



Radioactive Materials In Antiques

Among the furniture, clothing, jewelry, books, dolls, dishes, and many other objects sold at flea markets and antique shops, you will likely find items that contain radioactive compounds. These items were generally made and originally sold before the health effects of radiation were well-understood and long before radiation protection regulations were put in place.

Many antiques actively exploit the radioactive properties of radionuclides:

- clocks, watches, and instrument dials that glow in the dark, may contain radium or tritium
- some ceramics (specifically old Fiestaware®) get their color from the addition of various radionuclides to their glaze
- vaseline or canary glass contains small amounts of uranium, which provide it's yellow-green coloring and also makes it glow under black lights.

These items emit small amounts of radiation, but enough to register on a hand-held Geiger Counter.

Clocks, Watches and Instrument Dials

When radium was discovered in the early 1900's, people were fascinated with its mysterious glow. The hands and faces of some clocks, watches, and ship and airplane instruments were painted with paints containing radium to make them glow in the dark.

Over time, however, experts discovered that radium is highly radioactive and emits alpha, beta, and gamma radiation. Radium is particularly hazardous if inhaled or ingested because it then emits radiation directly to living tissue. Many radium dial painters licking the bristles of their paintbrushes to create fine tips for applying the paint to these small surfaces. Later many of them developed bone cancer, primarily in their jaws. By the 1970's, the practice of using radium on watch dials ended.

Ceramics

Glazes used for tiles, pottery, and other ceramics made before the 1960's, often contain elevated levels of naturally-occurring radionuclides. Manufacturers typically used uranium, thorium, and/or potassium-40, all of which emit alpha, beta, and gamma radiation. As recently as the 1930s, Fiestaware® used uranium oxides to create the distinctive orange-red color of its dinnerware.

Glass

Early 19th century European glass makers sometimes added small amounts of uranium to glass as a yellow-green coloring agent. Because of its yellowish color, this type of glass was called vaseline or canary glass. In part, collectors like canary glass for the attractive green glow the uranium gives off when exposed to a black light.

Starting around 1970, the intentional use of radioactive coloring agents in commercial glazes and glasses in the U.S. dramatically decreased. However their use continues in other countries, and ceramics and glasses containing radioactive coloring agents may occasionally enter the United States.

Antiques containing radioactive materials will continue to emit low levels of radiation for many years.

Who is protecting you

The States

Each state has the authority to regulate naturally- occurring radioactive materials, including uranium, thorium, and radium.

U.S. Nuclear Regulatory Commission (NRC)

NRC establishes regulations for licensing the sale, use and disposal of radioactive material. Licensing requirements for the use of radioactive materials in consumer products are based on the quantity and radioactivity of the materials. Generally, NRC does *not* regulate antiques, but there are a few exception depending on the origin of the radiation source and the source strength.

U.S. Environmental Protection Agency (EPA)

The Clean Materials program at EPA monitors the ways radioactive material could get into consumer products. EPA also works with the nationwide Conference of Radiation Control Program Directors to investigate methods for keeping radioactive materials out of consumer products. Generally, EPA does *not* regulate antiques, but there are a few exception depending on the origin of the radiation source and the source strength.

U.S. Department of Transportation (DOT)

DOT regulates the transport of hazardous materials, including radioactive materials, by highway, rail, air, and vessel. The hazardous materials regulations are in Title 49 of the Code of Federal Regulations. Generally, DOT does *not* regulate the shipment of antiques, but there are a few exception depending on the origin of the radiation source and the source strength.

What you can do to protect yourself

Antiques that contain radioactive material do not normally pose a significant hazard if they are intact and in good condition. The more radioactive antiques added to your collection the greater the potential hazard. Even though the potential radiation exposure from your antiques is very small, it is still possible to reduce it further.

- Avoid displaying antiques in an area where people spend a lot of time.
- Minimize the time you or your family handle radioactive antiques.
- Do not attempt to disassemble radium watches or instruments.
- Do not use orange-red Fiestaware®, similar ceramics, or vaseline glass to hold food or drink.
- Immediately dispose of any broken radioactive antiques. For proper disposal instructions, contact your state or local radiation department.

Resources

You can explore this radiation source further through the resources at the following URL:
<http://www.epa.gov/radtown/antiques.html#resources>

We provide these resources on-line rather than here so we can keep the links up-to-date.