<u>ACQWS Paper No. 1</u> <u>World Health Organization Guidelines and International</u> <u>Standards for Drinking-water Quality</u>

Preamble

Owing to various political, geographical, economic and social factors, different guidelines or standards for drinking-water quality have been established by different international organizations and national authorities. The most well known are those established by the World Health Organization (WHO), the European Communities (EC) and the United States Environmental Protection Agency (USEPA).

The WHO Guidelines for Drinking-water Quality

2. The Water Supplies Department (WSD) adopts the Guidelines for Drinking-water Quality promulgated by WHO as the standard for drinking-water quality in Hong Kong. Singapore also adopts WHO Guidelines as standards while other national standards are based on the Guidelines e.g. in New Zealand. WHO's guidelines are prepared through the participation of numerous authoritative institutions and over 200 experts from some 40 developing and developed countries, and represent the consensus opinion based on worldwide scientific and medical data of recognized experts. The primary aim is for the protection of public health as a Guideline Value (GV) which represents the concentration of a substance that does not result in any significant risk to the health of the consumer over a lifetime consumption. According to the Guidelines for Drinking-water Quality recommended by WHO in 1993, the guideline value of a genotoxic carcinogen is the concentrations in drinking-water associated with an excess lifetime cancer risk of 10^{-5} (i.e. one additional cancer case per 100 000 of the population ingesting drinking-water containing the substance at the

guideline value for 70 years, assuming a daily consumption of 2 litres of drinking-water for a person of 60 kg body weight). The guidelines are intended to be used as a basis for the development of national standards for drinking-water quality. It must be emphasized that the WHO's GVs are not mandatory limits. In order to define mandatory limits, it is necessary to consider the guideline values in the context of local or national environmental, social, economic and cultural conditions.

The EC Standards

3. Like many of the standards adopted by developed countries the EC standards are in line with WHO's guidelines. According to the Directive 98/83/EC, EC's parametric values (PVs) are generally based on WHO's Guidelines for Drinking-water Quality and the opinion of the Commission's Scientific Advisory Committee. Precautionary principles have been taken into account in establishing PVs. The PVs have been set to ensure that water intended for human consumption can be consumed safely on a life-long basis, and thus represent a high level of health protection. The EC's PVs are mandatory standards except for those indicator parameters e.g. on aesthetic quality. According to the EC Directive, each Member State should establish monitoring programmes to check that water intended for human consumption meets the requirements of the EC standards.

The USEPA Standards

4. USEPA sets drinking-water standards which apply to all public water systems across the United States of America. There are two types of standards: primary and secondary. Primary standards or Maximum Contaminant Levels (MCLs) are health-based standards, most of which are mandatory

standards. The MCL is the maximum permissible level of a contaminant in water delivered to users of a public water system. Secondary standards include those parameters concerning the aesthetic quality of the water and are non-enforceable guidelines i.e. these have no legal implication in the event of noncompliance. USEPA sets the MCL as close to the Maximum Contaminant Level Goal (MCLG) which are considered feasible to achieve taking costs and technology into consideration. MCLGs are non-enforceable public health goals and the MCLG is the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health effect on humans would occur.

Comparison among the WHO, EC and USEPA Guidelines

5. In comparing the WHO's GVs with USEPA's MCLs and with EC's PVs, it is not appropriate to say which standard is more stringent than the other. There are some WHO's GVs which are more stringent than USEPA's MCLs or EC's PVs and there are some WHO's GVs which are less stringent than these two standards.

6. The reasons for the existence of different guidelines/standards for WHO, USEPA and EC are mainly attributed to the following influences:- various political, geographical, economic and social factors, the level of risk considered to be acceptable, differences in methods and assumptions used in risk assessment, the quantity and quality of data available to the assessors and the importance attached to aesthetic considerations.

7. As regard to the compliance with the guidelines/standards for drinking water quality, it is noteworthy that WHO states that 'Short-term deviations above the guideline values do not necessarily mean that the water is unsuitable for consumption'; while USEPA stipulates that 'For systems which are conducting monitoring at a frequency greater than annual, compliance with the maximum contaminant levels is determined by a running annual average at any sampling point'.

8. It must be emphasized that the WHO guidelines are designed to be protective of human health and are aimed globally, not just at developing countries. If Hong Kong were to meet the USEPA and the EC standards in addition to the WHO guidelines, all the 19 existing treatment works will have to be upgraded but this is not necessary or justified as the drinking water in Hong Kong is already of world standard.

Advice Sought

9. Members' views on the subject are sought.

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