

The RfD for MCAA of 0.004 mg/kg/day is based on a LOAEL of 3.5 mg/kg/day for increased spleen weight in rats (DeAngelo *et al.* 1997) and application of an uncertainty factor of 1000 (composite uncertainty factor consisting of two factors of 10 chosen to account for extrapolation from an animal study, and inter-individual variability in humans; as well as two factors of 3 for extrapolation from a minimal effect

LOAEL, and insufficiencies in the database, including the lack of adequate developmental toxicity studies in two species, and the lack of a multi-generation reproductive study). Two developmental toxicity studies have been reported (Johnson *et al.* 1998; Smith *et al.* 1990), but the NOAELs yielded less conservative RfDs. The study by DeAngelo *et al.* (1997) is the most appropriate for derivation of the

RfD because it identifies the lowest LOAEL, and dosing was in drinking water, which is more appropriate for human health risk assessment.

The MCLG is calculated to be 0.03 mg/L using the following assumptions: an adult tap water consumption of 2 L of tap water per day for a 70 kg adult, and a relative source contribution of 20 %.

$$\text{MCLG for MCAA} = \frac{(0.004 \text{ mg/kg/day})(70 \text{ kg})(20\%)}{(2 \text{ L/day})} = 0.03 \text{ mg/L (rounded)}$$

An RSC factor of 20% is used to account for exposure to MCAA in other sources in addition to tap water. Although MCAA is nonvolatile and inhalation while showering is not expected to be a major contribution to total dose, rain waters contain 0.05–9 µg/L of MCAA (Reimann *et al.* 1996) and it can be assumed to be detected in the atmosphere. Presence of MCAA has also been reported in rain waters; thus, inhalation of MCAA in ambient air may contribute to overall exposure. Concentrations of MCAA that have been measured in a limited selection of foods including vegetables, fruits, grain and bread (Reimann *et al.* 1996) are comparable to that in water. About 2.5 to 62% of MCAA in cooking water has been reported to be taken up by food during cooking in a recent research summary (Raymer *et al.* 2001). In addition, there are uses of chlorine in food production and processing, and MCAA may occur in food as a byproduct of chlorination (USEPA 1994a). Therefore, ingestion of MCAA in food may also contribute to the overall exposure. Assuming dermal absorption rate of MCAA is similar to DCAA, dermal contribution to the total doses of MCAA from routine household uses of drinking water should be minor (*see* V.B.2.a.).

### 3. Request for Comment

EPA requests comment on the new MCLGs for TCAA (0.02 mg/L) and MCAA (0.03 mg/L) and all the factors incorporated in the derivation of the MCLGs, including the RfDs and RSCs. EPA also solicits health effect information on DBAA and monobromoacetic acid (MBAA), for which MCLGs have not yet been established.

#### C. Consecutive Systems

Today's proposal includes provisions for consecutive systems, which are public water systems that purchase or

otherwise receive finished water from another water system (a wholesale system). As described in this section, consecutive systems face particular challenges in providing water that meets regulatory standards for DBPs and other contaminants whose concentration can increase in the distribution system. Moreover, current regulation of DBP levels in consecutive systems varies widely among States. In consideration of these factors, EPA is proposing monitoring, compliance schedule, and other requirements specifically for consecutive systems. These requirements are intended to facilitate compliance by consecutive systems with MCLs for TTHM and HAA5 under the Stage 2 DBPR. Further, this approach will help to ensure that consumers in consecutive systems receive equivalent public health protection. This section begins with a summary of how EPA proposes to regulate consecutive systems under the Stage 2 DBPR. The intent of this section is to provide an overview of all consecutive system requirements in today's proposal. Detailed explanations of these requirements are provided in later sections of this preamble. The overview of consecutive system requirements is followed by an explanation of why EPA has taken this approach to consecutive systems in today's proposal, including recommendations from the Stage 2 M-DBP Federal Advisory Committee.

#### 1. What Is EPA Proposing Today?

As public water systems, consecutive systems must provide water that meets the MCLs for TTHM and HAA5 under the proposed Stage 2 DBPR, and must carry out associated monitoring, reporting, recordkeeping, public notification, and other requirements. The following discussion summarizes how the Stage 2 DBPR requirements apply to consecutive systems, beginning with a series of definitions. Later

sections of this preamble provide further details as noted.

a. *Definitions.* To address consecutive systems in the Stage 2 DBPR, the Agency must define them, along with a number of related terms.

EPA is proposing to define a *consecutive system* in the Stage 2 DBPR as a public water system that buys or otherwise receives some or all of its finished water from one or more wholesale systems for at least 60 days per year. In addition to buying finished water, some consecutive systems also operate a treatment plant (meaning a plant that treats source water to produce finished water). As described in section V.I., monitoring requirements under the Stage 2 DBPR proposal differ depending on whether a consecutive system buys all of its finished water year-round or, alternatively, produces some of its finished water through treating source water.

EPA proposes to define finished water as water that has been introduced into the distribution system of a public water system and is intended for distribution without further treatment, except that necessary to maintain water quality (such as booster disinfection). With this definition, water entering the distribution system is finished water even if a system subsequently applies additional treatment like booster disinfection to maintain a disinfectant residual throughout the distribution system.

In today's proposal, EPA defines a *wholesale system* as a public water system that treats source water and then sells or otherwise delivers finished water to another public water system for at least 60 days per year. Delivery may be through a direct connection or through the distribution system of another consecutive system. Under this definition, a consecutive system that passes water from a wholesaler to another consecutive system, and that does not also treat source water, is not