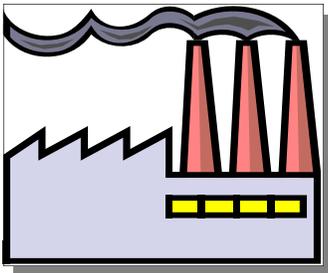


Former Waterbury Clock Factory: Questions & Answers About Radium

April 15, 1998

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This fact sheet was developed by the CT Department of Public Health (DPH) and the Department of Environmental Protection (DEP) to provide information and answer questions about the former Waterbury Clock Factory on Cherry St.

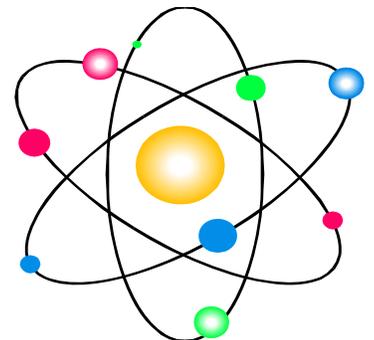
Site Background:

The Connecticut DEP is investigating the use of radium at the former Waterbury Clock Factory. Radium is a radioactive material that was used in painting dials on clocks because it makes paint glow in the dark. It was believed to be used from the early 1900's through the 1940's in the production of clocks. The DEP has completed an initial survey of the buildings. The former clock factory now contains some small manufacturing companies, offices and a number of apartments.

What are the Types of Radiation?

Radiation is produced when unstable elements such as radium decay (break down) and give off radioactive particles or rays. *Radon* is a substance formed when radium decays. The hazard associated with radiation depends on:

- the form of radiation;
- the element that is radioactive and its decay products; and
- the route of exposure.



Forms of Radiation Associated with Radium

Alpha is a heavy particle that is mainly a hazard to internal organs exposed to radium or radon. These particles only travel a short distance (inches) in air and cannot go through the skin.

Beta is a light particle that can sometimes penetrate the skin. Beta particles can travel several feet through the air and may expose the skin of those living or working near the radium dust.

Gamma is a ray that can penetrate nearly any substance. Gamma rays can travel great distances in air, and expose those living or working near the radium dust.

How is Exposure to Radiation Measured?

The DEP can measure the amount of radiation exposure caused by radium contamination in the buildings. The unit for this measurement is called a millirem. We are all exposed to background radiation, at about 350 millirems per year. Radiation occurs naturally in the environment from the sun, cosmic rays, and other sources. Background radiation refers to these naturally occurring sources, as well as medical exposures (X-rays). The testing done so far in the former clock factory has found radiation levels which result in exposures slightly above background.

What are the Health Effects of Radium Radiation Exposure?

Radiation is energy that may damage the human body by damaging cells or their genetic material (DNA). Some forms of radiation are known to cause cancer. There are 3 types of hazards when radium is present:

- *gamma ray exposure* occurs when people exposed are near the radium;
- *radon exposure*, which occurs when radium decays into radon and is inhaled; and
- *the inhalation (breathing) and ingestion (through the mouth) of radium dust* if it becomes airborne.

For both radon and radium, the hazard comes from radioactive materials getting into the body. The effects are mainly to specific organs:

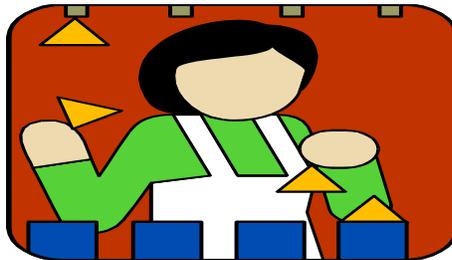
- the lungs for radon and its decay products
- lungs and bone for inhaled or ingested radium.

Bone cancer is connected with radium exposures. It was found among workers who worked directly with radium and ingested large amounts of it over a long period of time. It is important to remember that the health effects of radiation exposure vary according to:

⇒ how long you were exposed ; and

⇒ how much radium or radiation you were exposed to.

The health effects of radiation are well studied at higher levels of exposure, but the long-term effects of exposure to low levels of radiation - such as those found in the clock factory - have never been observed in humans. We assume that radiation exposure increases the risk of cancer by a small amount; the lower the exposure, the lower the risk.



I work at Belco or in the NOW building. Have I Been Exposed? Will I Get Sick?

Some areas at Belco and the NOW building had levels of radiation that were above background. Based on current information, no illnesses or symptoms are expected. There may be a very small risk of some types of cancer to some workers. This would depend on the amount of time a worker spent in areas with the higher levels of radiation contamination.

I Live in the Enterprise Apartments. Have I Been Exposed? Will I Get Sick?

The apartments were renovated before people moved in. The flooring installed at that time prevents radium dust from exposing people directly. Some of the apartments have levels of radiation a little above background. The highest levels of radiation found could result in an exposure of an additional 36 millirems per year. This can be compared to the background exposure of 350 millirems mentioned above. This is not enough to cause immediate health concerns. No apartment had radiation levels that were high enough for relocation.

Were There Exposures at the Daycare Center?

The investigation did not find any radiation levels above background levels at the daycare center. Therefore, it is unlikely that there were any radiation exposures at levels of public

health concern.

Should I Talk with my Doctor or Health Provider?

It is always wise to consult with your medical provider if you have questions about your health. At this time, the DPH believes it is unlikely that radium exposures will cause health effects.

What is Being Done to Evaluate the Buildings?

The DEP, in cooperation with federal agencies, is conducting additional surveys. Portable instruments designed to search for radium and radon contamination were/are being used to inspect the buildings. The results of the surveys and sampling will be used by the DPH to help determine cleanup levels that will protect public health.

What Will be Done to Clean up the Site?

The DEP, DPH, the Environmental Protection Agency (EPA) and the federal Agency for Toxic Substances and Disease Registry (ATSDR) will all be working together to determine the health risks of the radiation contamination at the former Waterbury Clock Company. Clean-up plans, if necessary, will be based on the amount of contamination present and what is practical. We will continue to keep you informed of what is happening.

Who Can I Call for More Information?

CT DEP
Air Quality &
Radiation Division
79 Elm St.
Hartford, CT 06106
(860) 424-3029

Waterbury Health Department
95 Scovill St, Suite 100
Waterbury, CT 06706
(203) 574-6780

ATSDR
1600 Clifton Rd, MS E-56
Atlanta, GA 30333
(800) 447-1544 (mention Waterbury Clock)

CT DPH
Division of Environmental Epidemiology & Occup. Hlth
410 Capitol Ave
Hartford, CT 06134-0308
(860) 509-7742

