



# Electrical Transmission & Distribution Partnership

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## Continuing Education Training

## Environmental Injury and Illness

Presenter Guide

Quarter 2, 2024

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## Introduction

This Environmental Injury and Illness Refresher course is a presenter lead (supervisor, safety professional) process. The presenter may choose to augment the material with videos, handouts, or other media to enhance the learning experience. The presenter may want to incorporate visual aids to enhance the presentation.

Using this material in combination with practical experience, good presentation skills and knowledge of adult learning techniques, the presenter has a greater opportunity to deliver the information.

Edgar Dale stated that 2 weeks after a learning event, adult learners remember:

- ✓ 10% of what they read
- ✓ 20% of what they hear
- ✓ 30% of what they see
- ✓ 50% of what they see and hear
- ✓ 70% of what they say
- ✓ 90% of what they say while performing a task

Microsoft® PowerPoint® combined with good instructional skills and instructor/student dialogue work strongly in the fifty to seventy percent range. PowerPoint® presents the information to the attendee and the instructor summarizes the content of the slides. It is critical to engage and involve the attendee in the process. Ask open-ended questions that will elicit conversation and discussion but be cautious to maintain control of the discussion.

Conversation and scenarios are good but can cause the discussion to run long. If it seems like the group is losing focus during the course, the presenter can direct the group back on track by using comments like “Good discussion, but let’s get back to the subject at hand”.

Another tool is the “Parking Lot” which is simply a newsprint chart or dry erase board or note pad where the presenter records questions/discussion points not answered or addressed during the meeting and that may require more research. It is vital to capture any ongoing discussions or questions on the “Parking Lot” and follow up when the information is known.

Deliver this refresher during the second quarter of 2024. Delivery time is approximately 45 minutes to 1 hour, in one setting or divided-up into three, 15-to-twenty-minute settings. The presenter may deliver the topic in a formalized meeting room setting using the PowerPoint slide deck or by using the three, key point sheets (located at the end of each session) as in a tailgate safety talk. It is critical that the facilitator makes him or herself familiar with the material prior to delivery.

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# Environmental Injury and Illness

## Continuing Education

Second Quarter 2024






## Purpose

Discuss the identification, prevention, and treatment of the following environmental injuries and illnesses.

- Heat Injury
- Poisonous Vegetation
- Bacterial and Viral


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Review these bullet points to provide employees with an understanding of the different topics that will be covered in this Continuous Education Module topic.



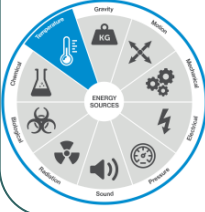
## Learning Objectives

- Understand various types of environmental injuries
- Identify the signs and symptoms of these injuries
- Discuss preventative strategies and tools
- Discuss Recognition and Treatment




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Explain the learning objectives outlined in this slide.



## HEAT INJURIES





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### Objectives

- Discuss heat-related injuries.
- Identify the different types of heat-related injuries.
- Discuss the common symptoms of heat-related injuries.
- Communicate preventions and response measure.



### Heat Injuries - General Concepts

- Heat injuries are preventable; hazard recognition and appropriate control measures are critical.
- Heat injuries are progressive; if conditions do not change, injuries get worse and can progress to death.



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The focus for all heat injuries must be on prevention. Steps must be taken before workers are exposed to heat risks.



### Know the Symptoms

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|                          |                                |
|--------------------------|--------------------------------|
| • Headache               | • Confusion                    |
| • Muscle cramps          | • Seizures                     |
| • Nausea                 | • Red, hot & dry skin          |
| • Vomiting               | • Body temperature over 103° F |
| • Weakness               | • Loss of consciousness        |
| • Dizziness              | • Fast, strong pulse           |
| • Accelerated heart rate |                                |
| • Heavy sweating         |                                |


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Discuss the symptoms associated with heat-related injuries. Note that these are generic symptoms. Specific symptoms will vary based on individuals and the type of heat related illness.



### Types of Heat Injuries

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|                   |                                                                                      |
|-------------------|--------------------------------------------------------------------------------------|
| • Heat Stroke     |  |
| • Heat Exhaustion |                                                                                      |
| • Rhabdomyolysis  |                                                                                      |
| • Heat Syncope    |                                                                                      |
| • Heat Cramps     |                                                                                      |
| • Heat Rash       |                                                                                      |

Dehydration contributes to heat injuries but is also an injury itself!


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## Heat Stroke

Heat stroke is the most serious heat-related illness. It occurs when the body can no longer control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down.

