



Safe water consumers **want** to drink

In a recent interview, Prof. Dr.-Ing. Wolfgang Kühn of Water Technology Centre discussed some of the factors that are driving developments in drinking water treatment in Europe. Challenges and opportunities abound as water suppliers and their partners strive to strike a balance between more stringent regulations to water quality, consumer expectations, environmental considerations and costs.



Professor Kühn

In the past, health requirements and basic safety have been the key drivers with disinfection as the number one priority. By-products of human activity have since come into focus. "In Europe the first priority was nitrate-reduced water and then pesticide-free water, but today consumer expectations play a more important role," explains Professor Kühn. This will without question bring renewed focus on undesired by-products of disinfection. "We in the water industry don't want to be criticised for having a negative impact on water quality".

As well as the need to view disinfection by-products critically, Professor Kühn expects increased focus on other substances such as pharmaceuticals, pesticides, endocrine substances, personal health care products and their metabolites. In this context, new regulatory initiatives will play a significant role. Prof. Kühn points to proposed German drinking water regulations as an initiative that will impose more stringent limits on substances in drinking water. "For instance, the current draft says that unknown substances, i.e. substances one does not know much about, are to be restricted to 0.1 micrograms. As soon as they can analytically be verified, no substance

may exceed this 0.1 benchmark. I myself think this is too demanding and too much, but it just proves that the requirements will become more stringent."

With basic health and safety issues subject to tighter regulation, customer expectations will come increasingly into focus. Smell, taste and softness will become competition parameters. "Especially in Germany, we see that if two water suppliers offer water to a city, often the softer water is preferred," says the professor.

One might expect that if water suppliers don't respond to consumer requirements, their customers will take matters into their own hands with point-of-use solutions. Professor Kühn warns of "mystical devices" used in households as a second treatment system that cost money and in some cases energy. "In my mind, here in Germany, water treatment will increasingly incorporate consumer requirements. In a country where so much money has been invested in water treatment and distribution systems, it is a waste of energy if we also add a second treatment system – primarily if it's about these "mystical devices" that promise to provide a healthy, living water."

Meeting these new consumer needs with central treatment technology isn't necessarily an expensive step. Professor Kühn again cites the example of water softening, "Hardness has unintended costs – cleaning bathrooms, lime-scaling in kitchen appliances, silted boilers. If central softening techniques are incorporated, this costs the consumer approx. 40 Euros more per year, but saves him 70 Euro – he's saved 30 Euros in total."

Another downside to second treatment according to Professor Kühn is energy consumption and CO₂ emissions. In these terms second treatment within the household is "most ineffective".

The current political agenda has strong focus on energy and CO₂, but as Professor Kühn puts it the energy question has always taken centre stage. "This focus will continue in the future: Energy-intensive processes used to treat water need to be viewed more critically in future. Thus, many things can be solved by using biological techniques," predicts Professor Kühn. "Biological processes consume little energy, have a particularly favourable CO₂ footprint, and – even though many technicians and companies do not like to hear this – biological treatment processes such as underground passage or bank filtration are enjoying a sort of renaissance; simply because they are particularly efficient in terms of the energy consumed."

About Professor Kühn

Prof. Dr.-Ing. Wolfgang Kühn is the managing director of the Water Technology Center (TZW) of applied water research in the DVGW, the German Gas- and Waterworks Association. He studied Chemistry at the University of Karlsruhe, working on his doctoral thesis with Prof. Sontheimer, leading to the development of the AOX-parameter. From 1979 to 1994 he was the director of the Technical Branch of the DVGW-Research Institute at the Water Chemistry Section of the Engler-Bunte-Institute at the University of Karlsruhe.



The Water Technology Center (TZW) is a politically and economically independent, non-profit association that collaborates with waterworks on joint research projects. Moreover, the TZW is contact point for authorities, ministries and associations in all questions concerning surface and ground water, drinking water and water technology.