

communities that might be exposed to elevated concentrations of sodium chloride or other sodium salts in their drinking water. This sodium advisory also provides appropriate cautions for individuals on low-sodium or sodium-restricted diets.

#### H. Sulfate

**Description:** Sulfate ( $\text{SO}_4^{-2}$ , CASRN 14808-79-8) exists in a variety of inorganic salts. Sulfate salts such as sodium, potassium, and magnesium are very water soluble and are often found in natural waters. Sulfate salts of metals such as barium, iron, or lead have very low water solubility. Sulfate is found in soil, sediments, and rocks and occurs in the environment as a result of both natural processes and human activities. Sulfate compounds are used for a variety of commercial and industrial purposes.

Sulfate may enter surface or ground water as a result of discharge or disposal of sulfate-containing wastes. In addition, sulfur oxides produced during the combustion of fossil fuels are transformed to sulfuric acid in the atmosphere. Through precipitation (acid rain), sulfuric acid can enter surface waters, lowering the pH and raising sulfate levels.

Sulfate is present in the diet. A number of food additives are sulfate salts and most (such as copper sulfate and zinc sulfate) are approved for use as nutritional supplements.

Sulfate may have adverse health effects on persons, primarily through its laxative effect following high-level, acute exposures. The adverse health effect from ingesting high levels of sulfate is increased water in the fecal matter (diarrhea), possibly contributing to dehydration. Because local populations usually acclimate to high sulfate levels, the impact is primarily on infants, transient populations (e.g., business travelers, visitors, and vacationers), and new residents.

**Agency Finding:** After reviewing the best available public health and occurrence information, EPA has made the determination not to regulate sulfate with a NPDWR at this time, because it would not present a meaningful opportunity for health risk reduction for persons served by PWSs. Although sulfate occurs in many PWSs nationally, the weight of evidence suggests that the adverse health effect is generally mild, of short duration, and generally occurs at concentrations considerably greater than 500 mg/L, except in very limited circumstances when sulfate co-occurs with magnesium and high total dissolved solids, which exacerbate its laxative effects. EPA is issuing a final

Drinking Water Advisory to provide guidance to communities that may be exposed to drinking water with high sulfate concentrations.

A complete review of EPA's analysis of the health effects, occurrence, and exposure for sulfate were presented in the June 2002 notice (USEPA 2002a) as well as in the regulatory determination (USEPA 2001g) support document for sulfate. EPA will issue a final Drinking Water Advisory for sulfate concurrent with today's action (USEPA 2003g). The advisory for sulfate provides guidance to communities that may be exposed to drinking water contaminated with high sulfate concentrations. This advisory contains information of use to sensitive sub-populations, such as infants and travelers.

#### VI. How Will EPA Address the Data Needs of the Remaining 51 CCL Contaminants?

The Agency continues to conduct research and/or to collect occurrence information on the remaining CCL contaminants. EPA has been conducting research to fill identified data gaps. The Agency will take action as appropriate when information becomes available and will not necessarily wait until the end of the next regulatory determination cycle before making other regulatory determinations.

To support decisions on CCL contaminants, the Agency is required to evaluate when and where these contaminants occur, the extent of exposure, and their risk to public health. EPA must also determine if regulating the contaminant presents a meaningful opportunity for reducing public health risk. Contaminants deemed ready for regulatory determination, which include those that are the subject of today's decisions, are determined to have sufficient data to support a decision as to whether or not to regulate based on evaluation of both exposure and risk to public health.

The remaining 51 CCL contaminants for which decisions are not being made today do not have sufficient data to support regulatory decisions. The Agency continues to conduct research and/or collect occurrence information on these remaining contaminants. The research issues are broader than those that EPA can address alone. It is anticipated that other entities will be involved in conducting much of the needed research to support this process. EPA continues to identify and develop new collaborations to conduct research and gather the additional data to characterize occurrence and adverse health effects to support future regulatory determinations of CCL

contaminants. EPA is also engaged with our stakeholders in a NDWAC work group to refine the CCL listing process to address emerging contaminants for future efforts.

EPA is committed to providing a means for our stakeholders to track progress of research on remaining CCL contaminants. The Agency is currently developing a web-based system that will be available to the public in 2003. This website will serve as a repository of information on drinking water research projects currently funded or performed by EPA.

#### VII. References

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- USEPA, 2001b. *Regulatory Determination Support Document for Hexachlorobutadiene*. EPA 815 R-01-009.
- USEPA, 2001c. *Regulatory Determination Support Document for Manganese*. EPA 815 R-01-013.
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- USEPA, 2001f. *Regulatory Determination Support Document for Sodium*. EPA 815 R-01-014.
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