

$$\text{MCLG for Chloroform} = \frac{0.01 \text{ mg/kg/d} \times 70 \text{ kg} \times 0.2}{2\text{L/day}} = 0.07 \text{ mg/L (rounded)}$$

EPA concludes that an MCLG of 0.07 mg/L based on protection against liver toxicity will be protective against carcinogenicity given that the mode of action for chloroform involves cytotoxicity as a key event preceding tumor development. Therefore, the recommended MCLG for chloroform is 0.07 mg/L.

v. *Other considerations.* The evidence supports similarity of potential response in children and adults. The basic biology of toxicity caused by cell damage due to oxidative damage is expected to be the same. There is nothing about the incidence and etiology of liver and kidney cancer in children to indicate that they would be inherently more sensitive to this mode of action. Most importantly in this case, children appear to be no different quantitatively in ability to carry out the oxidative metabolism step for the induction of toxicity and cancer and may, as fetuses, be less susceptible (USEPA 1999c).

Some commenters on the March 1998 NODA were concerned that EPA did not take drinking water epidemiology studies into account in its evaluation of chloroform risk. EPA believes that while the epidemiologic evidence suggests that chlorinated drinking water may be associated with certain cancers and reproductive, developmental effects pertinent to the risk of disinfectant byproduct mixtures, it does not provide insight into the risk from chloroform specifically. The SAB noted that "(t)he goal of the draft risk assessment (the isolation of the effect of chloroform in drinking water) makes the extensive epidemiologic evidence on drinking water disinfection byproducts largely irrelevant" to the specific question of chloroform health risks because, in the available studies, chloroform cannot be isolated from other disinfection byproducts that may be in the drinking water (USEPA 2000f). The SAB noted that "the epidemiologic evidence is quite pertinent to the broader question of most direct regulatory concern, namely disinfection byproducts in the aggregate".

d. *Feasibility of other options.* During the development of the MCLG for chloroform, EPA considered a number of options for both the chloroform MCLG and the TTHM MCL. Today, EPA is proposing the preferred option of a 0.07 mg/L MCLG for chloroform. EPA primarily considered two other options which are discussed in more detail later:

a 0.07 mg/L MCLG for chloroform in conjunction with developing MCLs for each of the individual THMs (*i.e.*, 4 MCLs and 4 MCLGs for the THMs); and developing a single combined MCLG for TTHM rather than developing a separate MCLG for each of the THMs.

EPA considered developing separate MCLGs and MCLs for each THM. Under this strategy, EPA would determine an MCL as close to the individual MCLGs as is technically feasible, taking cost into consideration, for each THM. EPA would propose an MCLG of 0.07 mg/L for chloroform and maintain the Stage 1 DBPR MCLGs for BDCM, DBCM, and bromoform (USEPA 1998c). EPA analyzed the impact such an MCL strategy would have and ultimately rejected this option. This approach represents a fundamental shift from the TTHM strategy agreed to by stakeholders and EPA as part of the M-DBP negotiation process and reflected in the 1998 Stage 1 DBPR. In addition, one important component of the existing single MCL is that TTHMs are an indicator for other DBPs. Developing a separate MCL for each THM would move away from this indicator approach. Because precursor and DBP occurrence measurements are highly variable, both temporally and geographically, determining technical feasibility for best available technology (BAT) would be difficult. Compliance with individual THM standards would be very different from compliance based on a sum of the four THMs and it is not clear what treatment technology shifts would be needed. This problem would be particularly exacerbated in areas with high bromide, such as California. EPA also projected that States would have a difficult time overseeing (*e.g.*, variances, exemptions, *etc.*) the more complicated rule that would result from this option.

EPA considered establishing a single combined MCLG for TTHM. There is precedent for using a toxicity equivalency quotient (analogous to a combined MCLG) for dioxin and coplanar PCBs (USEPA 2000a, Draft Dioxin Reassessment). From a scientific standpoint, a combined MCLG approach requires that the chemicals have a similar mode of action and health endpoint. Chemicals within each of the dioxin and coplanar PCB classes have the same mode of action and endpoint (target tissue). Within the PCB class, noncoplanar PCBs have a different mode of action than the coplanar PCBs. Noncoplanar PCBs are, therefore, not

included in the toxicity equivalency quotient for coplanar PCBs. In the case of the disinfection byproducts, EPA believes that the THMs have different modes of action and health endpoints. One of the THMs is a liver carcinogen (chloroform) with a mode of action dependent on cytotoxicity; two are DNA-reactive carcinogens (bromodichloromethane—large intestine and kidney tumors, and bromoform—large intestine tumors); and one is a nonlinear non-carcinogen (dibromochloromethane) which is a liver toxicant. EPA therefore, chose not to develop a combined MCLG for TTHM. Consequently, after considering this alternative option in some detail, EPA is today proposing an MCLG of 0.07 mg/L for chloroform.

3. Request for Comment

Based on the information presented previously, EPA is proposing an MCLG for chloroform of 0.07 mg/L. EPA requests comments on the MCLG and on EPA's cancer assessment for chloroform. EPA also requests comments on the RfD, the default RSC of 20 percent, and the tap water consumption and body weight assumptions used in the MCLG calculation. EPA solicits additional data on chloroform exposure via other sources and routes. EPA requests comment on the other options for developing the chloroform MCLG that the Agency considered.

B. MCLGs for THMs and HAAs

1. What Is EPA Proposing Today?

Today EPA is proposing new MCLGs of 0.02 mg/L for TCAA and 0.03 mg/L for MCAA based on new toxicological data. As a part of the Stage 1 DBPR, EPA finalized an MCLG of 0.3 mg/L for TCAA. The Stage 1 DBPR did not include an MCLG for MCAA (although it was included as one of the five haloacetic acids in the HAA5 MCL). With the exception of chloroform, discussed above, and these two HAAs, EPA is not revising any of the other MCLGs that were finalized in the Stage 1 DBPR. No significant new studies that would change EPA's MCLG estimates for BDCM, DBCM, bromoform, or DCAA have been published since the Stage 1 DBPR. See section III for a summary of new health effects data.

2. How Was This Proposal Developed?

EPA reviewed the available literature on BDCM, DBCM, bromoform, DCAA and determined that there was no new