



*"Safety Comes First"*

# Case Western Reserve University Environmental Health and Safety

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Federal and state agency regulatory inspections are visits to a facility or site for the purposes of gathering information to determine whether it is in compliance. During an inspection, facility and site owners and operators can expect to be interviewed, the review of reports and records, the taking of photographs, the collection of samples, and the observation of operations.

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Inspections conducted by your regulating authority may be planned, but sometimes they are not. Inspectors can show up on your doorstep at any time during business hours. If a spill occurs, you can expect that an after-hours inspection may be in order. When an inspector comes to your door, what happens?

*Plague*

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First, you should know that the inspector has the legal authority to enter the premises, even if it is private property, to conduct the inspection and determine compliance with state and federal regulations. An inspector will enter the facility or business with his or her photo identification issued by the regulatory agency.

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After the inspector has entered the premises, he or she will ask for the person in charge. Next, the inspector will identify his or her official title and explain the scope of the inspection activities. In most cases, a single inspector will evaluate only one area of compliance such as air, water, or waste regulations. Be aware that multiple inspectors can mean multiple areas of inspection! This type of inspection is called a multimedia inspection.

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An inspector might be at your door in the first place in order to:

- Determine compliance inspection for a permitted activity or permit application.
- Determine compliance with specific requirements.
- Find evidence that a violation occurred.
- Conduct a follow-up check on prior violations.
- Respond to a citizen or employee complaint.
- Conduct an examination based on a referral from a federal, state, or local agency.

The next step is the opening conference. What should you expect to happen? Read the next monthly *Employee EHS Newsletter* to find out.

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2015-4

## *Radiation and National Security*



*“...it is a product of the private sector working in close partnership with Federal, State, and local authorities.”*

### **Radiation and National Security**

The U.S. Nuclear Regulatory Commission (NRC) is committed to protecting the health and safety of the public and the environment in civilian uses of nuclear materials. This commitment is central to the agency's mission today, as it has been since Congress established the NRC in 1974. The following topics illustrate this commitment in action:

#### **Nuclear Power Plants**

Nuclear security, under the oversight of the NRC, is achieved through effective regulation of the industry. In addition, it is a product of the private sector working in close partnership with Federal, State, and local authorities. Nonetheless, the terrorist attacks on September 11, 2001, reaffirmed the need for collective vigilance, enhanced security, and improved emergency preparedness across the Nation's critical infrastructure, and the NRC was quick and effective in its response.

Since well before the terrorist attacks in 2001, the NRC has provided for the protection of public safety in this key aspect of our national infrastructure. Toward that end, nuclear power plants are well-protected by physical barriers, armed guards, intrusion detection systems, area surveillance systems, access controls, and access authorization requirements for employees working inside the plants. As a result, nuclear power plants continue to be among the best-protected private sector facilities in the Nation.

*(Continued on page 3)*

## *Radiation and National Security, Cont.*

*(Continued from page 2)*

### **Radioactive Materials**

The NRC has long-standing regulatory programs to ensure the security of agency-licensed radioactive materials, with a particular focus on those materials that could be used malevolently in an improvised nuclear device or a radiological dispersal device. Recent enhancements in this area include security improvements for high-risk sources, enhanced tracking of these materials, and increased export and import controls. In addition, research and test reactors have implemented the highest level of security to protect against radiological sabotage and theft of certain nuclear fuel.

Another important responsibility involves ensuring the security of radioactive materials that the NRC licenses for medical, industrial, and academic uses. The NRC also works with Agreement States, which administer regulatory programs to ensure the safe use and handling of these radioactive materials within their respective State borders.

### **International Safeguards**

In addition to its domestic responsibilities for radiation protection and nuclear security, the NRC conducts international safeguards activities to demonstrate the U.S. commitment to nonproliferation of nuclear materials. In so doing, the NRC strengthens the capability of the International Atomic Energy Agency (IAEA) to verify a State's commitments regarding the peaceful use of nuclear materials, and to prevent the spread of nuclear explosives capability. In addition, the NRC helps to strengthen the IAEA safeguards program through participation in interagency groups, as well as activities that directly support the IAEA.

*“...research and test reactors have implemented the highest level of security...”*



# Plague



*“For centuries, plague represented disaster for people living in Asia, Africa and Europe...”*

According to a recent CNN report, eleven cases of plague have been recorded in the U.S. this year, and three people have died. "It is unclear why the number of cases in 2015 is higher than usual," the Centers for Disease Control and Prevention says in a brief update. The CDC has recorded 91 cases of plague since 2000, an average of between 5 and 6 a year. The highest number this century was 17 cases in 2006. Now, 2015 is the year with the second-highest number of cases.

