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Colorado Department
of Public Health
and Environment

MEMORANDUM

To: Colorado Hospitals, Colorado Rural Health Association, and Other Interested Parties

From: Ron Falco, P.E., Safe Drinking Water Program Manager

Date: June 30, 2011

RE: Emergency Water Purification Devices and Emergency Water Supplies

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The Water Quality Control Division (Division) of the Colorado Department of Public Health and Environment understands that certain individuals and organizations in Colorado have acquired or intend to acquire water purification units for the purpose of producing potable water during times when an approved public water supply is unavailable. This memorandum reflects our current position on emergency water purification devices and emergency water supplies.

Numerous national organizations, such as the Association of State Drinking Water Administrators, U.S. Environmental Protection Agency, and U.S. Department of Homeland Security, have expressed concern over the marketing of the water purification units as acceptable treatment for non-potable water during emergencies or other conditions requiring boil or bottled water orders. The Division is also concerned about such use, particularly in light of the fact that some of the organizations that have acquired or intend to acquire these devices are hospitals responsible for the care of people who are especially susceptible to microbiological or chemical contaminants that may remain in the water after treatment with uncertified purification devices.

Despite marketing claims, many water purification units do not produce water that meets current drinking water standards as set forth in the Safe Drinking Water Act and the Colorado Primary Drinking Water Regulations. These drinking water standards describe the minimum treatment requirements that govern all Colorado public drinking water systems. Further, we are aware that some marketing materials state that treatment units are appropriate for treatment of any potential water source. It is our position that any assessment of the effectiveness of a drinking water treatment process cannot be uncoupled from characterizing specific contaminants in the source water, and that no water treatment process exists that can be certified to properly treat for every potential contaminant.

Treatment methods and devices that do not meet standards set forth in the Safe Drinking Water Act are considered by the Department to be inadequate for producing safe drinking water. The Department advises potential consumers to be aware of the following issues:

- Certain water purification units available for purchase are point-of-use (POU), point-of-entry (POE), or mobile trailer-mounted devices. These devices have not been certified by an appropriate third-party certification organization for effectiveness; therefore, they cannot be assessed for their capability for treating non-potable water to current drinking water standards.

- To be approved for potable water use, water purification units with an ultraviolet (UV) disinfection process must be certified to NSF/ANSI Standard 55, Class A, which defines the National Sanitation Foundation/American National Standards Institute (NSF/ANSI) requirements for treating microbiologically unsafe water. The NSF/ANSI Standard 55 for Ultraviolet Microbiological Water Treatment Systems states that a Class A device must be capable of producing 40 milliJoules/square centimeter. We are aware that some of the POU and POE water purification units produce only 16 milliJoules/square centimeter.

- The EPA's *Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule* (EPA 815-R-06-007, November 2006) provides technical information and guidelines on the use of UV light for the disinfection of drinking water, which is a single tool in the multiple barrier approach to the comprehensive disinfection process required to reduce microbial risks. Even approved devices must be monitored for flow rate, UV intensity, and lamp status in accordance with these guidelines to ensure their effectiveness in this step of the treatment process.

- Some POU, POE, and mobile trailer-mounted water purification units do not provide the required removal and/or inactivation of viruses. Viruses are particularly challenging because some have the ability to repair themselves within a host after inadequate UV exposure. In Colorado, disinfection processes for microbiologically unsafe water must provide 4-log (99.99%) removal and/or inactivation of viruses. Also, the new Ground Water Rule does not allow UV as stand-alone treatment for virus inactivation at this time as there are currently no means to validate reactors for adenovirus inactivation. Depending on the water source, additional treatment may be required (e.g., filtration).

- The installation of treatment will require that the facility comply with the applicable provisions of the *Colorado Primary Drinking Water Regulations*, which include, but may not be limited to, design approval of the treatment device(s), ongoing monitoring, and certified operator requirements.

The Department strongly encourages consumers to thoroughly investigate the manufacturer's claims before purchasing any water treatment device. Although in the future POU, POE, or mobile trailer-mounted water purification units may be proven to be adequate for secondary treatment of *potable* water from an approved drinking water supply, they are not currently acceptable for primary treatment of non-potable water and should not be used as such when an approved drinking water supply is unavailable. Using these devices should only be considered during a major catastrophe, if no other source of water is available and boiling water is not possible. During an emergency situation associated with a public water system, alternate water system arrangements or portable treatment units will be a high priority to evaluate on a case-by-case basis, as resources permit. During emergency situations the Department's ability to conduct such evaluations may be limited or non-existent depending on the nature and magnitude of the emergency situation.

Boiling water or using bottled or bulk drinking water supplies remains the Department's preferred last resort if safe drinking water is not available.