

A NOTE FROM THE SCIENTIFIC AND TECHNICAL EDITOR

## Disinfectant Residuals—Yes or No? IWSA-Specialised Conference in Philadelphia (USA) and Mülheim an der Ruhr (Germany)

The supply of drinking water which is free of pathogens is the primary objective of water supply companies all over the world. To achieve this goal, raw water resources should be protected as much as possible and the pathogens which nevertheless are present (in relatively low concentrations) should be eliminated by the drinking water treatment process or should be at least inactivated by disinfection. Furthermore, the recontamination of drinking water in the distribution system is always a possibility. This may be caused by contaminated water penetrating the distribution network, or by the growth of pathogens in the distribution network itself (e.g. in biofilms). To avoid recontamination, the use of sustainable disinfectant residuals such as chlorine, chlorine dioxide and chloramines may be helpful but will usually result in the undesirable formation of disinfection by-products.

Because of the complexity of water supply systems and the sometimes counter-current effects which may be achieved by the use of disinfectants, it is not surprising that different regulations and practices for the use of disinfectant residuals have been developed all over the world. On the suggestion of Dr Rhodes Trussel (chairman of the IWSA Disinfection Committee) two complementary IWSA-specialised conferences were organised to discuss the advantages and disadvantages of the use of disinfectant residuals. At the first conference, which was held from the 26th to 28th of April 1998 in Philadelphia and which was organised by the American Water Works Association, special emphasis was placed on the US-American point of view. At the second conference, organised by the IWW Rheinisch-Westfaelisches Institut für Wasserforschung, and held from the 28th to 30th of September 1998 in Mülheim an der Ruhr, Germany, the European perspective was reflected.

The main topics of both conferences, which had been attended by more than 350 participants in total, concentrated on

- setting the scene
- benefits of disinfectant residuals

- disinfection by-products
- low or no disinfectant residuals
- disinfection system management
- panel discussion: Is there a best practice?
- technical visits

It was realised that the use of residuals must be considered an extremely complex problem. According to the levels of complexity, different strategies are followed in different countries, which vary, from at one extreme the precautionary continual addition of quite high doses of residuals, to the strict nonuse of residuals (except in cases of emergency).

It was concluded at both conferences that the extensive protection of raw water resources is a primary necessity. In addition, the complete elimination of, or at least the inactivation of pathogens, is necessary by drinking water treatment processes. Furthermore, if the distribution system is in good condition and is well operated (without zones of vacuum), and therefore recontamination can be excluded under normal conditions, and if the re-germination potential of the drinking water is sufficiently low, the use of residuals may not be necessary.

In Philadelphia as well as in Mülheim an der Ruhr, many excellent papers were presented in which the general advantages and disadvantages of the use of disinfectant residuals were discussed alongside examples of water supply systems where the use and nonuse of residuals have been demonstrated. Selected papers have been published in the *Journal of the American Water Works Association* (issue January 1999) and in this and the following issue of *AQUA*. All other papers will be published in the IWSA Review Journal *Water Supply*. We hope that these papers will help to improve the drinking water supply all over the world. Thanks are given to all authors and speakers for their contribution.

**Rolf Gimbel**

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