### Symptoms:

- Confusion altered mental status, slurred speech.
- Loss of consciousness (coma)
- Hot, dry skin or profuse sweating
- Seizures
- Very high body temperature
- Fatal if treatment delayed.

### Treatment and Response:

- Call 911 for emergency medical care with the worker until emergency medical services arrive.
- Stay with the worker until emergency medical services arrive.

- Move the worker to a shaded, cool area and remove outer clothing.
- Cool the worker quickly, using the following methods:
  - With a cold water or ice bath, if possible
  - Wet the skin.
  - Place cold wet clothes on the skin
  - Soak clothing with cool water
- Circulate the air around the worker to speed cooling.
- Place cold wet clothes or ice on the head, neck, armpits, and groin; or soak the clothing with cool water.

### **Heat Exhaustion**

Heat exhaustion is the body's response to an excessive loss of water and salt, usually through excessive sweating. Heat exhaustion is most likely to affect:

- The elderly
- People with high blood pressure
- Those working in a hot environment.

### Symptoms:

- Headache
- Nausea
- Dizziness
- Weakness
- Irritability
- Thirst
- Heavy sweating
- Elevated body temperature
- Decreased urine output

### Treatment and Response:

- Take worker to a clinic or emergency room for medical evaluation and treatment.
- Call 911 if medical care is unavailable.
- Have someone stay with the worker until help arrives.
- Remove the worker from the hot area and give liquids to drink.
- Remove unnecessary clothing, including shoes and socks.
- Cool the worker with cold compresses or have the worker wash their head, face, and neck with cold water.
- Encourage frequent sips of cool water.



## **Rhabdomyolysis**

[Rhabdomyolysis](#) (rhabdo) is a medical condition associated with heat stress and prolonged physical exertion. Rhabdo causes the rapid breakdown, rupture, and death of muscle. When muscle tissue dies, electrolytes and large proteins are released into the bloodstream. This can cause irregular heart rhythms, seizures, and damage to the kidneys.

### Symptoms:

- Muscle cramps/pain
- Abnormally dark (tea or cola-colored) urine
- Weakness
- Exercise intolerance
- Asymptomatic

### Treatment and Response:

Stop activity.

Drink more liquids (water preferred)

Seek immediate care at the nearest medical facility.

Ask to be checked for rhabdomyolysis (i.e., blood sample analyzed for creatine kinase).

To learn more, visit NIOSH [Rhabdomyolysis](#).

## **Heat Syncope**

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs when standing for too long or suddenly standing up after sitting or lying. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

### Symptoms:

- Fainting (short duration)
- Dizziness
- Light-headedness from standing too long or suddenly rising from a sitting or lying position.

### First Aid Treatment and Response:

- Sit or lie down in a cool place.
- Slowly drink water, clear juice, or a sports drink.

## **Heat Cramps**

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles cause painful cramps. Heat cramps may also be a symptom of heat exhaustion.

### Symptoms:

- Muscle cramps, pain, or spasms in the abdomen, arms, or legs

### Treatment and Response:

- Drink water and have a snack or a drink that replaces carbohydrates and electrolytes (such as sports drinks) every 15 to 20 minutes.
- Avoid salt tablets.
- Get medical help if the worker:
  - Has heart problems.

- Is on a low sodium diet.
- Has cramps that do not subside within 1 hour.

### Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

#### Symptoms:

- Red clusters of pimples or small blisters
- Usually appears on the neck, upper chest, groin, under the breasts, and in elbow creases.

#### Treatment and Response:

- Work in a cooler, less humid environment, if possible.
- Keep the rash area dry.
- Apply powder to increase comfort.
- Don't use ointments and creams.

Source:

Heat Stress Related Illness | NIOSH | CDC



### Risk Factors

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- Environment
  - High Temps
  - High Humidity
  - Lack of shade or breeze
  - Proximity to hot equipment
- Health Conditions
  - Diabetes
  - Heart Disease
  - Obesity
  - Short-Term Illness
  - Poor physical fitness

- Dehydration
- Prior Heat Illness
- Medications
- No Acclimatization
  - Sudden shifts in work intensity or sudden increases in environmental temp can increase the risk for heat illness even for acclimatized workers

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Discuss some of the common risk factors associated with heat-related injuries.

