 0.1 micrograms per liter was considered free of contaminants, it was the "analytical zero", so to speak. Today, however, much lower concentrations can be detected, which could give the impression that the quality of the water is deteriorating. But the fact is: exceeding the limit value does not pose a health risk per se. [4] [5]

Improved analytics

The fact that a substance is detected does not equate to a risk to human health. It is the quantity that makes the poison. Due to major advances in measurement technology, concentrations in the trillionth range can now be measured. The analytical zero therefore recedes into the background. You always find something. But you only ever find what you are looking for. To assess the health risk, limit values derived from toxicological studies are needed. Toxicologists calculate the

acceptable daily intake dose of an active substance. The dose should not harm a person with reasonable certainty, even if it is consumed daily for a lifetime. This value is derived from extensive animal studies. [6]

Risk reduction mechanism works

Water protection is a central element of the federal government's "Action Plan for Risk Reduction and Sustainable Use of Plant Protection Products". A joint analysis by EAWAG, the Ecotox Centre and the Association of Swiss Wastewater and Water Pollution Control Experts (VSA) shows that the action plan's measures to reduce run-off lead to an improvement in water quality. If a substance does not meet the quality criteria for acute ecotoxicity, industry and the authorities act together. The substances are subjected to a targeted review (TR) by the federal government and re-evaluated. If necessary, the relevant products are withdrawn from the market by the manufacturer. [7] [8]

Industry actively involved in water protection

The chemical industry is contributing to the reduction of undesirable water inputs with various programmes and measures. These include, for example, the Europe-wide TOPPS project. This provides farmers with information on the sustainable use of crop protection products in a way that protects water. The focus is on reducing drift. TOPPS projects are also underway in Switzerland, involving the research-based crop protection industry, the FOEN and the cantons. A decisive factor in minimizing water inputs is the proper installation of a filling and washing station on agricultural farms. As part of the federal government's Plant Protection Action Plan, every farm must draw up a washing station concept. The industry supports and advises farmers in the implementation of the concept and develops practical solutions for the proper filling and disposal of crop protection products. Bayer, for example, has developed a system for decanting crop protection products that prevents accidental splashes. Syngenta offers a cleaning platform that ensures that no residues of crop protection products seep into the soil when tanks are filled and emptied. [9] [10] [11]

Limit values for groundwater and drinking water

For groundwater

During the approval of plant protection products, the leaching behaviour of an active substance is examined. An authorisation is only granted if inputs of the active substance and all its relevant metabolites of ≥ 0.1 µg/L into groundwater can be excluded when applied properly. Non-relevant degradation products shall only be authorised if the competent authorities conclude, following a detailed review of scientific studies, that they are harmless. If a degradation product proves to be non-relevant, a maximum concentration of 10 µg/l is considered to be toxicologically acceptable. Reference is made to EU guidance on the assessment of the relevance of metabolites of active substances of plant protection products in groundwater (EU DG Sanco "Guidance Document on

the Assessment of the Relevance of Metabolites in Groundwater of Substances regulated under Council Directive 91/414/EC" - Sanco/221/2000). The reference document in Switzerland is the document "Relevance of Pesticide Metabolites in Groundwater and Drinking Water" by BLW and BLV. [12] The relevance assessment of the BLV of 3 December 2019 (page 40) for chlorothalonil also speaks of a "maximum possible concentration of 10 micrograms / litre in groundwater". [13]

For drinking water
The maximum values are regulated in Annex 2 of the FDHA Ordinance on Drinking Water and Water in Publicly Accessible Baths and Shower Facilities (TBDV) (page 1033). 0.5 micrograms / litre is the cumulative maximum value. For individual pesticides (active substances and relevant metabolites), the maximum value is 0.1 micrograms / litre (page 1032). [14]

How much are micro- and nanograms?
The NGO Water for Water (wfw) writes on its homepage: "Trace substances are present in the range of micro- and nanograms in water. This can look like a lot at first glance. The following example shows how to classify this almost unimaginably small unit of measurement: If you drink water with a concentration of 100 ng/l of the drug aspirin, you would have a whole 700 years to absorb the dose of a single aspirin tablet if you consumed two litres a day.

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[1] Status and development of groundwater in Switzerland. Results of the National Groundwater Monitoring NAQUA, as of 2016. URL: https://www.bafu.admin.ch/dam/bafu/de/dokumente/wasser/uz-umwelt-zustand/zustandundentwicklunggrundwasserschweiz.pdf.download.pdf/UZ-1901-D_NAQUA.pdf[2] Implementation of the Water and Health Protocol. BLV. URL : https://bit.ly/36r5mfT
[3] Campaign of the Swiss cantonal chemists in 2019. plant protection products in drinking water (campaign report). URL : https://www.kantonschemiker.ch/mm/VKCS%20Kampagne%202019%20Bericht_2019_09_09_D.pdf
[4] Speech by Prof. Dr. Rex FitzGerald on the occasion of the swiss-food Medientalk on 26 August 2020. URL : https://swiss-food.ch/wp-content/uploads/2020/08/200826_Refereat_FitzGerald.pdf
[5] "Argumentarium Chlorothalonil". Swiss Gas and Water Association SVGW. URL : https://www.svgw.ch/shopregelwerk/produkte/argumentarium-chlorothalonil/
[6] Speech by Prof. Dr. Rex FitzGerald on the occasion of the swiss-food Medientalk on 26 August 2020. URL : https://swiss-food.ch/wp-content/uploads/2020/08/200826_Refereat_FitzGerald.pdf
[7] Action plan for risk reduction and sustainable use of plant protection products. FOAG: https://www.blw.admin.ch/blw/de/home/nachhaltige-produktion/pflanzenschutz/aktionsplan/massnahmen-aktionsplan.html
[8] Daouk et al. Pesticides: reduction measures and monitoring. Aqua & Gas (2/2019). URL : www.aquaetgas.ch https://bit.ly/3oT3XXN
[9] Information on the TOPPS project. URL : https://pflanzenschuetzer.ch/topps-abdrift/
[10] RemDry cleaning platform from Syngenta. URL : https://www.syngenta.ch/news/neuheiten/restmengen-von-pflanzenschutzmitteln-mit-remdry-sauber-entsorgen
[11] Easyflow removal and cleaning system from Bayer. URL : https://phytobac.com/de/easyflow
[12] Relevance of pesticide metabolites in groundwater and drinking water (09/2020). FOAG and FSVO. https://bit.ly/3l4thr1
[13] Relevance assessment of groundwater metabolites of products containing the active substance chlorothalonil as part of the (partially) targeted review. Assessment of toxicological information submitted as part of the legal hearing (3.12.19). FSVO.
[14] Ordinance of the FDHA on drinking water and water in publicly accessible baths and shower facilities (TBDV). FDHA. https://www.fedlex.admin.ch/eli/oc/2017/153/de