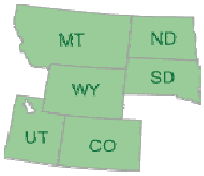


U.S. Environmental Protection Agency Region 8
Serving Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations

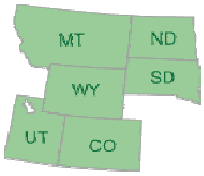
The U.S. Environmental Protection Agency (USEPA) Region 8 Emerging Contaminants Project Summary

Over 98 million prescriptions were filled at pharmacies in Region 8 alone in 2010. Over one billion pounds of pesticides are used in the United States each year. Results obtained by the scientists in Region 8 demonstrate that pharmaceuticals, personal care products (PPCPs), pesticides and pesticide degradates, and other compounds of emerging concern are being detected in surface and ground waters within the Region. There is increasing concern that the potential exists for low-level, chronic exposure to mixtures of these chemicals to have adverse ecological or human health effects. For example, new information has shown that many of these chemicals may pose a threat to aquatic life, such as feminizing changes observed in male fish exposed to endocrine-active PPCPs in streams and lakes within Region 8.

The occurrence, fate, and transport of these chemicals are an important water quality concern, both nationally and regionally, and have gained public interest. The work conducted by Region 8 scientists is providing useful information to address those concerns and fill information gaps which can be used to inform the implementation of the SDWA and CWA, as appropriate. The Region 8 data was shared with the National Academy of Science (NAS) in a review of the science being performed by USEPA. The feedback was overwhelmingly positive and Region 8 was commended for this innovative work by the NAS committee. Furthermore, a Government Accountability Office report (GAO-11-346 August 8, 2011) recommended that EPA collect the pharmaceutical environmental occurrence data and address the issue of pharmaceuticals and their relationship to other contaminants in the nation's waterways. The work conducted by Region 8 directly addresses the recommendations outlined in the GAO report by collecting occurrence data and examining the co-occurrence of pharmaceuticals and other contaminants such as pesticides in surface water.

The Pesticide Program within the Office of Partnerships & Regulatory Assistance (OPRA), the Water Quality Unit within the Office of Ecosystems, Protection and Remediation (EPR), and the Laboratory Services Program within the Office of Technical and Management Services collaborated to develop a list of over 250 compounds for monitoring. Data has been collected in all 6 states in the Region, for 12 individual tribes, three municipalities, two universities, and two other federal agencies (DOI and USDA). The analytical methods serve as a foundation for gathering the data needed to start evaluating what chemicals are present, what concentration are they at if present, what is happening to them as they travel downstream, what are the human, ecological, and economic effects if any, and what synergistic effects are present if any. Example compounds include caffeine, ibuprofen, drugs of abuse such as cocaine and certain cocaine metabolites, anti-microbials such as triclosan, phosphate based flame retardants, and common pesticides such as 2,4-D, atrazine, and atrazine degradates.

Data generated from this collaborative approach were used in the Region by states and tribes, but was also shared with other USEPA divisions and offices, and other federal agencies to assess risk to human health. This coordination expands the utility of the data to improve our scientific understanding of fate and effects from emerging contaminants, for use in regulatory decisions such as re-registration of pesticides and implementation of the CWA and SDWA, for regional and national water quality initiatives, and to serve as a national program model suggested by NAS. This teamwork-based effort is improving and maintaining improvements in water quality as well as fostering partnerships within the agency, between the agency and states and tribes, and between other federal partners. Three sub-projects are described on the reverse side.



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Urban Waters

The water quality issues associated with mountains and plains as well as pristine public lands and urban areas are challenging. Snowpack runoff and groundwater are the predominant water resources in Region 8. The use of these waters for drinking water, as well as for recreation, and in industries such as energy extraction, and animal husbandry all require the gathering of data to determine the effect that humans, wildlife, animal husbandry, and climate change may have on these valuable resources. Region 8 scientists are monitoring for select pharmaceuticals, waste indicators, and pesticides to start to understand how these compounds affect the use of the water resources in urban areas in Region 8.

National Parks

Region 8 contains some of the largest National Parks in the country. These include Rocky Mountain National Park, Yellowstone National Park, and Glacier National Park. The Parks are visited by millions of citizens each year. How these citizens affect the ecology of the lakes and streams is an important factor in protecting these national resources for future generations. Region 8 scientists, in collaboration with National Park colleagues, are monitoring for select man-made compounds to determine if there are pharmaceuticals, pesticides, and other man-made compounds present, and if there are, how much is present. This information will be used to determine how best to protect the delicate ecosystems within the Parks.

Local Municipalities

Region 8 scientists, in collaboration with local municipalities, are working to understand the sources, fates, and transport of emerging contaminants. Working with wastewater treatment plants, local citizen groups, and other Federal partners, ongoing studies are measuring the effectiveness of specific wastewater treatment strategies and their optimization.

The projects described are just a few of the many that Region 8 scientists are pursuing. More details for each project can be obtained by contacting the Region 8 Laboratory Director at 303-312-7799.