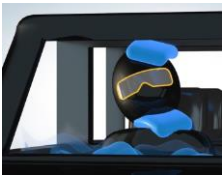


### Heat Stroke Response

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- Call 911
- Move to a cool location
- Remove excess clothing
- Apply ice packs to the neck, armpits and groin



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Re-emphasize that heat stroke is the most severe type of heat injury. It is a life-threatening condition where the internal temperatures are elevated, and the body is unable to cool itself and is a medical emergency.





## Heat Injury Prevention

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- Hydration and acclimatization are critical to preventing heat illness



### Hydrate

- Before Work
- During Work
- After Work

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Although this is an important factor, the thought that people only need to stay hydrated to prevent heat injuries is not the only method of prevention we should take.





## Heat Injury Prevention

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- Appropriate clothing
  - Encourage workers to wear clothes that are breathable, light-colored, and loose-fitting
  - Cotton clothing can be soaked in water to aid cooling
  - Keep in mind that personal protective equipment may increase the risk of heat stress
- Implement work/rest and hydration schedules

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## Heat Acclimatization

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- Employees should be allowed to adapt and adjust gradually to working in hot environments.
- This should take place over a period of 5 to 7 days.

**Example of an acclimatization schedule developed by NIOSH:**

For new workers, the schedule should be no more than 20% exposure to heat on day 1 and an increase of no more than 20% exposure on each additional day

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| DAY 1                                                                               | DAY 2                                                                               | DAY 3                                                                               | DAY 4                                                                               | DAY 5                                                                               |
|  |  |  |  |  |
| 20%                                                                                 | 40%                                                                                 | 60%                                                                                 | 80%                                                                                 | 100%                                                                                |

For workers who have previous experience with the job, the acclimatization schedule should be no more than:

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| DAY 1                                                                               | DAY 2                                                                               | DAY 3                                                                               | DAY 4                                                                               |
|  |  |  |  |
| 50%                                                                                 | 60%                                                                                 | 80%                                                                                 | 100%                                                                                |

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"Criteria for a Recommended Standard: "Occupational" Exposure to Heat and Hot Environments ([cdc.gov](https://www.cdc.gov/niosh/publications/occupational-heat-exposure-criteria-for-a-recommended-standard.html))"



## Heat Injury Prevention

- Designate a co-worker at the beginning of the shift to be your buddy and check in on each other throughout the shift.
- Make sure they:
  - Take consistent breaks - and hydrate!
  - Make use of available shade
  - Are not showing any heat illness -related symptoms


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## NIOSH Heat Safety Tool

- It has a real-time heat index and hourly forecasts specific to your location and provides occupational safety and health recommendations from OSHA and NIOSH.
- The OSHA-NIOSH Heat Safety Tool features:
  - A visual indicator of the current heat index and associated risk levels specific to your current geographical location
  - Precautionary recommendations specific to heat index - associated risk levels
  - An interactive, hourly forecast of heat index values, risk levels, and recommendations for planning outdoor work activities
  - Location, temperature, and humidity controls, which you can edit to calculate for different conditions
  - Signs and symptoms and first aid for heat -related illnesses



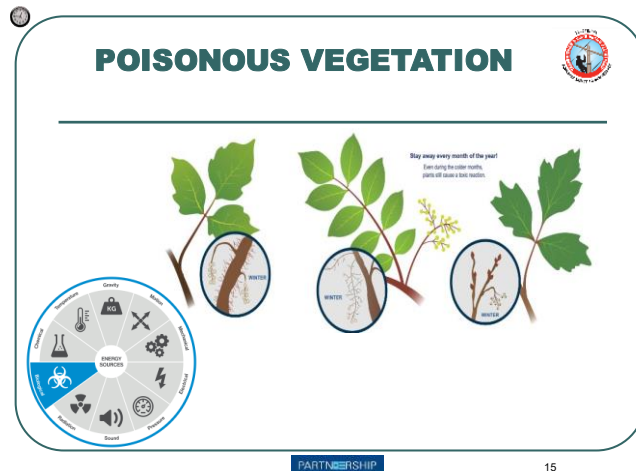
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[The OSHA-NIOSH Heat Safety Tool](#) is a useful resource for planning outdoor work activities based on how hot it feels throughout the day. It has a real-time heat index and hourly forecasts specific to your location. It also provides occupational safety and health recommendations from OSHA and NIOSH.

