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# "Safety Comes First" Case Western Reserve University Environmental Health and Safety

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# FluView Activity Update

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According to the latest FluView report, seasonal influenza activity increased again this week, reaching a new high for this season. Influenza activity, predominantly driven by influenza A(H1N1)pdm09 virus infections this season, is widespread in 48 states and Puerto Rico and influenza like illness (ILI) activity increased to 5.1%. Flu activity has been similar to what has been seen during other H1N1-predominant seasons, but indicators that track hospitalizations and deaths remain well below what was observed last season. However, this week another seven flu-related pediatric deaths were reported to the CDC, bringing the total to 41 flurelated deaths in children reported to the CDC for the 2018-2019 flu season.

CDC expects flu activity to remain elevated for a number of weeks. An annual flu vaccine is the best way to protect against influenza and its potentially serious complications. There are many benefits to vaccination, including reducing the risk of flu illness, doctor visits, hospitalization, and even death in children. Flu vaccination also has been shown to reduce severity of illness among people who get vaccinated but still get sick. For anyone six months or older who has not yet been vaccinated this season, the CDC recommends that they get vaccinated now. There also are flu antiviral drugs that can be used to treat flu illness.

Source: CDC

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### Silicosis

OSHA	Breathing in very small ("respirable") crystalline silica particles, causes multiple diseases, including silicosis, an incurable lung disease that leads to disability and death. Respirable crystalline silica also causes lung cancer, chronic obstructive pulmonary disease (COPD), and kidney disease. Exposure to respirable crystalline silica is related to the development of autoimmune disorders and cardiovascular impairment. These occupational diseases are life-altering and debilitating disorders that annually affect thousands of workers across the United States.
"	<b>Silicosis</b> Breathing crystalline silica dust can cause an incurable disease called silicosis. In severe cases silicosis can be disabling or even fatal. When silica dust enters the lungs, it causes the formation of scar tissue, which makes it difficult for the lungs to take in oxygen. There is no cure for silicosis.
(silicosis) in severe cases can be disabling,	Silicosis typically occurs after 15–20 years of occupational exposure to respirable crystalline silica. Symptoms may or may not be obvious therefore, workers need to have a chest X-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain or respiratory failure. Because silicosis affects the immune system, exposure to silica increases the risk of lung infections such as tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust.
or even fatal. "	In rare instances, individuals exposed to very high concentrations of respirable crystalline silica can develop typical silicosis symptoms as well as fever and weight loss within weeks instead of years. In these cases, medical evaluation should be performed as soon as possible.
	Lung Cancer Exposure to respirable crystalline silica increases the risk of developing lung cancer. Lung cancer is a disease where abnormal cells grow uncontrollably into tumors, interfering with lung function. The abnormal cancer cells can also travel ("metastasize") and cause damage to other parts of the body. Most cases are not curable.
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### Silicosis, cont.

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#### **Chronic Obstructive Pulmonary Disease (COPD)**

Exposure to respirable crystalline silica increases the risk of other lung diseases, primarily COPD, which include emphysema and chronic bronchitis. The main symptom of COPD is shortness of breath due to difficulty breathing air into the lungs. COPD is not usually reversible and may worsen over time.

#### **Kidney Disease**

Studies of workers exposed to respirable crystalline silica have found that these workers are at increased risk of developing kidney disease. For instance, kidney failure has been observed among workers with high silica exposure, such as in abrasive blasters who also were suffering from silicosis.

BONUS MEDIA

**Protecting Workers from Silica Hazards in the Workplace Video** Protecting Workers from Silica Hazards in the Workplace Video An introduction on the hazards of exposure to respirable crystalline silica.

#### **1938 "Stop Silicosis" Video**

The hazard of respirable crystalline silica exposure has been known for decades. This 1938 video features former Secretary of Labor, Frances Perkins (1933-1945), and describes both the hazards associated with silica exposure and the U.S. Department of Labor's early efforts to ensure safe and healthful working conditions for America's working men and women. Although tremendous progress has been made since this video was produced, evidence indicates that a substantial number of workers still suffer from silica-related diseases.

"COPD is not usually reversible and may worsen over time."



Source: Safety.BLR

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# Dangers of Blue Light



"...there are negative health effects that can also result from exposure to too much blue light..."

The white light we see from the sun or artificial sources is made up of light waves of different colors. The visible light spectrum spans red light, with the lowest energy, to blue light, with the highest energy. These higher-energy waves can penetrate the cornea and lens (the outer two layers of the eye) and reach the retina (the back layer of the eye). Most people know about the dangers of ultraviolet (UV) rays, which are not visible to the human eye but are even higher energy than blue light. However, there are negative health effects that can also result from exposure to too much blue light, including eyestrain or retina damage, which could lead to age-related macular degeneration (AMD), an incurable eye disease caused by the degradation of the retina. AMD is the leading cause of vision loss and is caused by both hereditary and environmental factors. It's estimated that 11 million people in the United States have AMD, and it is projected that by 2050, 22 million people will suffer from the disease.

