"Safety Comes First"

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In this issue:

Safety with Hammers, Pliers, and Wrenches

Follow these safe practices when using hammers, pliers, and wrenches:

Hammers

- Make sure that the hammer head fits tightly.
- Replace cracked heads and loose or cracked handles.
- Use the right hammer for the job (for example, a soft metal hammer on highly tempered tools such as drills or dies; a claw hammer for driving nails).
- Heads should be of proper hardness so they won't chip or mushroom.
- Grip the handle close to the butt end.

Pliers

- Don't use pliers on a hard metal surface. This will dull the teeth and loosen the pliers' grip.
- Grasp plier handles at the ends, not near the hinge.
- Never use pliers on nuts; use a wrench instead.

Wrenches

- If a wrench is bent, cracked, badly chipped, or has a loose or broken handle, discard it.
- Keep the jaws of the wrench sharp.
- Use the right wrench for the job, and be sure it fits snugly on the nut. Never use a shim to make a wrong-size wrench fit.
- If you can't loosen a nut with the wrench you're using, get a larger wrench. Never add an extension to the handle for more leverage.
- Pull the wrench—don't push it. Make sure your footing is secure, and allow plenty of clearance for your fingers. Use a short, steady pull.
- Don't pull on an adjustable wrench until it has been tightened on the nut. The jaws should be pointed in the direction of the pull.

Source: Safety BLR

Correct Process to Order a Radioactive Isotope

"All lab members must be current in their safety training before a radiation order will be approved. "

Radioactive material (RAM) may only be ordered by an Authorized User (AU) or their designee, usually the lab manager. Designees are listed as such on Form 5 of the AU's RAM application. Form 5 must be updated yearly and a copy must be on file with the Radiation Safety Office (RSOF).

First, the order must be entered into PeopleSoft. It is extremely important to flag it as a radioactive order so it gets routed to the RSOF. A signed requisition must be included. Most commonly it is attached as a .pdf file, but it can also be emailed to us directly, faxed, or dropped off in person. Only the AU or their designee may sign off on the requisition. A blank requisition form may be picked up in the RSOF.

The requisition must include the following information: AU name, laboratory location, isotope, activity, quantity, catalog number, requisition number and the signature of either the AU or the designee. If any of these pieces of information are missing, the laboratory will be contacted so that they can correct their requisition.

All lab members must be current in their safety training before a radiation order will be approved. This includes Radiation Safety, Laboratory Safety, and Biosafety (if applicable). Additionally, only an isotope on the AU's approved license application may be ordered. To order additional isotopes, an amendment to the application must be approved before the order will be placed.

Each AU has a possession limit which is determined on the RAM application. Radiation orders must not put an AU over their limit. The RSOF will contact the lab to notify them if they are ordering over their limit. A radiation waste pick up can be arranged to reduce the amount of radiation in the lab so that the order can be placed.

Radiation orders must be placed before 2:00pm for overnight shipping. P32, P33, and S35 are short lived and are shipped overnight for next day delivery. H3 and C14 are long lived and usually take a few days to come in. Questions about ordering isotopes should be directed to 216-368-2906.

CWRU EHS Staff

Global Recycling Day

First held in 2018, Global Recycling Day is observed annually on March 18 to help recognize and celebrate the importance that recycling plays in preserving our natural resources and securing the future of our planet. The proposal for Global Recycling Day was first announced by the president of the Bureau of International Recycling (BIR), a global recycling industry association, at the 2015 World Recycling Convention.

The mission of Global Recycling Day, as set out by the Global Recycling Foundation, is twofold:

1. To tell world leaders that recycling is too important not to be a global issue and that a common, joined-up approach to recycling is urgently needed; *and*
2. To ask people across the planet to think resource, not waste, when it comes to the goods around us.

According to the Foundation, people produce 2.1 billion metric tons of solid waste every year, and 46% of the trash is recyclable. However, only 16% of that is recycled each year.

Recycling has many benefits, including:

- Reducing the amount of waste sent to landfills and incinerators.
- Conserving natural resources such as timber, water, and minerals.
- Lessening the burning of fossil fuels, which can decrease the emissions of greenhouse gas. According to the BIR, it's estimated that recycling saves over 700 million tons in carbon dioxide (CO_2) emissions.