The OSHA-NIOSH Heat Safety Tool features:

- A visual indicator of the current heat index and associated risk levels specific to your current geographical location
- Precautionary recommendations specific to heat index-associated risk levels.
- An interactive, hourly forecast of heat index values, risk levels, and recommendations for planning outdoor work activities.
- Location, temperature, and humidity controls, which you can edit to calculate for different conditions.
- Signs and symptoms and first aid for heat-related illnesses

The App allows workers and supervisors to calculate the heat index for their worksite, and, based on the heat index, displays a risk level to outdoor workers. Then, with a simple tap, you can get reminders about the protective measures that should be taken at that risk level to protect workers from heat-related illness - reminders about drinking enough fluids, scheduling rest breaks, planning for and knowing what to do in an emergency, adjusting work operations, gradually building up the workload for new workers, training on heat illness signs and symptoms, and monitoring each other for signs and symptoms of heat-related illness.



### Training Objectives:

- Equip participants with the knowledge to identify common poisonous plants.
- Understand the health risks associated with poisonous plant exposures.
- Learn preventive measures to avoid contact with poisonous plants.
- Gain skills in emergency response and first aid for plant-related injuries.

While numerous poisonous plants exist, today we will center our attention on the three primary ones notorious for causing skin irritation upon contact: poison oak, poison sumac, and poison ivy.

### Poison Oak

- Poison Oak
  - Is a plant found primarily in North America.
- Contact can cause the same allergic reaction as poison ivy, resulting in an itchy rash and blistering.
- Identification is essential, as its leaves resemble oak leaves, but it grows as a vine or shrub rather than a tree.



Contains the same toxic oil, urushiol, in its leaves, stems, and roots.  
The rash can be equally severe and may last for several weeks.

## Poison Sumac

- **Poison Sumac:**
  - Is a highly toxic plant found in wetlands and swamps in the Eastern United States and Canada.
- The stems of the leaflets are always red. Yellow -green flowers are present during June and July.
- The small white or grey berries are visible in September.







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Contains urushiol, like poison ivy and poison oak, and can cause a severe allergic reaction upon contact.

Poison sumac is a small tree or tall shrub with compound leaves.

The rash from poison sumac is typically more severe than that caused by poison ivy or poison oak due to the higher concentration of urushiol.

## Poison Ivy

- **Poison Ivy:**
  - It can grow as a vine or a shrub and is recognizable by its clusters of three leaflets.
- Remember the saying "Leaves of three, let them be" for identifying poison ivy and poison oak, which typically have clusters of three leaflets.







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Is another plant that contains urushiol and is widespread throughout North America.

Contact with any part of the poison ivy plant can cause an allergic reaction, leading to a red, itchy rash.



### **Preventive measures**

- Wear Protective Clothing
- Be Cautious When Removing Plants
- Use Barriers

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#### **Protective Clothing:**

- Wear long sleeves, long pants, and closed-toe shoes when working, or engaging in activities where you might encounter poisonous plants.
- Wear your PPE (gloves and protective eyewear) When handling plants or working in areas where poisonous plants may be present.

#### **Be Cautious When Removing Plants:**

- Take precautions when removing or handling plants, especially if you're uncertain whether they're poisonous.
- Wear protective clothing and gloves and avoid touching your face while handling plants.

#### **Use Barriers:**

- Create physical barriers between yourself and potentially poisonous plants by using landscaping fabric.
- Use a barrier cream or lotion on exposed skin as an additional layer of protection.





## First aid

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First aid for contact with poisonous plants primarily focuses on minimizing the spread of the irritating oils and soothing the affected skin.

1. Wash with Water
2. Apply Cold Compress
3. Avoid Scratching
4. Keep Clean and Dry
5. See Doctor if Needed



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First aid for contact with poisonous plants primarily focuses on minimizing the spread of the irritating oils and soothing the affected skin.

#### **Wash with Water:**

- Rinse the affected area with lukewarm water to remove the plant oils. Use mild soap or products such as Tecnu or Ivy wash if available.

#### **Apply Cold Compress:**

- Use a cold, damp cloth to soothe the skin and reduce itching. Apply for 15-20 minutes at a time.

#### **Use OTC Medications:**

- Take antihistamines like Benadryl for itching. Use corticosteroid creams for inflammation.

#### **Avoid Scratching:**

- Don't scratch the rash to prevent further irritation and infection.

