

# City of Burlingame Corporate Yard



## Poison Oak, Bites, Stings and West Nile Virus

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## Section I: Overview

The poisons or venoms injected by insects, snakes, spiders and other creatures have been categorized by chemical composition into three main types.

- *Defensive poisons* are used to discourage intruders from disturbing nests, hives or young, or for self-defense.
- *Offensive poisons* are used to disable or kill a potential meal.
- *Anticoagulants* are designed to prevent a victim's blood from clotting after being bitten so the insect or arachnid can drink it.

### Defensive poisons

Ants, Bees, Wasps, Hornets, Yellow jackets use them to defend their nests or hives. The effect on a human is usually a short period of pain (5 to 15 minutes), swelling and a possible allergic reaction. Treatment may involve pain relievers and antihistamines or Epinephrine for allergic reactions.

### Offensive poisons

Snakes, Spiders, some lizards use them to disable or kill a victim so it can be eaten or to soften or predigest the victim. The effect on a human may be dizziness, difficulty breathing, swelling leading to pain, tissue and/or nerve damage. Treatment may involve seeking medical attention as well as antihistamines to relieve swelling.

### Anticoagulants

Biting flies, Mosquitoes, Fleas, Ticks use it to prevent the host's blood from clotting or closing the wound so the insect can obtain a blood meal. The effect on a human may be itching, which is the body's reaction to an anticoagulant, pain from tearing of the skin, possible allergic reaction. Treatment may involve extracting the tick from the skin, applying a topical pain reliever or creating suction to remove the anticoagulant.

## Section II: Poison Oak

### Background

Poison oak is a widespread shrub found throughout valleys and mountains of California, which generally live below 5,000 feet elevation. Poison oak was taken to England in 1800's. Unwary gardeners planted poison oak because of their climbing habit and autumnal colors. It commonly grows as a climbing vine that sticks to oaks and sycamore trees. It regenerates readily after disturbances such as fire and land clearing. It is a shrubby or sometimes climbing plant that can grow to 8 feet high. Found along fencerows, open forests, pastures, and stream banks. In shady areas, it can grow woody vines that wrap around trees and larger shrubs

All parts of the plant (roots, stalks, stems, leaves, berries, flowers) contain *URUSHIOL*, which is the toxin. Breathing burning poison oak may cause severe respiratory inflammation. The amount on a pinhead is sufficient to cause rashes in 500 people. Less than one millionth of an ounce may cause an allergic reaction.

### Identification

Spring/Summer

In spring, the leaves of young plants are shiny red, turning to green as they mature. The leaves grow in groups of 3 on a shared stalk. The leaflets are densely haired and generally have 3 to 7 distinct lobes.

The leaves are about 1 to 4 inches long and may be glossy or a bit hairy.



In the spring, poison oak yields small clusters of greenish-white flowers. The fruits are formed in the summer and resemble green berries.



Fall/winter

Changes from green to orange/red in late fall and then loses its leaves in winter



### Prevention

Learning to identify and then staying away is the best way to prevent misery. Wearing long sleeves, long pants, boots and gloves helps. Wash all clothing and tools. Poison plant oils can remain active on these items for years. Herbicides found in local nurseries, hardware and home improvement stores are effective. Burning these plants is considered very dangerous and is outlawed in California.

Some products are from the U.S. Forest Service:

- Ivy Block®
- StokoGard Outdoor cream®
- Tecnu Oak-n-Ivy® removes resin and urushiol from the skin.

## Signs and Symptoms

Urushiol must contact the skin directly or indirectly. Burning of the plant emits particles that carry the oil into the air. Coming in contact with the smoke can cause severe cases of poisoning. Once bound to cell membranes, urushiol is virtually impossible to wash off. Bonding takes place in as little as 3 minutes but on average is 30 minutes.

The toxin may be transmitted anytime of the year from any part of the plant and may cause painful irritation and blistering of the skin.

