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I. Summary

A. Why Is EPA Proposing the Stage 2 DBPR?

The Environmental Protection Agency is committed to ensuring that all public water systems provide clean and safe drinking water. Disinfectants are often an essential element of drinking water treatment because of the barrier they provide against harmful waterborne microbial pathogens. However, disinfectants react with naturally occurring organic and inorganic matter in source water and distribution systems to form disinfection byproducts (DBPs) that may pose health risks. The Agency is proposing the Stage 2 Disinfectants and Disinfection Byproduct Rule (DBPR) to reduce potential cancer, reproductive, and developmental risks from DBPs.

The Stage 2 DBPR augments the Stage 1 DBPR that was finalized in 1998. The proposed Stage 2 DBPR focuses on monitoring and reducing concentrations of two classes of DBPs: total trihalomethanes (TTHM) and haloacetic acids (HAA5). In part, these two groups of DBPs are used as indicators of the various byproducts that are present in disinfected water. This means that concentrations of TTHM and HAA5 are monitored for compliance, but their presence in drinking water is

representative of many other DBPs that may also be present in the water; likewise, a reduction in TTHM and HAA5 indicates a reduction of total DBPs.

The Stage 2 DBPR is designed to reduce the level of exposure from disinfectants and DBPs without undermining the control of microbial pathogens. The Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) will be finalized and implemented simultaneously with the Stage 2 DBPR to ensure that drinking water is microbiologically safe at the limits set for disinfectants and DBPs.

New information on health effects, occurrence, and treatment has become available since the Stage 1 DBPR, which supports the need for the Stage 2 DBPR. Several reproductive and developmental studies have recently become available, and EPA has completed a more extensive analysis of reproductive and developmental effects associated with DBPs since the Stage 1 DBPR. Both human epidemiology studies and animal toxicology studies have shown associations between chlorinated drinking water and reproductive and developmental endpoints such as spontaneous abortion, stillbirth, neural tube defects, pre-term delivery, intrauterine growth retardation, and low birth weight. New epidemiology and toxicology studies evaluating bladder and rectal cancers have also increased the weight of evidence linking these health effects to DBP exposure. The large number of people (254 million Americans) exposed to DBPs and the identified potential cancer, reproductive, and developmental risks played a significant role in EPA's decision to move forward with regulatory changes that target lowering DBP exposures beyond the requirements of the Stage 1 DBPR.

While the Stage 1 DBPR provided a major reduction in DBP exposure, new national survey data suggest that some customers are receiving drinking water with elevated, or peak DBP concentrations even when their distribution systems are in compliance with the Stage 1 DBPR. Some of these peak concentrations can be substantially greater than the Stage 1 DBPR maximum contaminant levels (MCLs). The new survey results also showed that Stage 1 DBPR monitoring sites may not be representative of peak DBP concentrations that occur in distribution systems. In addition, the new information indicates that cost-effective technologies including ultraviolet light (UV) and granular activated carbon (GAC) may be very effective at lowering DBP levels. EPA's analysis of this new

information concludes that significant public health benefits may be achieved through further cost-effective reduction of DBPs in distribution systems.

Congress required EPA to promulgate the Stage 2 DBPR as part of the 1996 Safe Drinking Water Act (SDWA) Amendments (section 1412(b)(2)(C)). Today's proposal reflects consensus recommendations from the Stage 2 Microbial/Disinfection Byproducts (M-DBP) Federal Advisory Committee (the Advisory Committee). These recommendations are set forth in the M-DBP Agreement in Principle (USEPA 2000g), which can be accessed on the edocket Web site (www.epa.gov/edocket).

After considering the new occurrence and health effects data and analyses, EPA has determined that there is an opportunity to further reduce potential risks from DBPs. The Stage 2 DBPR being proposed today presents a cost-effective, risk targeting approach to reduce risks from DBPs. The new requirements provide for more consistent protection from DBPs across the entire distribution system and the reduction of DBP peaks. New risk targeting provisions require only those systems with the greatest risk to make capital improvements. The Stage 2 DBPR, in conjunction with the LT2ESWTR, will help public water systems deliver safer water to Americans with the benefits of disinfection to control pathogens but with fewer risks from DBPs.

B. What Does the Stage 2 DBPR Require?

The Stage 2 DBPR applies to community or nontransient noncommunity water systems that add a primary or residual disinfectant other than ultraviolet light or deliver water that has been treated with a primary or residual disinfectant other than ultraviolet light. The TTHM and HAA5 MCL values will remain the same as in the Stage 1 DBPR, although compliance calculations will be different. The proposed Stage 2 DBPR includes new MCLGs for chloroform, monochloroacetic acid, and trichloroacetic acid, but these new MCLGs do not affect the MCLs for TTHM or HAA5.

The risk targeting components of the Stage 2 DBPR will focus the greatest amount of change where the greatest amount of risk may exist. The provisions of the Stage 2 DBPR focus on identifying and reducing exposure by reducing DBP peaks in distribution systems. The first provision, designed to address significant variations in exposure, is the Initial Distribution System Evaluation (IDSE). The purpose