

Fact Sheet on Health Issues Related to Discolored Drinking Water

The discoloration of potable tap water has in the past and will continue to raise questions about the safety of this water for drinking, bathing and laundering. The following information is provided to re-assure residents and to provide a review of the body's need for iron, an element essential to life.

Q. What causes discoloration of the water?

A. Discoloration of drinking water can occur in any given area of the City due to a variety of circumstances. The discoloration is caused by the presence of iron particles being released from iron water distribution pipes within the City. Any change in water flow causes vibrations within the pipes that create the loosening of brownish/red/orange particles of iron into the water. Water rerouting to repair a water main or increased usage from fire fighting are events that can cause a change in flow. Closed loop systems which occur in various neighborhoods as well as the significant age of many of the City's water distribution pipes can also contribute to more chronic locations and periods of water discoloration. Periodic flushing of water hydrants in areas affected by discolored water (**weather permitting**) will usually eliminate or reduce the discoloration of the water. As a result of the line flushing process, residents in the immediate vicinity of the work may experience temporary discoloration of their water. This discoloration consists primarily of harmless silt and air and does not affect the safety of the water. If you experience discoloration in your water after crews have been flushing in your neighborhood, clear the pipes in your own home by running all water faucets for several minutes. This same philosophy of water line preventive maintenance is one that you should use in your own home to ensure the quality of water inside your home. Your home's water heater should be drained and flushed on a regular basis, according to manufacturers' recommendations, to keep it working effectively and efficiently.

Q. Are there standards which govern the allowable levels of iron in drinking water and is it a health concern?

A. The Environmental Protection Agency (EPA) is the federal government agency responsible for setting drinking water standards, which are enforced through the State Department of Environmental Protection. There are two categories of drinking water standards, primary and secondary. The primary standards protect drinking water by limiting levels of specific contaminants that can adversely affect public health. Secondary drinking water standards are guidelines regarding contaminants that may cause cosmetic (skin or tooth discoloration) or aesthetic (taste, odor color) effects. The EPA, through the Safe Drinking Water Act, has established a level of 0.3 milligrams per liter of iron as a secondary drinking water standard. At this level, a discoloration of the water will occur but the impact will be an aesthetic one, not a health threat.

Q. Are there harmful bacteria present when the water is discolored?

A. It is important to note that repeated tests of discolored water conducted by MWRA scientists indicate the presence of iron, but not coliform bacteria. The primary or health-based drinking water parameter for microorganisms is total coliform. The standard is zero coliform bacteria. Tests of the City's water distribution system for the presence of coliform bacteria is done twice a month for a total of twenty four times a year.

Q. Is the iron present in the drinking water O.K. to consume?

A. The iron found in rusty drinking water is not in a form that is readily absorbed by the body. Iron is a metallic element found widely distributed in nature, in foods and in iron supplements. It is essential for the formation of hemoglobin in our red blood cells, which is necessary for transporting oxygen to cells and the carrying away of waste products. The iron in blood is needed to build and repair tissues and muscles and is essential to life. The amount needed daily depends upon the age, sex and size of an individual. Adult males require approximately 1.0 mg/l of iron per day, females 2.0 mg/l per day, pregnant and lactating women 2.0-4.0 mg/l per day and infants up to 6 months requiring 0.6 mg/l per day and about 1.0 mg/l daily thereafter. For the first six months of life, infants utilize iron they had received through the placenta of the mother. These stores are usually depleted by six months with additional iron to be provided through the diet and/or supplements. Only a small amount of

iron is absorbed into the body from foods eaten. It is necessary to consume at least 15 - 30 milligrams of iron in order for the body to absorb the required 1 - 4 mg needed. Meat, poultry and seafood are good sources of iron. Foods that contain high levels of vitamin C increase the ability of the body to absorb iron from foods when consumed at the same time.

Q. Should one be concerned about excess storage of iron in the body from drinking rusty water?

A. The excess storage of iron in the body is called hemosiderosis. This condition is typically caused from taking excessive quantities of iron supplements or from blood transfusions, not from increased iron intake from the diet, and as stated previously, the iron in the water is in a form not readily absorbed by the body.

Q. Are there any medical conditions that would be affected from excess iron in the drinking water?

A. Individuals having a very rare metabolic disease called hemochromatosis are unable to absorb iron into the body. As such, an accumulation of iron occurs within the body with the liver being the organ most affected. This uncommon metabolic disease rarely occurs before middle age. The overall incidence has been reported to be as low as one in a million in the U.S. to 3 to 8 in a thousand, worldwide. Any one who suspects this condition or if it has occurred in a family member should seek medical advice.

Q. Is it O.K. to use this water for making my infant's formula?

A. Parents concerned that infants on formula may be receiving too much iron from the brownish water containing iron should not worry. In order for iron toxicity to occur, the infant would be required to drink over 300,000 ounces of water based formula per day!

However, if parents feel uncomfortable with the color of the water for use in preparing infants formula or for consumption in general, bottled water can be used for drinking purposes. All source water used for bottled water must meet the EPA's primary standards for drinking water. Bottled water must also be labeled in accordance with the Food & Drug Administration's requirements. Parents should be aware however that most bottled waters do NOT contain fluoride; a child's pediatrician should be consulted for use of dietary fluoride supplements during the time the child is consuming bottled water.