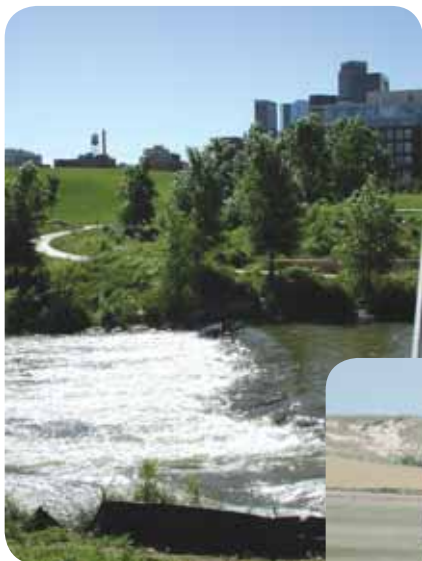


What are Emerging Contaminants?

New analytical capabilities have allowed scientists to identify chemicals in the environment in extremely small concentrations. Emerging contaminants (ECs) are those chemicals that recently have been shown to occur widely in water resources and identified as being a potential environmental or public health risk, and yet adequate data do not exist to determine their risk (Younos, 2005). ECs are used every day in our homes, on our farms, or by businesses and industry and include detergents, fragrances, prescription and nonprescription drugs, disinfectants, and pesticides. Some ECs have been shown to be common in water resources around the world, across the Nation, and in Colorado (Ternes, 1998; Kolpin et al., 2002; Sprague and Battaglin, 2005). The occurrence of some emerging contaminants correlates with ecological effects and sexual abnormalities in fish, although a cause-and-effect relation has not been established.



Why Study Emerging Contaminants in the Rocky Mountain Region?

The increasing need to conserve and reuse water can lead to increases in the number and concentration of many ECs and underscores the need for more scientific assessment to better understand the sources of ECs, the effectiveness of removal by wastewater- and drinking-water-treatment processes, the transport and environmental fate of these compounds, and their potential for physiological effects on humans and wildlife. The Rocky Mountain region is an ideal laboratory for studies of the source, fate, and effects of ECs. All of the components for a risk assessment are here—an identified problem (aquatic biological abnormalities), potential causes for the problem, a gradient of exposure, and an established network of scientists, decision makers, and key stakeholders willing to address the problem.

Many streams originate high in the Rocky Mountains and, in a relatively short distance, flow through pristine forests, high-use recreational areas, rapidly growing urban areas, and intensively farmed agricultural lands. As these streams leave the mountains, the water is used by agriculture and growing urban populations, and streamflow becomes dependent on treated wastewater, non-point discharges, and return flows from agricultural land. Due to the semiarid climate of the region, most streamflows are relatively limited so that dilution of ECs is minimal. Pressure on this relatively limited resource results in frequent reuse of water for urban, agricultural, and drinking water. Each reuse of water can result in additions of manmade compounds, including ECs, to the resource. As a result, Rocky Mountain region streams provide a unique gradient of water-quality, land-use, and demographic conditions where the source, fate, transport, and effects of ECs can be easily observed.

In addition, a world-class network of scientists and stakeholders are in the Rocky Mountain region, including scientists at the local, State, and Federal level, with expertise in hydrology, biology, environmental geochemistry, analytical chemistry, wastewater- and drinking-water-treatment technology, and wildlife toxicology. Other regional stakeholders include regulators, policy makers, municipalities, and wastewater-treatment-plant owners and operators. These groups and individuals have indicated their willingness to learn more about EC-related issues. In fact, many of these scientists and stakeholders are at the forefront of EC research and education in the United States.

Why Form a Consortium?

The complexity of EC research will require a coordinated, multi-disciplinary approach to provide the level of understanding needed to make informed management decisions. Scientists and stakeholders in the Rocky Mountain region have decided to be proactive in regard to the issue of ECs in the region's streams and groundwater. The consortium provides a forum to share ideas, resources, and expertise and creates a focal point for financial support and data interpretation that results in more efficient and effective EC studies. The consortium also provides a place to talk about study results and work together to communicate those results to policy makers and the general public in a way that will produce understanding without unwarranted alarm.



Consortium Mission Statement

To take advantage of the unique resources of the Rocky Mountain region to achieve the following objectives: facilitate scientifically sound studies regarding the occurrence, fate, transport, and effects of ECs; interpret and communicate the results of local and national studies on ECs for stakeholders and the general public; identify critical EC-related research needs; and provide solutions that are transferable worldwide.

Consortium Key Goals

- Advance the current state of knowledge of occurrence, fate, transport, and ecological relevance of ECs by facilitating cooperative, multi-institution, interdisciplinary research and monitoring projects.
- Foster interdisciplinary research and collaboration and effectively integrate the application of limited resources.
- Link consortium researchers with field sites, pilot facilities, and laboratory resources available at Federal, State, and academic institutions and water, wastewater, and agricultural agencies.
- Share information on current and proposed research among scientists, regulators, and regulated parties in an open and unbiased way.
- Coordinate and sponsor the acquisition of funding and infrastructure to conduct EC research at laboratory and field scales in watersheds that are representative of the region and the entire United States.
- Investigate options for removal of ECs from the environment by treatment or source control.
- Advance knowledge concerning the ability to reuse waters that contain ECs.
- Synthesize and communicate the results of current and future EC research to regulators, policy makers, treatment-plant operators, other scientists, and the public.
- Provide practical solutions to EC-related problems.

How Can You Participate in CREEC?

If you are interested in participating in CREEC meetings or activities, or if you just want to be informed of CREEC products, please contact us by email at creec@usgs.gov

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