



Colorado Department
of Public Health
and Environment

Water Quality Control Division Safe Drinking Water Program

2012 ANNUAL REPORT



PROGRAM MANAGER'S MESSAGE

I am pleased to share this brief report on Colorado's 2012 Safe Drinking Water Program. I hope it helps every water consumer understand the daily challenges experienced and overcome by public water systems and the Colorado Safe Drinking Water Program as we work together to bring safe drinking water to wherever you may be – at home, at work or during your travels across this diverse and beautiful state.

We have divided this report into three major areas:

The first provides an overview of the multiple risks or contamination pathways that may threaten the safety of your drinking water.

The second explains the voluntary and regulatory approaches used by the Safe Drinking Water Program to eliminate or reduce the various contamination risks.

The third provides a scorecard comparing program goals to results and compliance status for water systems in Colorado.

Challenging initiatives for 2013 to strengthen our Program and better ensure the continuous safety of your drinking water include:

- ▶ Assuring adequate disinfection - New regulations promulgated after the Alamosa waterborne disease outbreak in 2008 were passed in 2010 with implementation requirements running through 2012. In 2013, we will complete those implementation activities.
- ▶ Assisting water systems with uranium and radium problems – Approximately 28 public drinking water systems, serving about 21,000 people in total, struggle with naturally occurring uranium and radium above health standards in their water supplies. Several of these systems will initiate projects to address the problem in 2013, and we will continue to help other systems who may still be years away from a solution.
- ▶ A major revision of the Colorado Primary Drinking Water Regulations – Program staff is working to make these regulations more organized and easily understandable to the diverse regulated community of public water systems that includes giant systems like Denver Water, as well as small camp grounds and rural restaurants with their own wells.
- ▶ Updating the State of Colorado Design Criteria for Potable Water Systems – This document provides the design basis for the approval of new or modified waterworks in Colorado. It has not had a significant revision since 1997.

I am proud of the work done every day by the dedicated staff of your Safe Drinking Water Program. If you have any questions or concerns, please feel free to contact me by telephone at (303) 692-3569, or by email at ron.falco@state.co.us. Thank you!

Ron Falco, P.E.

Safe Drinking Water Program Manager



INTRODUCTION

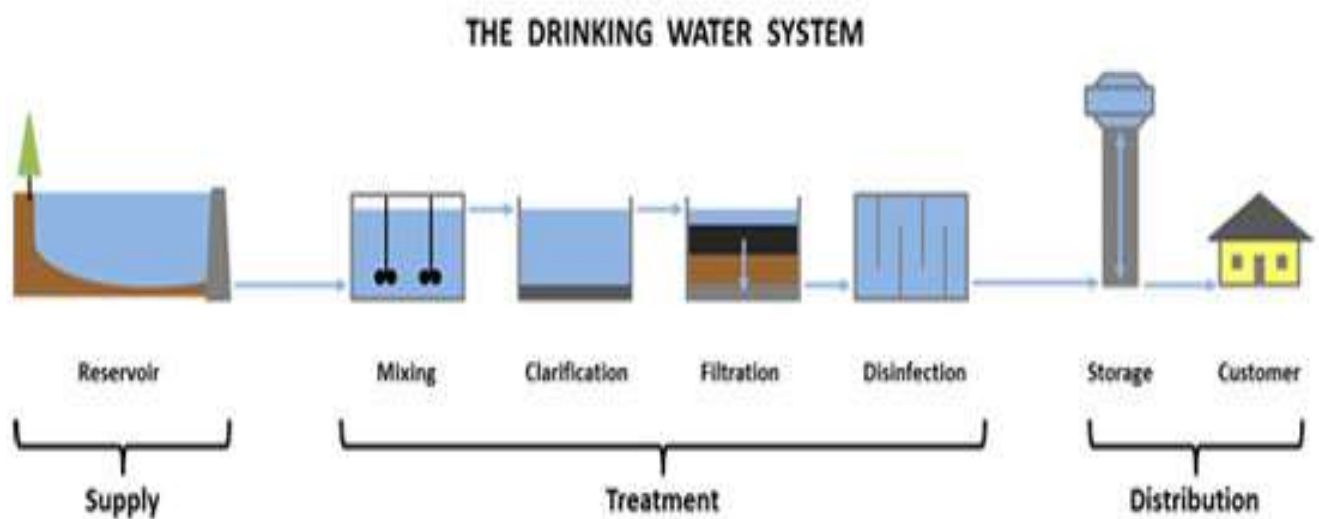






Each day, millions of people – young and old, healthy and infirm, residents and visitors - use water provided by Colorado public water systems to bathe, wash dishes and clothes, prepare their food, and quench their thirst. Few consumers have the time or technical knowledge to ensure that the water



