Current analytical capabilities are allowing scientists to identify possible contaminants in the environment that were previously unmonitored or were present at concentrations too low for detection. New scientific evidence about the exposure pathways and potential impacts of some of these compounds on human or environmental health is regularly being published (Woodling et al., 2006; Drewes et al., 2005; Kinney et al., 2006; Gibs et al., 2007; Veldhoen et al., 2006). Recent news headlines have declared potential human health and ecological concerns regarding the occurrence of personal care products and pharmaceuticals in our environment. These are products that we regularly use (or create) in our homes, businesses, farms and industry, including plasticizers, flame retardants, detergents, pesticides and herbicides, antibacterial agents, steroids, antibiotics, and disinfection by-products. These ‘emerging contaminants’ (ECs) are compounds that have recently been shown to occur widely in one or more environmental media, have been identified as being a potential public health or ecological risk, and yet adequate data are lacking to determine their actual risk (Younos, 2005; Soin and Smagghe, 2007; Hutchinson, 2007).

In response to the headlines, and recognizing the need for and benefits of multidisciplinary, collaborative research and expanded analytical capabilities, a group of proactive stakeholders from the mountain states of Colorado and Wyoming (Table 1) formed the Consortium for Research and Education on Emerging Contaminants (CREEC) (see http://co.water.usgs.gov/CREEC/). This consortium includes scientists and engineers from the local, state, and Federal government and from several universities with expertise ranging from hydrology and environmental geochemistry to wildlife toxicology, as well as drinking-water and wastewater treatment technology. Regional stakeholders also include regulators, policy makers, consultants, drinking water and wastewater treatment plant representatives, and concerned individuals.

Through collaboration, communication, and education, CREEC seeks scientifically sound answers to human, ecological, and environmental questions and concerns regarding emerging contaminants that are applicable to the Colorado and Wyoming Rocky Mountain region and transferable worldwide.

CREEC’s purpose is to share research ideas, resources, and expertise and to create a mechanism for channeling financial support to advance EC research in the Colorado and Wyoming Rocky Mountain region. CREEC provides a forum to discuss study plans, research ideas, and scientific results, and strives to communicate results to policy makers and the public to enhance understanding without producing unwarranted alarm.

<table>
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<tr>
<th>Water and Wastewater Utilities, Consultants, and Universities</th>
<th>State and Federal Government Agencies*</th>
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<tr>
<td>CH2M Hill</td>
<td>CDPHE – Water Quality Control Division</td>
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<tr>
<td>City of Aurora, Colorado</td>
<td>CDPHE – Colorado State Environmental and Clinical Chemistry Program</td>
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<td>City of Boulder, Colorado</td>
<td>Colorado Division of Wildlife</td>
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<td>City of Englewood, Colorado</td>
<td>USEPA – Region 08 – Industrial Pretreatment Program</td>
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<td>City of Thornton, Colorado</td>
<td>USEPA – Region 08 – Office of the Regional Administrator</td>
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<td>Colorado School of Mines</td>
<td>USEPA – Region 08 – Water Quality Unit, Ecosystems Protection</td>
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<td>Colorado State University</td>
<td>USEPA – Region 08 Laboratory</td>
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<td>Denver Water</td>
<td>U.S. Fish and Wildlife Service</td>
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<td>Metro Wastewater Reclamation District</td>
<td>USGS – Colorado Water Science Center</td>
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<td>Richard P. Arber Associates</td>
<td>USGS – Toxic Substances Hydrology Program</td>
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<td>University of Colorado at Boulder</td>
<td>USGS – National Research Program</td>
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<td>University of Wyoming</td>
<td>USGS – Biological Resources Discipline</td>
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CREEC members are focusing their research efforts in the Colorado and Wyoming Rocky Mountain region, which provides an “ideal field laboratory setting” for research and education on emerging contaminants. The region includes a unique hydrologic gradient of exposure, identified EC occurrence and effects, and an established network of scientists and other key stakeholders from institutions and facilities at the forefront of EC research, who are willing to collaborate on the issue. Most streams in the region originate high in the Rocky Mountains, initially flow through relatively pristine forests and open space with varying levels of recreational use, then traverse rapidly growing urban and suburban areas, and finally pass through intensively farmed agricultural areas. Once the streams leave the mountains, their water is used and reused by agriculture and urban populations, resulting in streamflow and water quality that are highly dependent on treated wastewater, nonpoint discharges, and agricultural return flows. As a result of this combination of factors and mounting pressures on this relatively limited resource, the Colorado and Wyoming Rocky Mountain region has a unique gradient of water quality, land use, and demographic conditions where the source, fate, transport, and effects of ECs can be effectively studied.

Consortium goals include the following:

- **Advance the state of knowledge** of occurrence, fate, transport, ecological relevance, and potential effects on human and environmental health of ECs by facilitating cooperative, multi-institution, interdisciplinary research and monitoring projects.
- **Foster collaborative research** by linking consortium researchers with field sites, pilot facilities, and laboratory resources available at Federal, state and academic institutions as well as several local and regional water, wastewater, drinking water, and agricultural organizations and agencies.
- **Share information** on current and proposed research among scientists, regulators, and stakeholders in an open environment for discussion and educational purposes.
- **Coordinate, facilitate, and share limited resources** to acquire funding and maximize resources to conduct transferable EC research at laboratory and/or field scales in the Colorado and Wyoming Rocky Mountain region.
- **Advance knowledge** concerning the ability to reuse waters that contain ECs.
- **Investigate options for EC removal** from the environment by treatment or source control.
- **Synthesize and communicate results** of current and future EC research to regulators, policy makers, drinking-water and wastewater treatment plant operators, other scientists, and the public.

