CALLAWAY PLANT ENVIRONMENTAL FACTS—2011

ENVIRONMENTAL ENHANCEMENTS TO THE LOCAL AREA

In 1977, Ameren Missouri entered into an agreement with the Missouri Department of Conservation to create the Reform Conservation Area on more than 6,000 acres of Ameren Missouri-owned land surrounding the Callaway Plant. In the wildlife area, at the company's expense, the department conducts a land and water conservation program for wildlife enhancement and species enrichment, an agricultural land-management program, and a forest management plan. The area also offers abundant outdoor recreational activities, including a one-mile section of the popular bicycling and hiking trail across Missouri known as the KATY Trail.

In 1992, Ameren Missouri turned a 6.4-acre river silt pond at the Callaway Plant site into a "wetland" to process residues from the facility's sanitary sewage treatment plant. In a wetland, plants like cattails, reeds and willows purify the wastewater and filter out pollutants, remove sediments, produce oxygen and absorb nutrients. The wetland project proved to be so successful that in 1997 Callaway retired its existing mechanical treatment plant—replacing it with an aerated lagoon and wetlands to provide a completely passive treatment system and beneficial wildlife habitat.

RADIATION

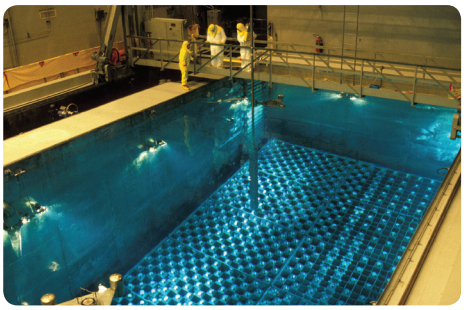
Radiation is energy released from unstable atoms as they go through a natural process called "radioactive decay." By releasing this energy, they eventually change into stable, non-radioactive atoms.

An average person in the U.S. receives about 310 units of radiation called millirems (mrem) every year from natural sources, such as the sun and minerals in the ground, and naturally-occurring radioactivity in air, food and water. Even our own bodies contain small amounts of radioactive material. Another 310 mrem comes from man-made sources, such as dental X-rays, nuclear medicine procedures, and certain consumer products. Thus, the average American receives a total of about 620 mrem annually. This is called "background" radiation.

Calculations based on actual monitoring data and plant operations show the maximum theoretical radiation dose any member of the public could receive annually from operations at the Callaway Plant is less than four-tenths (0.4) mrem—1,500 times less than an average person receives from background sources. In numerous health studies conducted over more than 60 years, such extremely minimal exposure has never been found to cause any adverse health effects.

SPENT FUEL STORAGE AND DISPOSAL

Spent nuclear fuel consists of bundles of fuel rods called "fuel assemblies" that have been removed from the nuclear reactor when they can no longer sustain a nuclear reaction. All the spent fuel produced in 40 years of operation at the Callaway Plant will fit in a space about the size of a tennis court. Although highly radioactive when it is initially removed from the reactor, spent fuel loses more than 90 percent of its radioactivity in just the first year of storage.



This "high-level" nuclear waste is initially stored in a stainless steel-lined water pool in the Callaway Plant's Fuel Building, located adjacent to the Reactor Building. The plant has sufficient storage space in the spent fuel pool until the year 2020, and Callaway planners are considering the construction of dry cask storage to provide additional space—as many plants have already done.

Under the Nuclear Waste Policy Act of 1982, the U.S. Department of Energy (DOE) is responsible for the permanent storage and disposal of spent nuclear fuel. To fund the future disposal of spent fuel, DOE currently charges one mill—one tenth of one cent—per nuclear generated kilowatt-hour of electricity sold. This charge is included in Ameren Missouri's electric rates.

Since the early 1980s, scientists have been studying Yucca Mountain, Nev., as the site for a permanent spent fuel disposal site. In 2008 DOE submitted a license application to the NRC for construction and operation of the facility. A year later, President Obama announced plans to discontinue the Yucca Mountain project and empanel a blue-ribbon commission to provide recommendations for long-term management of high-level nuclear waste. The Department of Energy announced formation of the commission on Jan. 29, 2010.

Advanced technologies for recycling spent fuel could enable up to 90 percent of the energy in a fuel rod to be reused, reducing the volume and toxicity of the waste to be disposed. But even with recycling, deep geological burial of the remaining waste would still be required.

LOW-LEVEL RADIOACTIVE WASTE

Low-level radioactive waste generated at the Callaway Plant consists of disposable items that have become contaminated in working with radioactive material. Examples include metal components, filters, resins, protective clothing and tools. These wastes are classified as Type A, B or C.

Ninety-five percent of the low-level waste from Callaway is Type A, which has the lowest amount of radioactivity. It is currently shipped to a licensed disposal facility in Clive, Utah. Type B and C waste is presently stored on site, because the only facility in the U.S. that handles such waste—at Barnwell, South Carolina—stopped accepting waste from outside the Atlantic Coast Compact in July 2008.

Efforts are underway to develop new disposal sites, because continued safe disposal of low-level waste is important to hospitals, research laboratories, manufacturing facilities and the government—not just nuclear power plants.