Some mass-produced products that have come from recycled materials include:

- Adidas running shoes,
- Cruiser skateboards,
- Blow-up sofas,
- Bottle openers,
- Patagonia clothing,
- Bicycles,
- Wooden watches, *and*
- Hammocks.

(Continued on page 8)

"According to the Foundation, people produce 2.1 billion metric tons of solid waste every year, and 46% of the trash is recyclable."

Pandemic Basics

"Pandemics happen when new (novel) influenza A viruses emerge..."

An influenza pandemic is a global outbreak of a new influenza A virus that is very different from current and recently circulating human seasonal influenza A viruses. Pandemics happen when new (novel) influenza A viruses emerge which are able to infect people easily **and** spread from person to person in an efficient and sustained way. Because the virus is new to humans, very few people will have immunity against the pandemic virus, and a vaccine might not be widely available. The new virus will make a lot of people sick. How sick people get will depend on the characteristics of the virus, whether or not people have any immunity to that virus, and the health and age of the person being infected. With seasonal flu, for example, certain chronic health conditions are known to make those people more susceptible to serious flu infections. The risk factors associated with seasonal flu can be found at "People at High Risk of Developing Flu–Related Complications." Influenza pandemics are uncommon; only occurred during the 20th century.

What is an influenza pandemic?

An influenza pandemic is a global outbreak of a new influenza A virus that is very different from current and recently circulating human seasonal influenza A viruses. Pandemics happen when new (novel) influenza A viruses emerge which are able to infect people easily and spread from person to person in an efficient and sustained way.

Where do pandemic influenza viruses come from?

Different animals—including birds and pigs—are hosts to influenza A viruses that do not normally infect people. Influenza A viruses are constantly changing, making it possible on very rare occasions for non-human influenza viruses to change in such a way that they can infect people easily and spread efficiently from person to person.

How do influenza A viruses change to cause a pandemic?

Influenza A viruses are divided into subtypes based on two proteins on the surface of the virus: the hemagglutinin (H) and the neuraminidase (N). There are 18 different hemagglutinin subtypes and 11 different neuraminidase subtypes (H1 through H18 and N1 through N11). Theoretically, any combination of the 18 hemagglutinins and 11 neuraminidase proteins are possible, but not all have been found in animals and even fewer have been found to infect humans.

Influenza viruses can change in two different ways, one of which is called "antigenic shift" and can result in the emergence of a new influenza virus. Antigenic shift represents an abrupt, major change in an influenza A virus. This can result from direct infection of humans with a non-human influenza A virus, such as a virus circulating among birds or pigs. Antigenic shift also can happen when a non-human influenza A virus (for example an avian influenza virus) exchanges genetic information with other influenza A viruses in a process called genetic reassortment, and the resultant new virus is able to infect people. For example, an exchange of genes between a human influenza A virus and an avian influenza A virus can create a new influenza A virus with a hemagglutinin protein or both a hemagglutinin protein and a neuraminidase protein from an avian influenza A virus. If this new virus causes illness in infected people and can spread easily from person to person, an influenza pandemic can occur.

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Pandemic Basics, Cont.

(Continued from page 4)

What happens when a pandemic influenza virus emerges?
When a pandemic influenza virus emerges, the virus can spread quickly because most people will not be immune and a vaccine might not be widely available to offer immediate protection. During the 2009 H1N1 pandemic, for example, a new H1N1 virus was first identified in April 2009. By June 2009, that novel H1N1 virus had spread worldwide and the World Health Organization declared a pandemic. Spread of a pandemic influenza virus may occur in multiple disease "waves" that are separated by several months. As a pandemic influenza virus spreads, large numbers of people may need medical care worldwide. Schools, childcare centers, workplaces, and other places for mass gatherings may experience more absenteeism. Public health and healthcare systems can become overloaded, with elevated rates of hospitalizations and deaths. Other critical infrastructure, such as law enforcement, emergency medical services, and transportation industry may also be affected.

Will seasonal flu vaccines protect against pandemic flu?
It is unlikely that seasonal flu vaccines would protect against a pandemic influenza virus. Seasonal flu vaccines that are used annually protect against currently circulating human influenza A and B viruses. They are not designed to protect against new influenza A viruses. A pandemic influenza virus would be very different from circulating seasonal influenza A viruses and thus seasonal vaccines would not be expected to offer protection.

