What is our exposure?

When we think of workplace injury we generally think of strains and sprains, cuts and bruises. We are vigilant for moving equipment and unsafe conditions, and use best practices to accomplish our tasks. We seldom think of insects, whose bites and stings can make life unpleasant, even resulting in life threatening reactions. Insects (and arachnids such as spiders and ticks) that bite and sting are found everywhere, at home and work. This briefing will discuss how to reduce the risk of contact, and how to treat if bitten or stung.

What is the concern following a bite or sting?

Most bites and stings cause limited swelling, itching, pain, and redness. Stings by bees, wasps, and stinging ants can cause anaphylaxis that may require treatment by medical professionals. The venom from widow spiders, brown spiders, and some scorpions are likely very painful, and may lead to complications requiring medical care.

Non-venomous Insects Bite	Venomous Insects Sting
Chiggers	Wasps
Fleas	Hornets
Lice	Yellow Jackets
Scabies	All Bees
Bed Bugs	Fire Ants
Ticks	Scorpions
Mosquitoes	Brown Spider (bites)
	Widow Spider (bites)

How do I treat a bite or sting?

First we need to understand the difference between a bite and a sting.

Venomous insects attack as a defense mechanism, injecting painful, toxic venom through their stingers to punish you so you'll stay away next time. Non-venomous insects bite and usually inject anti-coagulant saliva in order to feed on your blood. Although local irritation and "allergic" reactions do occur from non-venomous bites, severe reactions such as anaphylactic shock only happen from venom stings.

Venomous stings are always very painful, red in color, and can swell up to 12 inches around the sting site. This is called a **local reaction.** In sensitive individuals, a **systemic,** or "whole body" reaction occurs, with redness, hives, and swelling far away from the sting site. It is very important to know the difference between local and systemic reaction.

Contact your regional Manager Industrial Hygiene for additional information on this topic by following the below path or clicking the link:

Path: Employee Portal/Safety/Medical and Environmental Health (More Info)/MEH Department Directory

Link: https://employee.bnsf.com/departments/hr-medical/Pages/Find-My-Medical-Environmental-Health-Contact.aspx

The first step in managing a typical local reaction is to remove any retained stinger. Bees always leave the stinger behind, and it continues to pump venom. Never use tweezers or your fingers to remove a stinger. Squeezing the stinger forces venom into your skin. Use a knife, slip of paper, or your fingernail to drag the stinger out of your skin. Home remedies to relieve the pain, itching and swelling include baking soda or meat tenderizer to "draw out" or destroy protein-based venom. Anti-inflammatory drugs such as Motrin IB will help to reduce pain and swelling. Hydrocortisone 1% creams such as Cortaid 10 will provide long term relief from itching. For immediate relief from surface itching and pain Dermoplast Spray (benzocaine 20%, menthol .5%) is highly effective and convenient.

Systemic reactions can be recognized by the presence of hives (itchy raised lumps), and swelling far away from the bite site. Systemic reaction may progress to involve the airway and circulation, and may be life threatening. The most feared reaction to stings is anaphylactic shock. If a person becomes severely ill or collapses soon after a sting, medical help should be summoned immediately. The victim should be laid down and the legs raised to improve blood flow from the heart to the brain. Persons who are extremely allergic may be carrying a "bee sting kit" and require an epinephrine injection. They can inject themselves or have the dose administered by someone familiar with the method of injection, otherwise wait for medical help.

For insect bites itching is the main symptom to control. Topical anti-histamines and anesthetics are for quick temporary relief; hydrocortisone cream has slower onset, but longer effect. Bites and stings will benefit from the application of ice as soon as possible. Most bites do well with standard daily wound care (cleansing, dressing, and tetanus prophylaxis). Local reactions generally do not require professional care. However, if your local reaction causes enough swelling or pain to distract you from your normal activities you should see a doctor.

Venomous insect bites such as those from widow spiders, brown spiders, and bark scorpions will benefit from immediate application of ice. Medical care is advised, as reactions can be severe. A cautious attempt to capture the insect (allowing medical personnel to identify it) can be made, and then the victim should be transported to a medical care facility for evaluation.

Prevention

For insect bites and stings there are two types of prevention: repellents and avoidance.

Insect repellents work well for biting, non-venomous insects, but not against angry stinging insects. The most effective repellent available is DEET, found in a variety of sprays and lotions. Additional information on products containing DEET is available in BNSF Medical Briefing *DEET*.

Avoidance techniques are summarized in the lists below:

Avoiding insect stings

- Avoid wearing perfumes or colognes as well as using perfumed soaps, shampoos, and deodorants.
- Wear light-colored, smooth-finished clothing.
- Wear clean clothing and bathe daily (sweat may anger bees)
- Avoid flowering plants. Bumble bees tend to inhabit areas .
- Control odors in your activity area (sweets, garbage, etc.) Social wasps thrive in places where humans discard food.
- Destroy or relocate hives near your activity areas (This should generally be done by professionals).
- Examine exposed skin and scalp areas for clinging ticks after returning from infested areas.

Avoiding Mosquitoes, Chiggers, and Ticks

- Cover as much of your skin as possible with clothing, hats, and socks.
- Pay special attention to cuff areas at ankles, wrists, and neck.
- Use insect repellent.

Summary

Bug bites generally are not dangerous because allergic reactions are very rare. It is true that they may spread diseases like Lyme, Rocky Mountain Spotted Fever, encephalitis, and malaria, but for most of us their bites just cause itching.

Quick application of ice, and over the counter or home remedies are usually effective in treating non-venomous insect bites.

Insect stings are more painful and have the potential to progress to serious medical conditions.

Know the difference between **local** and **systemic** reactions.

Use effective repellents, and practice good avoidance, when working in surroundings where there is a noticeable bug population.

Additional resources on this topic may be found on the BNSF intranet pages.

- **BNSF Medical Briefing:** ***DEET***
- **BNSF Medical Briefing:** ***Lyme Disease***