flowing from the tap in their home, workplace or favorite restaurant is safe. The Colorado Safe Drinking Water Program has the mission of ensuring that the water provided by public drinking water systems is always safe to drink. It is a challenging task because there are many opportunities for drinking water to become contaminated on its journey from source through treatment, storage and delivery to the consumer's tap. Success takes the combined efforts of many dedicated professionals to control the multiple contamination risks shown below.

Colorado Safe Drinking Water Program Mission: Always Safe Drinking Water

DRINKING WATER - POTENTIAL SOURCES OF CONTAMINATION



WATER SYSTEM COMPONENT		POTENTIAL SOURCE OF CONTAMINATION
	<p>Ground Water Sources</p> <ul style="list-style-type: none"> ▶ Wells ▶ Springs 	<p>Leaking Storage Tanks/Pipelines</p> <ul style="list-style-type: none"> ▶ Industrial and Agricultural Chemicals ▶ Transportation Fuels <p>Septic System Discharges</p> <ul style="list-style-type: none"> ▶ Bacteria and Viruses ▶ Household Chemicals ▶ Pesticides and Fertilizers <p>Improperly Managed Injection Wells</p> <p>Sewage System Leaks/Breaks</p> <ul style="list-style-type: none"> ▶ Surface Spills ▶ Excess Chemical Application ▶ Feed Lot Waste <p>Naturally Occurring Compounds</p> <ul style="list-style-type: none"> ▶ Organic ▶ Inorganic ▶ Radium and Uranium ▶ Bacteria and Viruses
	<p>Surface Water Sources</p> <ul style="list-style-type: none"> ▶ Rivers and Creeks ▶ Reservoirs and Lakes ▶ Shallow Ground Water Wells 	<p>Surface Runoff</p> <ul style="list-style-type: none"> ▶ Lawn Fertilizers and Pesticides ▶ Agricultural Feedlot Runoff ▶ Streets, Roads and Parking Lots ▶ Flood Contamination ▶ Airborne Deposition <p>Domestic and Industrial Wastewater Discharges</p> <p>Naturally Occurring Compounds (see above)</p>
	<p>Water Treatment Plant</p>	<p>Treatment Chemical Impurities</p> <p>In-Plant Cross Connections</p> <p>Disinfection Byproduct Formation</p> <p>Chemical Overdoses</p> <p>Unapproved Treatment Processes</p> <p>Inadequate Treatment Infrastructure</p> <p>Improper Management or Operation</p> <p>Improperly Trained/Certified Operators</p>
	<p>Treated Water Storage Tanks</p>	<p>Unprotected Openings</p> <ul style="list-style-type: none"> ▶ Vents ▶ Hatches ▶ Penetrations for Wiring, Pipes, etc ▶ Tank deterioration <p>Corrosion</p> <p>Old Paint Coatings</p> <p>Sediment Buildup</p> <p>Bacterial Growth</p>

WATER SYSTEM COMPONENT		POTENTIAL SOURCE OF CONTAMINATION
	<p>Treated Water Distribution System</p>	<p>Leaks and Breaks Inadequate Pressure Bacterial Growth Cross Connections</p> <ul style="list-style-type: none"> ▶ Industrial ▶ Residential <p>Pipe Corrosion</p>
	<p>Consumer's Place of Use</p>	<p>Lead Service Line Leaching Lead Plumbing Cross Connections</p>

COLORADO SAFE DRINKING WATER PROGRAM

The Colorado Safe Drinking Water Program and public drinking water systems take steps to eliminate or reduce the multiple contamination risks outlined above. Regulations require specific activities, but many public drinking water systems also participate in our Program's voluntary activities to keep drinking water as safe as possible.

VOLUNTARY ACTIVITIES TO KEEP WATER SAFE

- ▶ Protecting Water Sources,
- ▶ Using Financial Assistance for Water Infrastructure, and
- ▶ Building Technical, Managerial, and Financial Capacity

PROTECTING WATER SOURCES

The Safe Drinking Water Program helps public water systems protect their sources of raw water. About ten years ago, each public drinking water system received a Source Water Assessment report that detailed potential contamination risks. Source water protection efforts are now directed at proactive efforts that water systems can take to protect water quality and safety, including:



- **Development and Implementation Grants** - Protection plan development and implementation grants of up to \$5,000 are currently available.
- **Pilot Planning Project Grants** - Source Water Assessment and Protection Pilot Planning Project (PPP) Grants of up to \$50,000 are currently available.