Blue light is not all bad—it serves an important function by regulating your body's circadian rhythm, which is the natural cycle of sleeping and waking. While exposure to blue light during daytime hours is essential for healthy functioning, additional exposure at night could disrupt this natural cycle, causing poor quality sleep. Many health issues have been related to sleep deficiency, including heart disease, high blood pressure, obesity, and depression. Tiredness on the job also presents safety issues; when employees are not alert, more accidents and near misses have been shown to occur.

While the largest source of blue light is the sun, other sources include:

- Fluorescent, CFL, and LED bulbs
- LED televisions
- Computers, smartphones, and tablet screens

Today, we spend an increasing amount of time in front of screens. Many office workers spend most of their day in front of the computer and at home watching TV, playing computer or video games, and on their smartphone. The proximity of our eyes to the screens and the time spent exposed to the screens have an impact on long-term health risks. While we can't control the natural blue light we are exposed to, we can decrease your exposure to blue light from artificial sources by doing the following:

- Limit your screen time, and take breaks to let your eyes rest.
- Wear yellow-tinted computer glasses or glasses with anti reflective lenses that reduce glare and block some of the blue light.
- Use a screen filter. Some operating systems have built-in display functions that decrease the blue light and gives it a slightly yellow appearance. There are also apps available to download that can be adjusted to your desired level of filtration.

Source: Safety.BLR

## **Revised Flammable Material Storage Label**

There are new warning labels for ThermoFisher spark-proof freezers/ refrigerator units. Please remove the current Flammable warning label on your ThermoFisher Scientific flammable materials refrigerator and/or freezer and replace it with the revised label 104481 REV A. Removing the old label and replacing with this new label will not void any warranty on the units.

The revised label correctly indicates that there should be no ignition sources near these units.

#### Former flammable warning label



"The revised label correctly indicates that there should be no ignition sources near these units."

#### These revised labels can be picked up at the EHS office.

List of some units which carry the older flammable warning label:

- Fisher Scientific Isotemp Flammable Material Laboratory Freezer 13988-425F2
- Fisher Scientific 13986 Isotemp Flammable Materials Refrigerator/ Freezer
- Fisher Model 425D Flammable Material Storage Refrigerator/Freezer

Thermo Fisher

# **Radiation Therapy Basics-Part I**



Radiation is one of the most common treatments for cancer. Other names for radiation treatment are radiation therapy, radiotherapy, irradiation, or x-ray therapy.

#### What is radiation therapy?

Radiation therapy uses high-energy particles or waves, such as X-rays, gamma rays, electron beams, or protons, to destroy or damage cancer cells.

Your cells normally grow and divide to form new cells. But cancer cells grow and divide faster than most normal cells. **Radiation works by making small breaks in the DNA inside cells. These breaks keep cancer cells from growing and dividing and cause them to die.** Nearby normal cells can also be affected by radiation, but most recover and go back to working the way they should.

"Radiation works by making small breaks in the DNA inside cells." Unlike chemotherapy, which usually exposes the whole body to cancerfighting drugs, radiation therapy is usually a local treatment. In most cases, it's aimed at and affects only the part of the body being treated. Radiation treatment is planned to damage cancer cells, with as little harm as possible to nearby healthy cells.

Some radiation treatments (systemic radiation therapy) use radioactive substances that are given in a vein or by mouth. Even though this type of radiation does travel throughout the body, the radioactive substance collects mostly in the area of the tumor, so there's little effect on the rest of the body.

#### Who gets radiation therapy?

More than half of people with cancer get radiation therapy. Sometimes, radiation therapy is the only cancer treatment needed.

Next Issue: What are the goals of radiation therapy?



# Chemical Spotlight: Diethyl Ether

Diethyl ether, also known as ether, is used as a solvent for products like waxes, fats, oils, and perfumes, as well as to manufacture other chemicals. Historically, it was used as an anesthetic and for medicinal purposes. Diethyl ether is a very volatile clear, colorless liquid with a distinct sweet odor. It is extremely flammable, and the vapor is heavier than air, so it can pool near the ground and travel to a distant source of ignition.

Diethyl ether can be oxidized to form peroxide, especially in ether containers that have been opened and stored for greater than six months. Peroxides may be ignited by friction, impact, or heating. Diethyl ether should be stored away from strong oxidants in a cool, dry, well-ventilated room away from sunlight.

The inhalation of diethyl ether vapors may cause headaches, nausea, vomiting, or loss of consciousness. If working with the chemical, use of a respirator and eye protection is suggested. Diethyl ether has moderate toxicity when ingested, and vomiting should never be induced because volatile chemicals have a high risk of being aspirated into the victim's lungs during vomiting. Exposure can cause significant eye and skin irritation or burns.

If diethyl ether is spilled or leaked:

- Wear personal protective equipment (PPE) if containing a spill.
- Evacuate the area, and keep people upwind.
- Remove all ignition sources.
- Ventilate the area of spill or leak.
- Collect leaking liquid in sealable containers. Absorb the remaining liquid in sand or an inert absorbent material.
- Never dump diethyl ether in a confined space, such as a sewer, due to the risk of explosion.

Contact the CWRU Environmental Health and Safety Office at 216.368.2907 to inquire about proper disposal.

Source: Safety.BLR







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#### Case Environmental Health and Safety



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