



## FACTS ABOUT:

BOTTLED WATER FOR HOMES  
NEAR PEARCE CREEK DMCF

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### **COMMUNITIES NEAR PEARCE CREEK DREDGED MATERIAL CONTAINMENT FACILITY WILL RECEIVE BOTTLED WATER**

Bay View Estates, West View Shores and Sunset Pointe residents as well as homes along Pond Neck Road adjacent to the Pearce Creek Dredged Material Containment Facility (DMCF) will receive bottled water beginning May 28, 2016. The Maryland Port Administration has offered to provide bottled water for approximately two months to allow the U.S. Army Corps of Engineers (USACE) to procure bottled water for the residents until a more permanent solution is in place. Through a grant from the Maryland Department of Transportation/Maryland Port Administration, the Town of Cecilton has started construction to extend water to these communities from the Town's municipal water supply. The project is expected to be completed and fully operational by spring 2018.

### **WATER QUALITY IN WELLS NEAR THE PEARCE CREEK DMCF**

Water quality in the residential wells in the area has been a longtime concern. The Department understands many homes in the communities have water treatment systems. A 2012 United States Geological Survey (USGS) study linked water quality issues in the area to the Pearce Creek DMCF. Some residents and elected officials have requested that bottled water be provided to residents. The State of Maryland took this action, in collaboration with the USACE, following notification in May 2016 of the U.S. Centers for Disease Control and Prevention's (CDC) concern regarding elevated levels of manganese in water from the communities' residential wells. The CDC has reviewed the well data collected by the Cecil County Health Department in 2013 and 2014, which was sent to the CDC in August 2014.

Manganese, an element commonly found in the environment, is currently under study by the U.S. Environmental Protection Agency for possible development of a regulation limiting its concentration in public water systems. The CDC has a minimum risk level



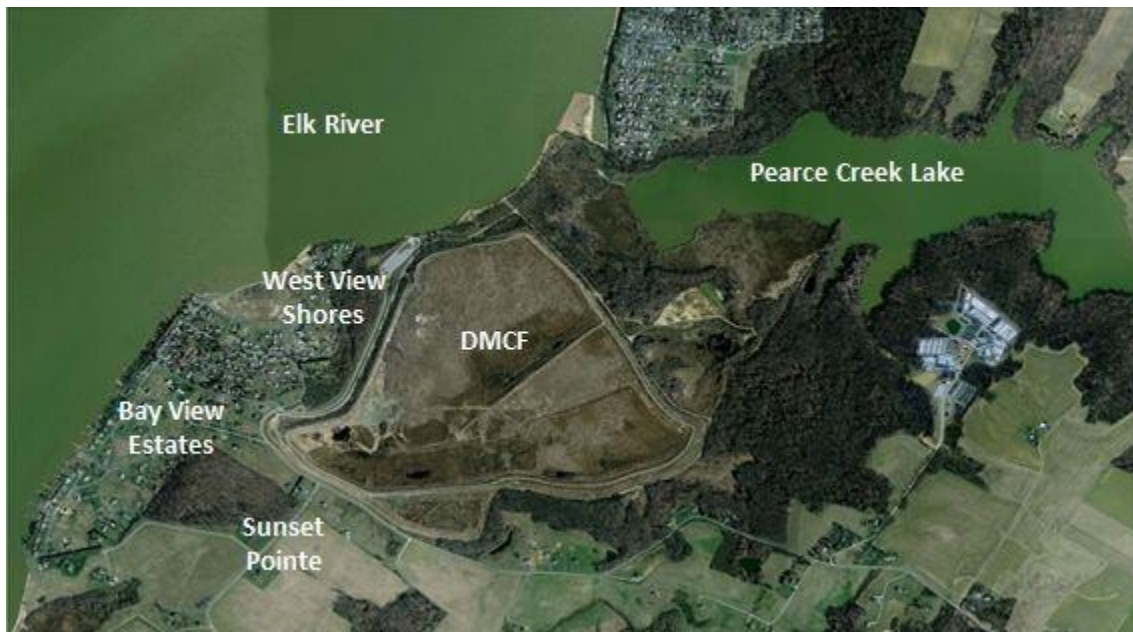
Maryland Department of the Environment  
1800 Washington Boulevard | Baltimore, MD 21230-1718 | [www.mde.maryland.gov](http://www.mde.maryland.gov)  
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(MRL) of 0.3 milligrams per liter and EPA has a residential tap water screening level (RSL) of 0.43 milligrams per liter.

The Maryland Department of the Environment has information from the Agency for Toxic Substances and Disease Registry (an arm of CDC) indicating that the levels of manganese present in the groundwater may present a public health concern for those on well water. The data showed that ten percent of the homes with treatment systems had concentrations above the advisory level. It is not clear whether this is due to inadequate maintenance of the individual treatment systems, high raw water levels of manganese or both. In addition, there are homes which do not have treatment systems. The safest course of action is the provision of bottled water to all residents until the public water system being provided by the Port is available to these residents. In addition to the initiative to provide bottled water, renewed outreach by the Port and the Maryland Environmental Service is planned to advise households on the proper maintenance of their water treatment systems.

