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## FACT SHEET

### Radium

#### *What is Radium?*

Radium (Ra) is a naturally occurring radioactive element that is present in varying amounts in rocks and soil within the earth's crust. Small amounts of radium also can be found in groundwater supplies. Radium can be present in several forms, called isotopes. The most common isotopes in Illinois groundwater are Ra-226 and Ra-228. The main type of radiation emitted by radium is the alpha particle.

#### *Is Radium In My Water?*

Surface water is usually low in radium, but groundwater can contain various levels of radium depending on local geology. Deep bedrock aquifers used for drinking water sometimes contain levels of Ra-226 and Ra-228 that exceed health-based regulatory standards. In Illinois, these higher levels occur primarily in the northern third of the state. This is because of the presence of radium in the granite bedrock that surrounds the aquifers from which water supplies are drawn.

Most shallow aquifers do not contain higher levels of radium. Radium is found in the wells that are drilled deeper into the aquifer. All public supplies are tested regularly for radium.

#### *Is Radium In Water Harmful To My Health?*

Studies of workers exposed to high levels of radium and other sources of alpha radiation for extended periods show that high levels of radium may cause depression of the immune system, anemia and fractured teeth. Exposure to high levels of radium also has shown an increased incidence of bone, liver and breast cancer.

#### *Is There A Safe Level Of Radium In Drinking Water?*

Based upon current knowledge, it is assumed that any radiation exposure carries some degree of risk. However, the U.S. Environmental Protection Agency (USEPA) has established a maximum contaminant level (MCL) for radium in public water supplies of 5 picocuries per liter (pCi/L). The MCL for radium has been set **well below** levels for which health effects have been observed and is therefore assumed to be protective of public health. Public water supplies whose radium levels exceed 5 pCi/L are required to notify the public that the water exceeded the MCL. They also must evaluate ways to reduce the radium levels in the water.

### *Can Radium Be Removed From Water?*

A number of treatment methods are available to remove radium from water. Ion exchange, lime softening and reverse osmosis are the most common and can remove up to 90 percent of radium present. Ion exchange (water softeners) can often remove 90 percent of radium along with the water hardness. For some people, an undesired effect of ion exchange is the addition of sodium to the treated water. Those on low sodium diets (silt) should consider this before using this water for cooking.

Analysis of the water from Rockford's wells showed that a few of the wells had levels of radium that exceeded the MCL of 5 pCi/L. As a result of these findings, Rockford installed filtration at these water plants that removes the excess radium from the drinking water. The water delivered from these well sites is now in compliance with the drinking water standards for radium.