## Background

Plague has a remarkable place in history and has had enormous effects on the development of modern civilization. Some scholars have even suggested that the collapse of the Roman Empire may be linked to the spread of plague by Roman soldiers returning home from battle in the Persian Gulf in 165 AD. For centuries, plague represented disaster for people living in Asia, Africa and Europe and because the cause of plague was unknown, plague outbreaks contributed to massive panic in cities and countries where it appeared.

Numerous references in art, literature and monuments attest to the horrors and devastation of past plague epidemics. We now know that plague is caused by a bacterium called *Yersinia pestis* that often infects small rodents (like rats, mice, and squirrels) and is usually transmitted to humans through the bite of an infected flea. In the past, black rats were the most commonly infected animals and hungry rat fleas would jump from their recently-dead rat hosts to humans, looking for a blood meal. Pneumonic plague, a particular form of plague infection, is instead transmitted through infected droplets in a sick person's cough.

## Three Major Plague Pandemics

### The Justinian Plague

The first recorded pandemic, the Justinian Plague, was named after the 6th century Byzantine emperor Justinian I. The Justinian Plague began in 541 AD and was followed by frequent outbreaks over the next two hundred years that eventually killed over 25 million people (Rosen, 2007) and affected much of the Mediterranean basin--virtually all of the known world at that time.

*(Continued on page 5)*

## *Plague, cont.*

*(Continued from page 4)*

### **"Black Death" or the Great Plague**

The second pandemic, widely known as the "Black Death" or the Great Plague, originated in China in 1334 and spread along the great trade routes to Constantinople and then to Europe, where it claimed an estimated 60% of the European population (Benedictow, 2008). Entire towns were wiped out. Some contemporary historians report that on occasion, there were not enough survivors remaining to bury the dead (Gross, 1995). Despite the vast devastation caused by this pandemic, however, massive labor shortages due to high mortality rates sped up the development of many economic, social, and technical modernizations (Benedictow, 2008). It has even been considered a factor in the emergence of the Renaissance in the late 14<sup>th</sup> century.

### **Modern Plague**

The third pandemic, the Modern Plague, began in China in the 1860s and appeared in Hong Kong by 1894. Over the next 20 years, it spread to port cities around the world by rats on steamships. The pandemic caused approximately 10 million deaths (Khan, 2004). During this last pandemic, scientists identified the causative agent as a bacterium and determined that plague is spread by infectious flea bites. Rat-associated plague was soon brought under control in most urban areas, but the infection easily spread to local populations of ground squirrels and other small mammals in the Americas, Africa, and Asia. These new species of carriers have allowed plague to become endemic in many rural areas, including the western U.S.

However, as a bacterial disease, plague can be treated with antibiotics, and can be prevented from spreading by prompt identification, treatment and management of human cases. Applications of effective insecticides to control the flea vectors also provide assistance in controlling plague.

### **Recent Outbreaks**

The most recent plague epidemics have been reported in India during the first half of the 20<sup>th</sup> century, and in Vietnam during wartime in the 1960s and 1970s. Plague is now commonly found in sub-Saharan Africa and Madagascar, areas which now account for over 95% of reported cases (Stenseth, 2008).

*(Continued on page 8)*

*"Plague is now commonly found in sub-Saharan Africa and Madagascar..."*



## Near Misses

**“Could someone have been injured, or could major damage have occurred?”**

When was the last time you felt a surge of adrenaline—only to shake it off a few minutes later? Was there a time recently when you said to a coworker, “Boy! We dodged a bullet there”? Have there been any incidents when you looked at what happened and thought, “That could have been a lot worse than it was”?

If so, you’ve likely suffered or seen a “near miss.” If we identify and investigate these incidents, we may be able to prevent others that cause large-scale property damage, catastrophic environmental damage, or serious injury or death to workers or members of the community.

Here’s what to be aware of:

- **Minor accidents or injuries.** If you’re using a saw and the workpiece kicks back at you and causes a bruise, that accident may not be anything you think twice about. If you’re operating a forklift and run up against a barrier while you’re turning, you might think it was a simple matter of isolated operator error and let it go. But in both cases, you may have just been given a warning of a larger problem. Report these incidents so they can be investigated before serious injury or property damage occurs.

- **Incidents that slow the job down.** If something unplanned and undesired occurs that makes it more difficult for you to do your job, ask yourself whether something more serious is going on. Does the corrosion that slowed down your maintenance work, for example, indicate a larger problem?