Broken or oozing blisters do not spread urushiol because the content is only body fluids. Once you get the rash, you cannot spread it from scratching because it only appears after the oil is absorbed into the skin. Poison oak rash is not contagious. Only urushiol can cause a reaction.

Toxin from the original contact will continue spreading for the first day or two.

- Red bumps
- Blisters and itching
- Swelling and pain
- Warm around the infected area
- Reaction generally lasts about 2 weeks

Approximately 24 to 36 hrs after a sensitized person is exposed to the urushiol, a blistering, itching rash develops. Usually within 15 minutes of contact, the urushiol binds to skin proteins. If it is washed off with soap and water before that time, a reaction may be prevented. After the antigen is fixed, however, it cannot be washed off or transferred to other areas.

Scratching or oozing blister fluid cannot spread the antigen to other areas of the body or to other persons. New lesions that appear a few days after the primary lesions represent less sensitive areas or areas where less antigen was deposited, not spreading of the antigen

## Treatment

There is no cure for the rash of poison oak once it begins. There are ways to relieve the symptoms. Immediately wash the area. Mild symptoms can be treated with over-the-counter anti-itch treatments that contain zinc acetate, zinc oxide or hydrocortisone.

A recurrent complication is infection. A physician may prescribe antibiotics by injection or pills.

Consult a physician if sensitive areas (eyes, face) are affected or if the reaction lasts longer than 3 weeks.

Ivystat® is available to help remove the oils.

### Section III: Snakebites

#### Background

The United States has four major kinds of poisonous snakes:

- Pit Vipers: Rattlesnakes, Water Moccasins, Copperheads
- Coral Snakes

Of the 10,000 – 20,000 snakebites reported in the US each year, less than ten are fatal. However, many more cause disfigurement or nerve or tissue damage. The name Pit Viper is derived from a small pit between the nostril and the eye on each side of the head. The bite is a lightning-like strike usually on the legs or hands, as the snake injects venom from two fangs in the forward portion of its upper jaw. These fangs leave two distinctive puncture wounds at the point of entry.

Rattlesnake



#### Prevention

- Be aware of surroundings. Ask locals if snakes inhabit the area. If mice, chipmunks or other rodents are present, assume that snakes are, as well.
- Carry a walking stick or similar device and prod before stepping in or touching suspected areas. Snakes like to hide under rocks, logs and leaf debris. Employees should pay attention to where they put their hands and feet.
- Wear high boots. A snake can extend only half its body length, so, if it is on the ground, it will generally bite below the knee.
- If a snake is seen step away slowly. Panicking and running away quickly may cause the employee to step on another snake.
- Don't corner a snake.

### Signs and symptoms

- Symptoms will vary depending on the size and weight of the victim, the amount of venom injected (young snakes tend to inject more venom than older, more mature snakes), speed of absorption and location of the bite.
- Usually, the bite of a Pit Viper will cause severe pain and rapid swelling and discoloration of the skin at the bite area.
- General body weakness
- Rapid pulse
- Nausea and vomiting
- Shortness of breath
- Dimness of vision
- Shock and even death

### Treatment

- Remove yourself from the risk of a second bite
- Calm the patient. Virtually all snakebites are successfully treated in the U.S.
- Keep the extremity lower than the heart. DO NOT elevate the limb.
- In most cases, severe complications occur hours after the bite. Make use of that time to transport the patient and seek medical attention immediately. Panic can increase the danger by causing a faster heart rate. Don't excite the victim or allow the patient to walk if it can be avoided.
- Limit liquid intake because the body pumps fluids to the bite site, increasing painful swelling.
- Do not apply a tourniquet or pack the area in ice. Do not cut open the wound or suck the poison as this increases trauma to the area.



## Section IV: Spider Bites

### Background

Brown recluses, like Black Widows, prefer warm climates but they can be shipped north and live comfortably indoors. Only about 5/8 inch long, the Black Widow is extremely shy. She often eats the male after mating. Black Widows live in woodpiles, stonewalls, outside toilets and similar hiding places. Brown Recluse, also known as the Violin or Fiddleback spider because of the distinctive violin-shaped marking on its back, can deliver a painless bite that may not be diagnosed until considerable tissue damage has occurred.