Are there vaccines to protect against pandemic flu?
The federal government has created a stockpile of some vaccines against select influenza A viruses with pandemic potential that could be used in the event of a pandemic, including vaccines against certain avian influenza A (e.g. H5N1 and H7N9) viruses. If a similar virus were to begin a pandemic, some vaccine would already be available.

The Department of Health and Human Services (HHS) is the lead agency for public health preparedness and medical response to an influenza pandemic. Within HHS, the Biomedical Advanced Research and Development Authority (BARDA) Influenza Division is charged with the advanced development and procurement of medical and non-pharmaceutical countermeasures for pandemic influenza preparedness and response.external icon

How long would it take to develop a new pandemic vaccine?
If a new pandemic influenza virus (not included in the pre-pandemic vaccine stockpile) were to emerge, it is likely that a vaccine would have to be developed against that virus in order for sufficient supply of vaccine to become available for everyone who wishes to be vaccinated. How long it would take to produce a pandemic flu vaccine would depend on many factors, including how long it would take to create a candidate vaccine virus (CVV) and what vaccine manufacturing process would be used." For seasonal influenza vaccine, it usually takes at least six months to produce large quantities of flu vaccine. During the 2009 H1N1 pandemic, it took about the same amount of time. CDC began developing a CVV to make monovalent (one component) H1N1pdm09

(Continued on page 6)

"It is unlikely that seasonal flu vaccines would protect against a pandemic influenza virus."

Pandemic Basics, Cont.

"Nonpharmaceutical interventions, or NPIs, are actions, apart from getting vaccinated and taking medicine..."

(Continued from page 5)

vaccine in mid-April. The first doses of vaccine were administered in early October and large quantities of vaccine became available in late November. Efforts are underway now to shorten the time it takes to produce influenza vaccines but because of the current amount of time needed to make flu vaccine, early supplies of pandemic vaccine might not be enough to meet demand, especially if most people need two doses of vaccine for protective immunity.

How many doses of pandemic vaccine would each person need?

People with no immunity against a new influenza virus may need two doses to be fully protected against that virus. The first dose primes the immune system and the second dose creates the protective response. During the 2009 H1N1 influenza pandemic, CDC recommended that two doses of the vaccine be given to children 6 months through 9 years of age in order to increase the immune response.

What treatments are available for pandemic flu?

During a flu pandemic, antiviral drugs would be an important tool to treat and prevent the spread of influenza illness. Antiviral drugs are medicines (pills, liquid or an inhaled powder) that fight against the influenza viruses infecting the respiratory tract. Antiviral drugs are recommended to treat seasonal influenza in people who are very sick or who are at high risk of serious flu complications. These same drugs may be useful for treating pandemic influenza, depending upon whether the pandemic influenza virus is susceptible or resistant to available antiviral drugs. Antiviral drugs are prescription drugs (they are not sold over-the-counter) and are different from prescription antibiotics that treat bacterial infections.

Are there other ways to slow a pandemic?

Nonpharmaceutical interventions, or NPIs, are actions, apart from getting vaccinated and taking medicine, which people and communities can take to help slow the spread of respiratory illnesses, like pandemic flu. Again, these actions do not include medicines, vaccines, or other pharmaceutical interventions. Given that it may take months to produce a pandemic flu vaccine (not included in the pre-pandemic vaccine stockpile) and that antiviral drugs may be reserved for treatment, NPIs will likely be the only prevention tools available during the early stages of a pandemic and, thus, critically important to help slow the spread of infection.

How would nonpharmaceutical interventions (NPIs) be used during a pandemic?

NPIs, also known as community mitigation strategies, may be more efficient when used early in a flu pandemic and in a layered fashion. Public health officials will recommend that people practice everyday preventive actions at all times. These actions include staying home when sick, covering coughs and sneezes with a tissue, washing hands often, and cleaning frequently touched surfaces and objects. During severe, very severe, or extreme flu pandemics, public health officials may recommend additional actions, such as using facemasks when sick and in close contact with other people, temporarily dismissing child care facilities and schools, and increasing the space between people and decreasing the frequency of contact among people (that is, social

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Pandemic Basics, Cont.

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distancing).

How do you plan for the use of NPIs during a flu pandemic?
CDC has developed an updated set of guidelines, called the *Community Mitigation Guidelines to Prevent Pandemic Influenza – United States, 2017*, supplemental plain-language guides for specific community groups, and online communication and education materials that outline strategies for planning and preparing for a flu pandemic and for using nonpharmaceutical interventions (NPIs). Additionally, CDC has developed an NPI 101 trainingExternalexternal icon for public health professionals to help them learn more about NPIs and share information with their communities on how to use NPIs.

