BASIC INFORMATION ABOUT DRINKING WATER DISINFECTION

5) How effective is monochloramine vs. chlorine as a primary disinfectant?

Monochloramine can be an effective primary disinfectant in limited situations.

- Monochloramine takes much longer than chlorine to kill most potentially harmful organisms.[2]
- Monochloramine can be used as a primary disinfectant but the amount of time needed for treatment makes it impractical for most utilities.
- But because it is longer lasting than chlorine, monochloramine is often used as a secondary disinfectant.

Chlorine is a very effective primary disinfectant.

- Chlorine is very effective at killing most potentially harmful organisms.[2]
- Chlorine kills most potentially harmful organisms quickly.
- Chlorine is the most frequently used primary disinfectant of drinking water.

A combination of disinfectants is often used for primary disinfection.

- Primary disinfection usually consists of multiple disinfection steps that may start as the water enters the treatment plant.
- When used as a primary disinfectant, monochloramine effectiveness is increased by combining it with other disinfectants.
- The choice of which combination of disinfectants to use varies from water utility to water utility based on their needs and to meet EPA treatment requirements.[3]

Additional Supporting Information:

1. See question 3 for a discussion of primary and secondary disinfectants. See questions 17 and 18 for advantages and disadvantages of monochloramine use.
2. Potentially harmful organisms include disease-causing bacteria, viruses, and protozoa. Chlorination and chloramination are not effective at inactivating *Cryptosporidium*. EPA requires that utilities that use surface water test and treat for cryptosporidium where necessary.
3. All utilities that use surface water are required to treat or remove 99.99% of viruses and also to filter their water. However, some surface water systems may obtain waivers for filtration if the water comes from a protected source. Surface water systems must also have a detectable disinfectant residual in their distribution system. Ground water systems are only required to disinfect as necessary and are not required to have a detectable disinfectant residual. Ground water systems that are found to be influenced by surface water (for example, wells located next to rivers) are required to follow the treatment requirements for surface water. In addition, States may have more stringent treatment requirements and may, for example, require all of their ground water systems to disinfect. For more information on surface water treatment requirements visit http://www.epa.gov/safewater/mdbp/implement.html and http://www.epa.gov/safewater/disinfection/lt2/basicinformation.html ; for information on requirements for ground water systems visit: http://www.epa.gov/safewater/disinfection/gwr/basicinformation.html.