**Near misses.** Even if no one was hurt and nothing was damaged, could the incident have been more serious? Could someone have been injured, or could major damage have occurred? If you’d been standing in a different place, or passed through a moment later, would you be in the hospital now? Could the incident happen again? Report minor incidents or near misses to your supervisor and describe what happened.

- **Who** was involved?
- **Where and when** did the incident take place?
- **What** exactly happened?
- **How** did it happen? *And perhaps most important,*
- **Why** did it happen? This last piece of information may be critical to preventing the incident from happening again.

Don’t stop once you have identified one cause of an incident; most accidents have more than one cause, and it’s important to address them all.

## *Chemical Spotlight: Acetone*

Acetone is a colorless liquid with a distinct, sweet smell and taste. It can dissolve in water, evaporates into the air, and is highly flammable. Acetone is often used for cleaning and degreasing. It is also used in the manufacture of plastics, fibers, and other chemicals. This chemical has been found in at least 572 of 1,416 National Priorities List sites identified by the EPA.

A large percentage of the acetone released during its manufacture or use goes into the air. From the air, about one-half of the amount released breaks down from the sunlight or other chemicals every 22 days. Acetone does not bind to soil or build up in animals. However, it can move into groundwater from spills and landfills.

Acetone is broken down by water and soil.

Acetone is quickly absorbed by ingestion, inhalation, and dermal exposure. It is important to wear protective clothing and equipment to avoid effects such as eye and respiratory irritation, mood swings, and nausea.

In the event of a release of acetone into the environment, it is important to eliminate all sources of ignition because of its flammable qualities. Spraying water may reduce the vapor, but it may not prevent ignition in closed spaces. The spill should be covered with dry earth, sand, or other noncombustible material and transferred to containers to absorb the acetone. The spill should be prevented from entering into waterways, sewers, basements, or confined areas.

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*“Acetone is quickly absorbed by ingestion, inhalation, and dermal exposure.”*

# Plague, cont

*“Yersinia pestis has been used as a weapon of biological warfare for centuries.”*

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## Plague as a Weapon of War

As a highly contagious disease with an extremely high mortality rate if left untreated, *Yersinia pestis* has been used as a weapon of biological warfare for centuries. Some warfare strategies have included catapulting corpses over city walls, dropping infected fleas from airplanes, and aerosolizing the bacteria during the Cold War (Stenseth, 2008). More recently, plague raised concern as an important national security threat because of its potential for use by terrorists. -CDC-

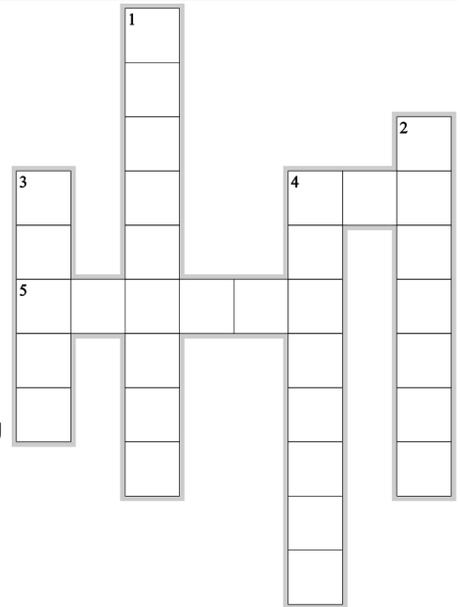
### PUZZLE: REVIEW OF THIS NEWSLETTER

#### ACROSS

- The \_\_\_\_\_ licenses radioactive materials for medical, industrial and academic use.
- Plague is now commonly found in sub-Saharan \_\_\_\_\_ and Madagascar.

#### DOWN

- OSHA inspectors have legal \_\_\_\_\_ to enter your premises.
- \_\_\_\_\_ is a highly flammable solvent used for cleaning and degreasing.
- The second pandemic of the Plague was known as the "\_\_\_\_\_ Death".
- A narrowly avoided collision or other accident is known as a \_\_\_\_\_.



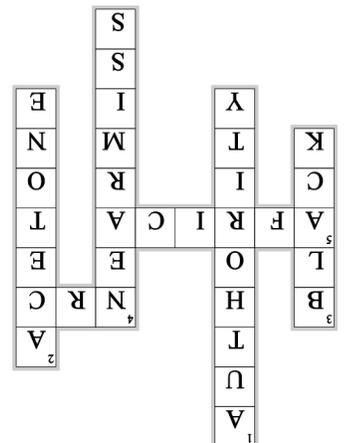
EclipseCrossword.com

### Funny Corner



A few hours before the false hazmat alert.

### Puzzle Answers



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