Are there novel influenza A viruses that are of extra concern in terms of their pandemic threat?
A novel influenza (flu) virus is an influenza A virus that has caused human infection and which is different from current human seasonal influenza A viruses. Any novel influenza A virus, such as those of avian or swine origin, has the potential to cause an influenza pandemic. Some novel flu A viruses are believed to pose a greater pandemic threat and are more concerning to public health officials than others because they have already caused serious human illness and death and also have been able to spread in a limited manner from person to person. Novel influenza A viruses are of extra concern because of the potential impact they could have on public health if they gained the ability to spread from person-to-person easily and thus trigger an influenza pandemic. Examples of novel influenza A viruses of extra concern because of their potential to cause a severe pandemic include avian influenza A (H5N1) and avian influenza A (H7N9) viruses. These two different avian influenza A viruses have caused sporadic human infections, some limited person to person spread and resulted in critical illness and death in people.

Influenza viruses that normally circulate in pigs also have infected people; these viruses include influenza A (H1N1v), (H1N2v) and (H3N2v). When influenza viruses that normally circulate in swine are found in people, they are called "variant" viruses; the "v" after the virus name indicates a variant virus. Limited, unsustained spread from person to person also has been detected with these viruses, but in general, these variant viruses have been associated with less severe illness and fewer deaths than avian influenza viruses. In general, human infections with H5N1, H7N9, H1N1v, H1N2v and H3N2v viruses have occurred rarely, but if these viruses were to change in such a way that they were able to infect humans easily and spread from person to person in a sustained manner, a flu pandemic could result.

"When influenza viruses that normally circulate in swine are found in people, they are called "variant" viruses..."

Global Recycling Day, Cont.

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The Foundation encourages people to ask themselves seven questions to ensure we create households and communities that recycle responsibly:

- Do I dispose of everything I have used properly so it can be recycled?
- Do I know my municipality's policies on recycling, and do I follow them?
- Do I know what happens to my recyclables once they are taken away by my local municipality?
- Do I, my family, and my friends mend, repair, and reuse in order to sustain the usefulness of the items around us for as long as possible?
- Am I committed to producing as little waste as I can?
- Do I know how, and do the brands that I buy make it easy for me to make the right "recycling friendly" purchasing decisions?\
- Am I sufficiently aware of my government's recycling legislation, or should I be demanding more?

You can participate in Global Recycling Day by joining one of the many local, national, and regional recycling events, including seminars, lectures, conferences, educational programs, and social media campaigns. To learn more, visit www.globalrecyclingday.com.

Source: Safety BLR

"Am I committed to producing as little waste as I can?"

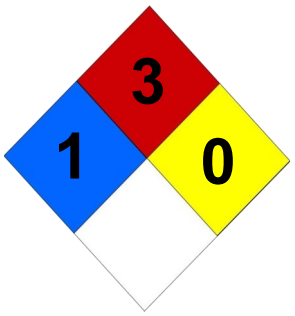
Chemical Spotlight: Diethyl ketone

Diethyl ketone is a colorless liquid with an acetone-like (nail polish remover) odor. It is used in chemical manufacturing and in medicine. Diethyl ketone is not compatible with oxidizing agents, strong bases, aliphatic amines, reducing agents, mineral acids, and mixtures of hydrogen peroxide and nitric acid.

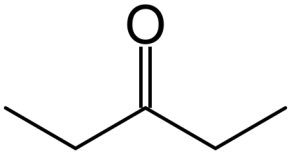
Store diethyl ketone in tightly closed containers in a cool, well-ventilated area away from heat. Sources of ignition are prohibited where diethyl ketone is used, handled, or stored. Metal containers involved in the transfer of diethyl ketone should be grounded and bonded. Only use nonsparking tools and equipment, especially when opening and closing containers of diethyl ketone.

If diethyl ketone is spilled or leaked, avoid breathing vapors, mist, or gas, and ensure adequate ventilation. Remove all sources of ignition, and evacuate personnel to safe areas. Use personal protective equipment (PPE), including goggles or safety glasses, gloves, flame-retardant protective clothing, and respiratory protection.