Most spider bites occur at night when a spider passes over a sleeping person.

Other spiders that deliver painful bites include wolf and jumping spiders, wandering and garden spiders and tarantulas. Unlike tarantulas from South America, the bites from tarantulas that live in North America are no more serious than bee stings.

Brown recluse



Black Widow



### Signs and symptoms

#### Brown Recluse

- Painless bite or bite that merely itches and burns at first.
- Later, the surrounding tissue turns red, or black and blue, and begins to disintegrate from the venom, which is designed to digest the victim's flesh.
- A crusted wound forms and, after the crust falls off, continues to deepen, forming a crater that may take months to heal.

### Treatment

- Seek medical attention if you suspect a Brown Recluse or Black Widow bite.
- Wash and disinfect the area.
- Monitor the patients' breathing.

## Section V: Bees, Wasps, and Hornets

### Background

Bees, wasps, hornets and yellow jackets all insert peptides when they sting, causing immediate, intense pain and swelling. Though peptides have no long-term effect, other chemicals in the venom induce a reaction from the victim's immune system, increasing potential for more severe reactions from future bites.

Every time a person is stung, he or she builds both a greater tolerance and a greater intolerance for the next sting. The tolerance dissipates in roughly six months, but the intolerance continues to build throughout one's lifetime. If you are stung frequently, your tolerance level remains high and overpowers your intolerance. For this reason, beekeepers, who may be stung often, do not have severe reactions.

Stinging insects kill around 25 people each year in the U.S. Half the Deaths are from honeybee stings, the remainder from yellow jackets or wasps. Social bees and wasps are likely to sting in defense of their nests or hives than are solitary wasps which sting to paralyze prey.

Honeybee



Wood Wasp



### Prevention

- Be aware of surroundings. Listen for buzzing and look for nests or hives. Check long grass before mowing, especially in late summer when yellow jackets are most aggressive.
- Escape into a body of water if possible.
- Carry protection. Though repellents are not effective against bees or wasps, the continuous flow from a spray can confuses them.
- Remove and destroy nests, if necessary, at night when they are not active.
- Always check before drinking from an open container.

### Signs and symptoms

- Pain
- Itching
- Swelling
- Redness
- Severe cases may cause anaphylactic shock, which may cause respiratory distress or even cause a person to stop breathing.
- Only the Honeybee leaves the stinger in the victim.

### Treatment

- By pulling out venom, you can relieve pain, itching and swelling.
- Seek medical help immediately if the victim has a history of serious reactions to stings or if the patient shows difficulty breathing. Assist in injecting Epinephrine if the patient has their medication.
- Don't pull a bee's stinger out with fingers or tweezers, as this will squeeze more venom into the patient. Instead, carefully flick it out with the blunt side of a knife, a credit card or other non-sharp object.
- Don't put meat tenderizer on a sting. Though this may provide temporary relief from itching and swelling, tenderizer contains enzymes designed to dissolve the fiber structure of muscle tissue and may permanently damage nerve tissue, resulting in loss of sensation if used repeatedly in one area.

## Section VI: Tick Bites

### Background

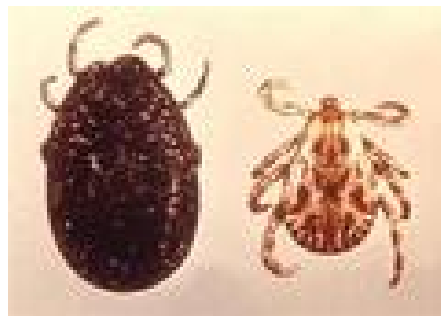
Because ticks are so small, blood has for them the consistency of Jell-O. In order to thin the blood meal so it is easier to suck in, the tick secretes saliva and in so doing may also secrete any disease-carrying bacteria harboring in its gut. This is how Lyme disease, Rocky Mountain spotted fever and other tick-borne illnesses are transmitted.

