

Colorado Water Quality Standards and In Situ Uranium Recovery

Colorado groundwater standards are approved and adopted by the nine-member, Governor-appointed, Water Quality Control Commission (WQCC) following a formal rulemaking hearing. The Colorado Water Quality Control Act requires the WQCC to review all of its promulgated regulations every three years. During these triennial review hearings, the WQCC typically considers additions, revisions and modifications to the groundwater standards. However, the WQCC can, and does, consider adopting or revising standards outside this triennial review process.

During the triennial review process the WQCC considers input from all interested stakeholders. For example, for the current rulemaking hearing there will be a third-party proposal regarding modifications to regulation of aquifer storage and recovery operations. In preparing for the triennial review, the CDPHE Water Quality Control Division (WQCD), as staff to the WQCC, solicits input from the State implementing agencies on additional or revised groundwater standards. This process usually involves EPA Region 8 for any issue that also would affect the surface water standards.

The actual numeric standards are established based on WQCC policy, which has previously established such things as appropriate risk levels, exposure scenarios and acceptable EPA toxicological data. For the majority of groundwater standards these parameters are consistent, but depending on the testimony during the hearing, the WQCC may consider alternatives. The diisopropylmethylphosphonate (DIMP) hearings for the Rocky Mountain Arsenal are probably the most dramatic example of the WQCC using different toxicological data than that used by EPA.

For naturally occurring contaminants that may already exceed numeric standard established by the WQCC, the applicable standard is based on the pre-mining ambient concentrations of that contaminant. For example, in areas throughout Colorado, due to the presence of marine shales, the naturally occurring levels of selenium exceed the numeric standard established by the WQCC. A similar, but not as widespread, situation exists for uranium. In these cases, the applicable standard is based on those levels that occur prior to any mining activity.

Under Senate Bill 181, the State's implementing agencies are required to enforce the standards adopted by the WQCC. However, Colorado is not a delegated state for the Underground Injection Control (UIC) program, which is handled by EPA Region 8. The UIC program, which is part of the Safe Drinking Water Act (SDWA), regulates, permits and inspects all injection operations in Colorado with the exception of Class II wells. Colorado has adopted groundwater standards for a number of chemicals that currently are not regulated under the SDWA, so this is one area where close cooperation with EPA's UIC personnel is essential.

The metals of most concern related to the in situ proposals are arsenic, cadmium, molybdenum, uranium, vanadium and possibly selenium. State standards exist for arsenic, selenium and cadmium, and State standards for molybdenum and uranium are

being proposed in the current rulemaking. A state standard for vanadium is not being proposed. There also is an existing EPA drinking water Maximum Contaminant Level (MCL) for uranium.

The EPA UIC Class III permit (for solution-injection and recovery wells) is contingent on an aquifer exemption under the Safe Drinking Water Act requirements. The aquifer exemption establishes that the aquifer to be mined will not be used as a drinking water source. No standards are applicable in the exempted aquifer, and at closure the mined zone must be stabilized. However, the mine operator is not required to return the aquifer to pre-mining conditions under the UIC permit.

The Radioactive Materials License will require containment of contaminated solutions within a defined area. Releases of contaminants outside this area during, or following, mining are identified through points of compliance, where WQCC groundwater standards must be met. If releases occur, the license requires corrective actions to be evaluated and implemented as appropriate. Decommissioning requirements include decontamination of the mined zone and return to conditions consistent with the WQCC standards, or pre-mining conditions.