Prevent further leakage or spillage if safe to do so, and do not let the product enter drains, sewers, underground or confined spaces, groundwater, or waterways or discharge into the environment. Absorb liquids in vermiculite, dry sand, earth, or a similar material, and deposit in sealed containers. Ventilate and wash the area after cleanup is complete. It may be necessary to contain and dispose of diethyl ketone as a hazardous waste. Contact the federal and local Environmental Protection Agency (EPA) for specific recommendations.



"Diethyl ketone is a colorless liquid with an acetone-like (nail polish remover) odor"

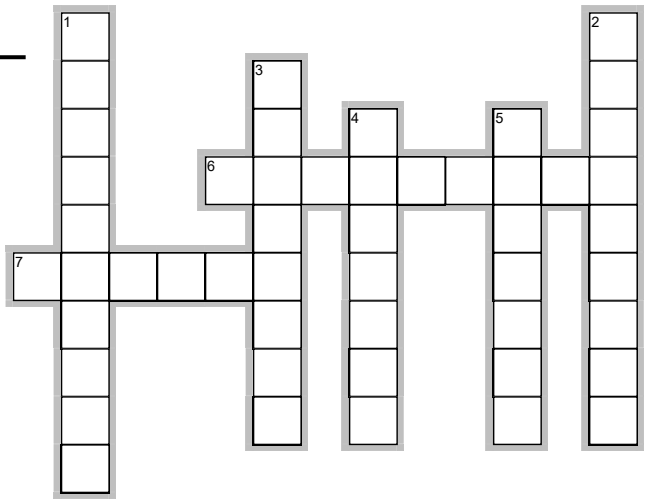


Fun Page

FUN PAGE

Across

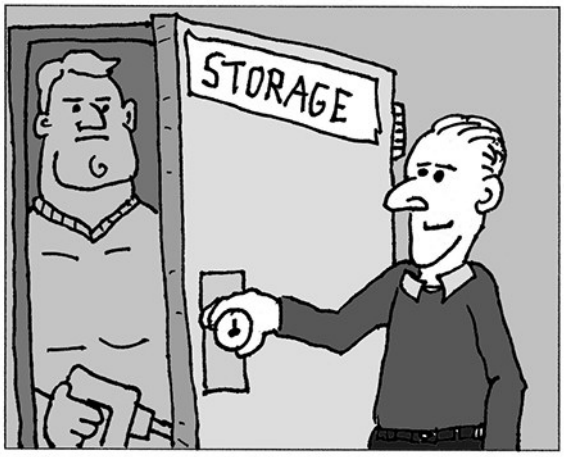
6. During a flu pandemic, _____ drugs would be an important tool to treat and prevent the spread of influenza illness.
7. Diethyl _____ is a colorless liquid with an acetone-like (nail polish remover) odor.



Down

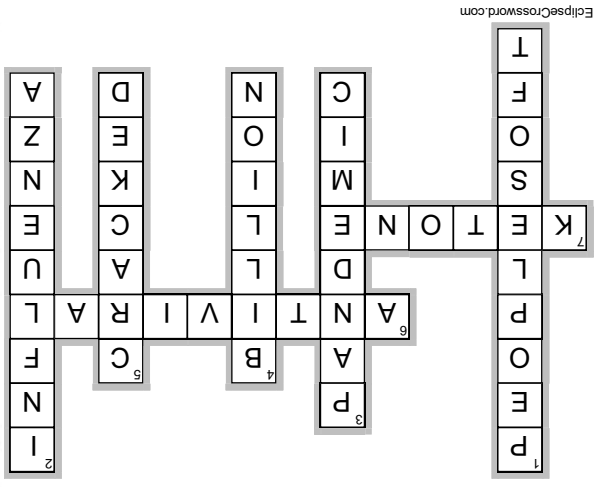
1. All radioactive isotope orders must first be added into _____.
2. _____ A viruses are constantly changing.....
3. It is unlikely that seasonal flu vaccines would protect against a _____ influenza virus.
4. People produce 2.1 _____ metric tons of solid waste every year.
5. Replace _____ heads and loose or _____ handles on

Funny Corner



After work, be sure to lock the nail guns, cartridges and studs in a safe place.

Puzzle Answers



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Safety Quotes

Your safety gears are between your ears.

~Author Unknown

All back issues of the EHS Newsletter can be found online at case.edu/ehs. Click on the "Newsletter" link at the bottom of each page.

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