The best known are the tiny deer tick, which spreads Lyme disease, the Lone Star tick, which transmits Rocky Mountain spotted fever, and the dog tick. All ticks are capable of transmitting disease to humans and animals. As a precaution, all ticks should be treated as if they carried disease.

Deer tick



North American Ticks



### Prevention

- Wear long pants, preferably tucked into socks.
- Wear light colors (so you can spot ticks) and tight weaves (so ticks can't get a foothold).
- Avoid brush and leaf debris, or at least be aware that there is a possibility ticks are hiding in these areas.
- Check yourself regularly, especially around waistlines, knees, armpits and ears.
- Apply Permethrin repellent on clothes, not on skin. It kills ticks and mosquitoes on contact, lasts up to 42 days and won't wash off with water.
- Use insect repellent containing Deet.

### Tick Removal

The best way to remove a tick is with fine-pointed tweezers. Grab as closely to the skin as possible and pull straight back, using steady but gentle force.

- Do not use your fingers to remove the tick.  
Do not twist the tick, which can cause breakage, leaving part of its body in your

skin. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva, body fluids, gut contents) may contain infectious organisms.

- Do not crush, prick, or burn the tick, which may cause it to salivate or regurgitate infected fluids.
- Do not try to smother the tick with products such as petroleum jelly or mineral oil. Ticks can store enough oxygen to complete feeding.
- After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.

## Section VII: Mosquito Bites – West Nile Virus

### Background

West Nile Virus is a mosquito-borne disease that has been found in parts of Asia, Africa, Eastern Europe and the Middle East. The virus was first detected in the United States in New York City in 1999 and has since spread through most of the country.

The virus can infect humans, birds, mosquitoes, horses and other mammals such as cats, squirrels, skunks, and rabbits.

Mosquitoes become infected when they feed on infected birds, which may circulate the virus in their blood for a few days.

West Nile Virus is not transmitted from person to person by casual contact such as touching or kissing an infected person.



### Prevention

- Apply insect repellent containing Deet.
- When possible, wear long sleeves, long pants and socks when outdoors. Spray clothing with Deet, not the skin under the clothing.
- Be aware of peak mosquito hours. Many of the mosquitoes that carry West Nile Virus are especially likely to bite around dusk and dawn.
- Drain standing water; discarded tires, sumps, tree holes, birdbaths.
- Turn over, cover, or remove equipment such as tarps, buckets, barrels, wheelbarrows and containers that accumulate water.

### Signs and Symptoms of West Nile Virus

Most people (around 80%) who are infected with the West Nile Virus will not have any type of illness. It is estimated that about 20% of the people who become infected will develop *West Nile fever*.

West Nile fever symptoms are generally mild:

- Fever
- Headache
- Body aches

- Possibly a skin rash on the trunk of the body
- Swollen lymph glands
- Symptoms of mild disease generally last a few days

It is estimated that 1 in 150 - 200 persons infected will develop a more severe form of disease – *West Nile encephalitis or meningitis*. People over 50 years of age are at the highest risk of serious illness.

West Nile encephalitis symptoms include:

- Headache
- Neck Stiffness
- High fever
- Disorientation
- Coma
- Tremors
- Convulsions
- Muscle weakness
- Paralysis
- Symptoms of severe disease may last several weeks, although neurological effects may be permanent.

### Treatment

For general mosquito bites, treatment involves reducing pain and swelling by applying topical ointments or removing the mild form of poisoning by suctioning using an extractor kit.

There is no specific treatment for WNV. There is no vaccine. In more severe cases, intensive supportive therapy is indicated, often involving:

- Hospitalization
- Intravenous fluids
- Airway management
- Respiratory support (ventilator)
- Prevention of secondary infections (pneumonia, etc...)

