Canadian Nuclear Safety Commission

Commission canadienne de sûreté nucléaire

Radium Luminous Devices:

Tips for Your Safety

Canada

What is a radium luminous device and how can I identify one?

Until the 1960s, various consumer and military products — such as wristwatches, clocks, marine compasses and aircraft instruments — were manufactured using a radium-based, glow-in-the-dark paint. These products are called *radium luminous devices*.

The most common remaining radium luminous devices are aircraft instruments, and there are tens of thousands of these in Canada today. Although the radium in these devices remains radioactive for thousands of years, their paint usually breaks down chemically after several years and may no longer glow in the dark. When new, the radium luminous paint was often white, but typically tarnished to yellow as it aged.

Radium luminous devices are generally not identified or marked as containing radioactive materials. Only a radiation survey meter can confirm if a device contains radium luminous compounds.

Are radium luminous devices dangerous?

The radium inside these devices is a naturally occurring radioactive nuclear substance that can be hazardous under certain circumstances. Radium can be harmful if:

- it is ingested (for example, transferred from contaminated hands).
- it is inhaled: (for example, as a result of loose radium luminous paint).

- absorbed through the skin (for example, through an open wound).

As long as a radium luminous device remains intact, the risk of contamination is limited. However, the device can be hazardous if:

- it is opened, because the radium inside the instrument remains radioactive.
- the radium luminous paint on the device surface becomes brittle with age and flakes off.
- several of them are stored together or displayed as a collection, which can cause high radiation levels to develop.

How are radium luminous devices regulated? Who may possess these devices?

The Canadian Nuclear Safety Commission (CNSC) regulates the possession, use transfer, and service of radium luminous devices in order to protect people and the environment.

Under an exemption granted by the Commission to Section 8 of the *Nuclear Substances and Radiation Devices Regulations*, a person may possess, transfer or use an unlimited number of radium luminous devices without a licence, provided that:

- radium is the only nuclear substance in the device.
- the device is not disassembled or tampered with.

A CNSC licence is required to service radium luminous devices. Service activities include:

- disassembling or repairing the device.
- removing radium luminous compounds from the device.

How can I handle, store and dispose of radium luminous devices safely?

The CNSC recommends these precautions when handling and storing radium luminous devices to protect yourself from unnecessary risk:

- Do not open a radium luminous device.
- Minimize the number of radium luminous devices stored or displayed in one location.
- Wear disposable gloves when handling a radium luminous device.
- Cracked or damaged devices should be contained. If you have a damaged radium luminous device, contact the CNSC for additional advice.

- Do not eat, drink or smoke in areas where the devices are handled or stored.
- Store the devices in a secure location away from occupied areas.
- Dispose of radium luminous devices at a CNSC-licensed radioactive waste management facility. To identify a licensed waste facility near you, contact the CNSC.

Photos taken at Canadian Aviation Museum, Ottawa

For more information

For more information about radium luminous devices or the CNSC and its mandate, please contact:

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The Canadian Nuclear Safety Commission regulates the use of nuclear energy and materials to protect health, safety, security and the environment and to respect Canada's international obligations with respect to the peaceful uses of nuclear energy.

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