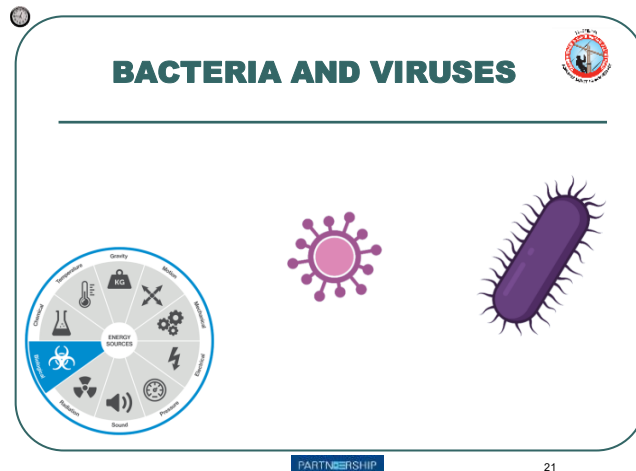
#### **Keep Clean and Dry:**

- Keep the area clean and dry. Change clothes and bedding often.

#### **See a doctor if Needed:**

- If the rash is severe or accompanied by breathing difficulties, swelling, or fever, seek medical help.





### Training Objective:

- Equip participants with a fundamental understanding of bacteria and viruses.
- Participants will learn about common infections, including their transmission and symptoms.
- Effective hygiene practices, the importance of vaccinations, and environmental cleanliness to promote public health and safety.

The slide is titled "Bacteria". It contains the following text:

- Bacteria are single-celled microorganisms that can be found in almost every habitat on Earth, including soil, water, and within living organisms.
- Common Bacterial Infections :
  - **Tuberculosis (TB):** Caused by *Mycobacterium tuberculosis*, TB primarily affects the lungs but can also impact other parts of the body. It is spread through the air when an infected person coughs or sneezes.
  - **Salmonellosis:** Often associated with contaminated food or water, *Salmonella* bacteria can cause gastrointestinal distress, fever, and diarrhea.
  - **Bacterial Pneumonia:** Various bacteria, including *Streptococcus pneumoniae*, can cause pneumonia, a serious lung infection.

On the right side of the slide, there is a microscopic image of blue, rod-shaped bacteria. At the bottom center, there is a blue box with the word "PARTNERSHIP" and the number "41" to its right.

While many bacteria are harmless or beneficial to humans (such as those that aid in digestion or contribute to the Earth's ecosystem processes), some are pathogenic and can cause diseases.

The slide is titled "Prevention & Control - Bacteria". It contains the following text:

- **Hygiene Practices:** Regular handwashing with soap and water is one of the most effective ways to prevent the spread of bacterial infections.
- **Food Safety:** Proper food handling, cooking, and storage reduce the risk of foodborne bacterial illnesses.
- **Vaccination:** Vaccines are available for some bacterial diseases, such as TB and pneumococcal pneumonia, and are crucial in preventing these infections.

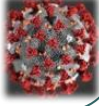
On the right side of the slide, there is a photograph of hands being washed with white soap foam. At the bottom center, there is a blue box with the word "PARTNERSHIP" and the number "42" to its right.



## Viruses

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- Viruses are even smaller than bacteria and require a living host to reproduce. They can infect all types of life forms, from animals and plants to microorganisms.
- Viruses are responsible for a wide range of diseases, some of which can lead to epidemics or pandemics.
- Common Viral Infections:
  - Influenza (Flu):** A respiratory infection that can cause severe illness and complications, particularly in vulnerable populations.
  - Hepatitis:** There are several types of hepatitis viruses that affect the liver, with varying modes of transmission, including contaminated food and water (hepatitis A) and bloodborne transmission (hepatitis B and C).
  - COVID-19:** Caused by the novel coronavirus SARS -CoV-2, COVID-19 has had a profound global impact, highlighting the rapid transmission and potential severity of viral infections.



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## Prevention & Control – Viruses

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- Vaccination:** Vaccines are a cornerstone in the prevention of viral diseases, including influenza and COVID-19.
- Personal Protective Equipment (PPE):** In healthcare settings and during outbreaks, PPE such as masks and gloves can reduce the risk of viral transmission.
- Quarantine and Isolation:** During outbreaks of contagious viral illnesses, isolating the infected and quarantining those exposed can help prevent the spread of the virus.

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## Knowledge Test

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A life-threatening condition where the internal temperatures are elevated, and the body is unable to cool itself.

Heat Stroke

The potential for Heat Related Injury or Illness fall under which segment of the Energy Wheel?

Temperature

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## Knowledge Test

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Poisonous Vegetation is identified under which segment of the Energy Wheel?

**Biological Hazards**

The three primary plants notorious for causing skin irritation upon contact is....

**Poison Oak, Ivy & Sumac**

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## Knowledge Test

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Controls for Viruses and Bacteria include

**Hygiene, Food Safety, Vaccination**

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## Questions?

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