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ALABAMA A & M AND AUBURN UNIVERSITIES

Typical Contaminants And Problems Metal Contaminants

It is extremely rare for concentrations of metals in Alabama water to exceed EPA Primary Standards for drinking water.

Drinking water containing some metals in very small quantities may actually reduce the possibility of deficiencies of trace elements in the diet. Several metals such as sodium, potassium, magnesium, and calcium are essential to sustain biological life. At least six additional metals, referred to as trace elements, are also essential for optimal growth, development, and reproduction. These are manganese, iron, cobalt, copper, zinc, and molybdenum.

Amounts of trace elements or other metals in the water supply should be kept to minimum levels because of possible chronic or acute poisoning effects. In addition to the metals essential for human life, drinking water may include metals which can cause chronic or acute poisoning. These metals should be eliminated from drinking water if possible.

Sources Of Metal Contaminants

Industrial contamination is the most likely source of metal contaminants. Junkyards and landfills may also contaminate ground and surface water. However, water pipes may contribute to elevated levels of some elements such as copper and lead.

Treatment Of Metal Contaminants

When To Treat. Arsenic, barium, cadmium, chromium, lead, mercury, and selenium have been regulated by the Environmental Protection Agency's Primary Drinking Water Standards for some time. Four additional metals—antimony, beryllium, nickel, and thallium were added to the list in November 1992. This means that if your water supply is from a public system, officials there make sure your water contains

less than the maximum contaminant level of these and other potentially toxic metals.

Not all of these metals would cause a change in water taste before dangerous levels are reached. Individuals should not be overly concerned about toxic levels of metals in drinking water, however, unless there is suspected industrial contamination.

How To Treat. Methods for the removal of trace amounts of toxic metals include distillation and reverse osmosis. Ion-exchange may be used if the resins are selected very carefully with regard to the metals needing removal and the other metals present in the water, which may interact with the process. Activated alumina is effective only for certain metals.

Metal Contaminants At A Glance

Symptoms: A change in water taste.

Causes Of The Problem: Industrial contamination; household water pipes leaching copper and lead.

Suggested Treatments: Distillation, reverse osmosis, ion-exchange, or activated alumina filter. Choose a method based on which metal you wish to remove. Special adsorption filters for specific metals are currently being studied for their effectiveness.

References

Haman, Dorota Z., and Del B. Bottcher. 1986. Home Water Quality And Safety. Circular 703. Florida Cooperative Extension Service. University of Florida. Gainesville, FL.

Shaw, Byron H., and James O. Peterson. 1990. Improving Your Drinking Water Quality. G3378. Wisconsin Cooperative Extension Service. University of Wisconsin. Madison, WI.

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For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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