Additional information about the Source Water Assessment and Protection Program is available on our web site at: <http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596793639>.

FINANCIAL ASSISTANCE FOR WATER INFRASTRUCTURE

The costs for the equipment needed to collect, treat, store, and distribute safe drinking water to the public can be very large and sometimes very overwhelming for small or disadvantaged communities. Colorado implements a federally funded program that provides grants and low interest loans to help these systems improve their infrastructure. Specific available financial assistance includes:

- **Design Grants** - System planning and design grants of up to \$10,000 are available to small systems.
- **Loans** - State revolving loan fund loans are available for treatment upgrades, distribution line replacement, water meters and treated water storage (dams and reservoirs). Projects needed primarily for growth are not eligible. These loans are provided with below market rates, extended loan terms, and no matching requirements.

Additional information about financial assistance for public water systems can be accessed from our web site at: <http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251599775915> and from the web site of our program partner, the Colorado Water Resources and Power Development Authority at: <http://www.cwrpda.com/programs/state-revolving-funds/drinking-water>

BUILDING TECHNICAL, MANAGERIAL, AND FINANCIAL CAPACITY

Having the necessary infrastructure is essential to providing continuously safe drinking water, but it is not enough. A public water system needs staff with critical skills to properly manage, operate and maintain the often sophisticated equipment and controls used to treat and distribute safe drinking water. Only when properly working together, can a water system's physical and human resources provide continuously safe drinking water. As noted above, this takes money too. So a water system needs to charge rates that will meet today's needs, and build a foundation to meet tomorrow's needs as well. Taken together these traits for success are referred to as having technical, managerial, and financial capacity and the Safe Drinking Water Program offers training and support including:

- **Coaching** – Certified Safe Drinking Water Program staff provide water system operators with on-site coaching on a wide range of proper operational practices.
- **Security and Emergency Preparedness** – Promotes security and all-hazards preparedness including training and exercises.
- **Training Partnerships** – Partnering with numerous training providers to deliver focused workshops on topics that water need to enhance their capacity.
- **Excellence** – Excellence activities promote treatment process optimization, and provide advanced and highly specialized technical training.



Additional information about other activities to build the technical, managerial and financial capacity of public water systems can be found at: <http://www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251596793667>

REGULATORY ACTIVITIES TO KEEP WATER SAFE

In addition to supporting voluntary activities, the Safe Drinking Water Program establishes and ensures that water systems comply with the Colorado Primary Drinking Water Regulations adopted by the Water Quality Control Commission. Program regulatory activities include:

- ▶ Regulation development and implementation
- ▶ Maintaining the inventory of public drinking water systems in Colorado
- ▶ Compliance assistance
- ▶ Enforcement
- ▶ Consumer assistance

REGULATORY DEVELOPMENT AND IMPLEMENTATION

Research into waterborne disease outbreaks and long-term health risks, such as cancer, has revealed common water safety risks. These are addressed by the Colorado Primary Drinking Water Regulations. The regulations require public drinking water systems to implement certain treatment technologies depending upon the contamination risk posed by their water's source: surface (such as lakes, rivers and streams) or ground (such as springs or wells). Water systems are also required to routinely sample the quality of the water they serve to the public and report those results to the Safe Drinking Water Program. If a problem occurs, then water systems must also notify the public and correct the problem. Considering the scope of knowledge required to properly operate a public water system, the wide range of water system sizes and complexity, and the public health risks associated with improper operation, the Colorado legislature requires that public water systems employ at least one certified operator. Colorado Regulation 100 establishes requirements for experience, skills and exams needed to become a certified drinking water facility operator.

MAINTAINING THE INVENTORY OF PUBLIC DRINKING WATER SYSTEMS IN COLORADO

The specific requirements that apply to a particular public drinking water system depend on a number of system characteristics such as size, type of population served, and threat of contamination. For example, water systems that serve a large resident population typically must sample much more frequently than very small systems, like campgrounds, that do not serve year-round residents. So inventory development and maintenance is important not only for identifying the regulated community, but for ensuring that regulatory requirements are applied with health risks and costs in mind.