For answers on health questions about manganese please see the attached Manganese – ToxFAQs. This fact sheet is also available at:  
<http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=101&tid=23>



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This fact sheet answers the most frequently asked health questions (FAQs) about manganese. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

**HIGHLIGHTS:** Manganese is a trace element and eating a small amount from food or water is needed to stay healthy. Exposure to excess levels of manganese may occur from breathing air, particularly where manganese is used in manufacturing, and from drinking water and eating food. At high levels, it can cause damage to the brain. Manganese has been found in at least 869 of the 1,669 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

## What is manganese?

Manganese is a naturally occurring metal that is found in many types of rocks. Pure manganese is silver-colored, but does not occur naturally. It combines with other substances such as oxygen, sulfur, or chlorine. Manganese occurs naturally in most foods and may be added to some foods.

Manganese is used principally in steel production to improve hardness, stiffness, and strength. It may also be used as an additive in gasoline to improve the octane rating of the gas.

## What happens to manganese when it enters the environment?

- Manganese can be released to the air, soil, and water from the manufacture, use, and disposal of manganese-based products.
- Manganese cannot break down in the environment. It can only change its form or become attached to or separated from particles.
- In water, manganese tends to attach to particles in the water or settle into the sediment.
- The chemical state of manganese and the type of soil determine how fast it moves through the soil and how much is retained in the soil.
- The manganese-containing gasoline additive may degrade in the environment quickly when exposed to sunlight, releasing manganese.

## How might I be exposed to manganese?

- The primary way you can be exposed to manganese is by eating food or manganese-containing nutritional supplements. Vegetarians, who consume foods rich in manganese such as grains, beans and nuts, as well as heavy tea drinkers, may have a higher intake of manganese than the average person.
- Certain occupations like welding or working in a factory where steel is made may increase your chances of being exposed to high levels of manganese.
- Manganese is routinely contained in groundwater, drinking water, and soil at low levels. Drinking water containing manganese or swimming or bathing in water containing manganese may expose you to low levels of this chemical.

## How can manganese affect my health?

Manganese is an essential nutrient, and eating a small amount of it each day is important to stay healthy.

The most common health problems in workers exposed to high levels of manganese involve the nervous system. These health effects include behavioral changes and other nervous system effects, which include movements that may become slow and clumsy. This combination of symptoms when sufficiently severe is referred to as "manganism". Other less severe nervous system effects such as slowed hand movements have been observed in some workers exposed to lower concentrations in the work place.

# Manganese

**CAS # 7439-96-5**

Exposure to high levels of manganese in air can cause lung irritation and reproductive effects.

Nervous system and reproductive effects have been observed in animals after high oral doses of manganese.

## How likely is manganese to cause cancer?

The EPA concluded that existing scientific information cannot determine whether or not excess manganese can cause cancer.

## How can manganese affect children?

Studies in children have suggested that extremely high levels of manganese exposure may produce undesirable effects on brain development, including changes in behavior and decreases in the ability to learn and remember. We do not know for certain that these changes were caused by manganese alone. We do not know if these changes are temporary or permanent. We do not know whether children are more sensitive than adults to the effects of manganese, but there is some indication from experiments in laboratory animals that they may be.

Studies of manganese workers have not found increases in birth defects or low birth weight in their offspring. No birth defects were observed in animals exposed to manganese.

## How can families reduce the risk of exposure to manganese?

- Children are not likely to be exposed to harmful amounts of manganese in the diet. However, higher-than-usual amounts of manganese may be absorbed if their diet is low in iron. It is important to provide your child with a well-balanced diet.
- Workers exposed to high levels of airborne manganese in certain occupational settings may accumulate manganese dust on their work clothes. Manganese-contaminated work clothing should be

removed before getting into your car or entering your home to help reduce the exposure hazard for yourself and your family.

## Is there a medical test to determine whether I've been exposed to manganese?

Several tests are available to measure manganese in blood, urine, hair, or feces. Because manganese is normally present in our body, some is always found in tissues or fluids.

Because excess manganese is usually removed from the body within a few days, past exposures are difficult to measure with common laboratory tests.

## Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to manganese in drinking water at concentrations of 1 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The EPA has established that lifetime exposure to 0.3 mg/L manganese is not expected to cause any adverse effects.

The Food and Drug Administration (FDA) has determined that the manganese concentration in bottled drinking water should not exceed 0.05 mg/L.

The Occupational Health and Safety Administration (OSHA) has established a ceiling limit (concentration that should not be exceeded at any time during exposure) of 5 mg/m<sup>3</sup> for manganese in workplace air.

## References

Agency for Toxic Substances and Disease Registry (ATSDR). 2012. Toxicological Profile for Manganese. Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

## Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30333.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaqs/index.asp>.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.