Recent CREEC activities include an EC-focused workshop held in conjunction with the 2005 South Platte Forum, application for state and Federal nonprofit status, and ongoing collaborative development of a regional water quality study on nonylphenol and selected organic compounds. CREEC also will be a sponsor of the American Water Resources Association Summer Specialty Conference, “Emerging Contaminants of Concern in the Environment: Issues, Investigations, and Solutions” in Vail, Colorado, June 25-27, 2007. If you are interested in participating in CREEC activities, or if you want to be informed of CREEC-sponsored events and products, please contact us by email at creec@usgs.gov.

Through collaboration, communication and education, CREEC seeks scientifically sound answers to human, ecological, and environmental questions and concerns regarding emerging contaminants that are applicable to the Colorado and Wyoming Rocky Mountain region and transferable worldwide.

**REFERENCES**


**SELECTED LINKS TO MORE INFORMATION**

http://co.water.usgs.gov/CREEC/index.html – Homepage of the Consortium for Research and Education on Emerging Contaminants (CREEC)


http://www.epa.gov/esd/chemistry/pharma/index.htm – Pharmaceuticals and personal care products (PPCPs) as environmental pollutants historically hosted by the U.S. Environmental Protection Agency National Exposure Research Laboratory Environmental Sciences (no longer being updated)

Striving for Collaborative Science and Communication Through the Consortium... . . . cont’d.

http://e.hormone.tulane.edu/ehormone.html – Gateway to information on the environment and hormones hosted by Center for Bioenvironmental Research at Tulane and Xavier Universities

http://www.chbr.noaa.gov/peiar/ – A database of available information on the general chemistry and toxicology of potential environmental levels of pharmaceuticals hosted by the National Centers for Coastal Ocean Science, Center for Coastal Environmental Health and Biomolecular Research

http://www.endo-society.org/ – The Endocrine Society whose mission is intended to advance endocrinology and promote its critical role in integrating scientific research and medical practice, hosted by The Hormone Foundation

http://www.ourstolenfuture.org/ – A website that tracks the most recent developments regarding endocrine disruption and related scientific findings, based on the book “Our Stolen Future” by Theo Colborn, Dianne Dumanoski, and John Peterson Myers

http://bcn.boulder.co.us/basin/topical/haa.html – Boulder Area Sustainability Information Network (BASIN) sponsored web site that contains a summary of research on the impacts of hormonally active agents in Boulder Creek, Colorado

Juliane B. Brown holds a BS in Geology and a Certificate of Environmental Studies from Dickinson College, Carlisle, Pennsylvania. In 2002 she earned her MS in Watershed Science from Colorado State University-Ft. Collins. Her research interests include the occurrence, distribution, fate, and effects of contaminants of emerging concern, the design and implementation of long-term water quality monitoring programs, collaborative watershed organizations, and water quality information systems. She is a founding member and currently the Secretary of the Consortium for Research and Education on Emerging Contaminants (CREEC).

IN MEMORIAM

The AWRA Board of Directors, staff and membership extend their deepest condolences to the families and friends of the victims of the tragedy at Virginia Polytechnic Institute and State University. Words cannot express the pain and sorrow these people are going through right now. It touches so many of us across the country and indeed the world. Even in our own little corner of that world, the AWRA Virginia Tech Student Chapter has been affected and altered forever. Not just by the loss of Matthew Gwaltney, the chapter’s Vice President, but also by the loss of the members of the Environmental and Water Resources Engineering Program, the students who participated in chapter’s activities, and faculty members such as Dr. G. V. Logathan, who supported their efforts. We honor their memories and trust that their spirit and dedication will live on in the Chapter and the University.

WATER POLICY ANNOUNCEMENT

Guatemala will be the venue for the SIXTH WATER DIALOGUE

The Sixth Dialogue will take place in Guatemala City, on August 12-17, 2007. The Sixth Inter-American Dialogue on Water Management is the most prominent regional event that gathers a wide array of stakeholders and practitioners in the theme of water management in the Americas. Organized by the Inter-American Water Resources Network and the Government of Guatemala, with the collaboration of many international agencies, civil society organizations, academic institutions, and the private sector, the Sixth Dialogue will take on the need to evolve “From Dialogue to action – Strengthening partnerships and building the basis for meeting the Millennium Development Goals.” The Dialogue is built around the foundation of wide participation to come up with a set of recommendations that will be sent to the decision-makers and opinion drivers in water issues in the region – regardless of the sector in which they act. Building such a partnership means more than just agreeing in how to split chores to work together for an objective, like water and sustainable development. It also means making a call to everyone to be part of the crusade to manage responsibly the most precious resources that our countries have: water and their people. For additional information, please visit the webpage http://www.iwrn.net.

HAVE SOME COMMENTS ABOUT THIS ISSUE OF IMPACT?

SEND US YOUR FEEDBACK

Water Resources IMPACT is in its ninth year of publication and we have explored a lot of ideas. We hope we’ve raised some questions for you to contemplate. “Feedback” is your opportunity to reflect and respond. We want to give you an opportunity to let your colleagues know your opinions ... we want to moderate a debate ... we want to know how we are doing. For this issue send your letters by land-mail or e-mail to

William A. Battaglin (wbattagl@usgs.gov)
Jonathan E. Jones (jon.jones@wrightwater.com)

Comments may also be sent to

Earl Spangenberg (espanen@uwsp.edu)

Either way, please share your opinions and ideas. Please limit your comments to approximately 350 to 400 words. Your comments may be edited for length or space requirements.