COMPLIANCE ASSISTANCE

The Safe Drinking Water Program provides assistance to public water systems via multiple avenues including:

- ▶ Public notice during emergencies – Program staff is frequently notified of problems that may have serious acute health implications such as loss of treatment or reports of illness. We assemble our acute team of engineering and compliance experts to consult with water system representatives and devise appropriate actions to protect the health of consumers. If necessary, the public is notified to boil their water prior to drinking, or to consume bottled water.
- ▶ Routine compliance assistance – Additionally, program staff monitors the compliance status of all public water systems. Systems that fail to collect required samples or that detect violations of water quality standards are

notified of the violation and generally offered assistance over the telephone or in person. We also support a variety of training events for water system operators.

- ▶ Periodic sanitary surveys – A sanitary survey is an on-site, top to bottom review of a water system’s practices. Program staff has the opportunity to review best practices and clarify regulatory requirements with the water system.
- ▶ Design review – Prior to construction, all new and modifications to existing waterworks must be approved by the Program to ensure compliance with Colorado’s design criteria and all applicable laws, standards, rules and regulations.

ENFORCEMENT

When compliance assistance efforts fail or where egregious or purposeful violations are discovered, staff may issue enforcement orders that can include penalties. In these cases, staff still tries to work with the public drinking water system to determine the best course of action and timeframe to re-establish compliance.

CONSUMER ASSISTANCE

Program staff ensures that public water systems provide their customers with annual consumer confidence reports that provide plain language information about their water system, drinking water quality sampling results, and whether any violations occurred. Additionally, staff responds to consumer questions.

SAFE DRINKING WATER PROGRAM GOALS AND PERFORMANCE

To measure our success the Safe Drinking Water Program uses a combination of national and Colorado-specific goals. Together they drive performance and measure the degree to which our customers, the residents and visitors to the state of Colorado, experience the benefits of our services. To meet health-based standards, it means that virtually every sample at a public drinking water system collected during the entire year, and this can be thousands of samples at large systems, must meet the standards. Even the slightest, temporary bad result can push a system below this stringent compliance threshold. We use this simple red, yellow green color-coded scorecard to assess performance relative to our goals.

PROGRAM GOAL	ACTUAL RESULT(S)	SCORE COLOR	COMMENTS
Zero waterborne disease outbreaks	Zero outbreaks since March 2008		In 2012 we responded to 94 potential threats at systems serving a total of 94,000 people. Threats often involve minor treatment problems or water main breaks, but can be more serious. We are available 24 hours a day to help during these situations. Thirty-one bottled or boiled water orders were issued impacting 18,500 people. There was a chemical contamination outbreak that sickened 26 people at a medical building complex in Colorado Springs during October 2012, but this was an issue inside one building and not a problem with the public water supply.
Zero persons receive drinking water that exceeds health-based standards for uranium or radium.	28 systems serving 21,000 people exceed these standards		Historically, over 50 water systems in Colorado struggled with naturally occurring radium and uranium in groundwater. It is a complicated challenge for these mostly very small systems. By 2016, we hope that only

			16 systems serving about 4,000 people are still grappling with this problem. Several systems in the Lower Arkansas River Valley are awaiting a Federal water pipeline project for clean, safe water. This may not happen until at least the 2020s.
98% of the population in communities receives drinking water that meets all health-based standards.	97.3%		We have always hovered right near the target, which is well above the national 2014 goal of 92%. The national result from 2010 was 91.4%. Colorado should be proud of this number.
95% of community public drinking water systems meet all health-based standards	92.2%		The national goal is 90%, and that is where the nation stood in 2010. If not for the radium and uranium issues, Colorado would be right at about 95%. Again, Colorado should be proud of this number.
80% of public drinking water systems are in full compliance with all regulatory requirements	75.1%		The most common violations are caused by failing to collect required samples and do not necessarily represent a direct public health risk, but unless a system properly samples, their water quality status cannot be known.

In conclusion, the Safe Drinking Water Program is proud that there has not been a confirmed waterborne disease outbreak at a public drinking water system since March 2008. We are also proud that we set our targets well above some key national goals and that we exceed the national performance. Unfortunately, the ancient geologic history of Colorado that blessed us with such beauty also left a little extra radium and uranium in the ground that can sometimes dissolve into groundwater at low levels, but still above health-based standards. We have been working on this problem for a number of years, and the situation is gradually improving. We would like to achieve more “green” results, but we will not lower our existing goals and when we achieve them, we will challenge our Program and public water systems by raising the goals for the future.