

Safety Around Honey Bees and Treatment for Stings

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Version Date

01 April 2016

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1 Introduction

This fact sheet is for all Bayer employees, contractors, and visitors to any Bayer Bee Care Center, or any sites where honey bees are kept or occur, so they can make better decisions regarding personal safety around honey bees. Many people keep honey bees and both beekeepers and non-beekeepers have the potential to be stung. Few actually suffer serious or life-threatening allergic reactions from honey bee stings. However, the risk is real, so it is important to be proactive by becoming informed, and taking precautions around honey bees.

2 Is there a real risk of being stung by honey bees?

Honey bee workers make up most of the bees in a colony and all of them have the potential to sting. However, it is the guard bees that are most aggressive. Stinging behavior evolved as a mechanism to defend the colony from predators and invaders. While defending its nest and delivering its sting, a honey bee releases an alarm pheromone that signals other defending bees to take action and they may also try to sting you.

Worker honey bees have a barbed stinger. When the honey bee pulls away after stinging someone, the stinger remains in the skin so the attached venom sac can deliver a full dose of venom. When the honey bee pulls away after delivering its sting, it disembowels itself in the process and dies soon after. Other bees, wasps, and ants do not have barbed stingers, so they can sting repeatedly.

Some colonies are more aggressive / defensive than other colonies, so it is wise to assume that all colonies are potentially aggressive. The Africanized honey bee (AFB) is now well established in southern US states, but because of natural northern advances and migratory beekeeping, they can temporarily be found as far north as the border with Canada. Bees that are Africanized are easily agitated, and even some non-Africanized strains (usually hybrids) can exhibit Africanized type aggressive behavior under certain conditions. Therefore, even though some honey bee colonies can be relatively docile some of the time, for safety reasons, one should **ALWAYS ASSUME THAT HONEY BEES MIGHT BE AGGRESSIVE / DEFENSIVE AND GETTING STUNG IS A REAL RISK IF YOU APPROACH OR DISTURB A HONEY BEE COLONY.**

3 Is a honey bee sting painful?

Yes. The sting is painful, but the degree of pain depends on your level of pain tolerance, health status, where you are stung, intrinsic sensitivity, and how much venom is injected. Mild stings feel a bit like a nasty mosquito bite. The most severe pain feels similar to touching a very hot object, or getting an electric shock.

4 What is bee venom and how does it work?

Honey bee venom is a complex mixture of proteins and peptides. The major component is the protein melittin. Each major component causes different reactions in different animals, but together will cause varying degrees of localized swelling or some type of allergic reaction in humans. *In general, the effects from a bee sting will be destruction of cells and depression of blood pressure and respiration, along with itching and pain.*

5 Types of reactions in humans

Local (most common; not an allergic reaction): Initial localized swelling possibly followed by more extensive swelling within a few hours. The swollen area may be large, red, itchy, and tender for up to seven days. *Treatment advise is to continue with cold ice pack and/or topical cream to ease pain. Benadryl/antihistamine pills may be taken as needed to reduce swelling. It is common for itchiness, pain and swelling to persist for up to 7 days. A more serious allergic reaction may be indicated if swelling occurs in other parts of the body besides the general area in which the sting occurred. In such cases, seek medical attention immediately.*

Systemic (uncommon; typically a nonlife-threatening allergic reaction): Starts occurring within a few minutes of a sting and may involve a whole-body rash, wheezing, nausea, vomiting, abdominal pain, and fainting. *Stop everything and seek medical attention as quickly as possible.*

Anaphylactic (rare; immediately life-threatening allergic reaction): An anaphylactic reaction can occur within a few seconds. Symptoms could include difficulty breathing, confusion, vomiting, falling blood pressure, and ultimately may include loss of consciousness and death from circulatory and respiratory collapse. In the event of anaphylaxis reaction, **call 911 immediately**. Lay the person down flat on their back and remain calm. If shortness of breath develops, sit person upright. Talk to them calmly and reassure them that medical professionals are on the way. A Epi-Pen epinephrine auto-injector can save a life and there is no counterindication for treating anaphylaxis. If patient is able, provide the Epi-Pen to them so they can make their own decision about self-injecting. However, be aware of liability issues in any case. Record the intervention and the time of injection and provide this information to the medical team. *First-aid and immediate medical attention is critical.*

6 Who is at greatest risk of being allergic to bee stings?

Most people exhibit some degree of localized reaction which is normal and is not the result of an allergic response. Over time, after repeated stinging incidents, one may develop resistance to the venom. However, one can also suddenly develop an acute allergic reaction. Those who are extremely sensitive are at risk of dying from a single sting. Even if one is not acutely allergic, it has been suggested that one can only tolerate 100-200 stings in a short interval of time. Some factors that influence the type of reaction include your age, health status, medications, previous exposure to stinging, location of sting, amount of venom received.

7 Where would one encounter honey bees?

Whole colonies of honey bees can be encountered in hives designed for honey bees, in hollows of large trees, and in wall cavities and eaves of houses and buildings. When bees swarm they can also be found in exposed clusters just about anywhere, including fence posts, car door mirrors, and branches of trees and bushes. Sometimes, AHB colonies will establish exposed nests in well protected sites such as rock overhangs and under eaves of buildings. Individual bees that are foraging on flowers, or resting on foliage can also pose a risk for stinging if handled or accidentally contacted. Foraging bees are not aggressive, but should not be handled by a novice or person who knows they are allergic.

8 What are Africanized honey bees?

The Africanized honey bee (AHB) is strain of honey bee that is a hybrid of African (found in Africa) and European, or Western, honey bees (found in western Europe and North America and other areas of the world). The AHB is generally much more aggressive than the western honey bee. As a result, AHB colonies are generally more easily disturbed than non-Africanized strains, and the guard bees will attack sooner, pursue longer, and sting enmasse with little hesitation. An unprotected person or animal, that cannot seek shelter quickly, is at grave risk of death from stinging. Even unprotected, seasoned beekeepers will not be able to endure attacks by these bees.

9 Is it necessary to wear protective gear around honey bee hives?

Yes. Always wear full protective gear around honey bee colonies as a good safety practice. Bayer employees who are working in or around honey bee hives are required to wear a full head to toe suit with veil, gloves, above-the-ankle boots, and have a lit smoker (or syrup water sprayer) on hand to calm the bees. The only exception to this rule would be when the bees are known to be very docile, and only minimal hive manipulations are being done. In such cases a jacket and veil may be adequate, but this is a call only an experienced beekeeper can make, but exposing yourself to honey bees without full protection is generally not a good practice.

10 What precautions should be taken when around honey bees?

Clothing

When around honey bees, always wear a full bee suit with a veil, as well as proper gloves and boots, for full body protection. Before entering an apiary (a place where honey bee hives are located), each person should be checked by a 'buddy' to make sure all zippers and hook and loop closures are properly sealed. Also, bee suits and clothing should be laundered frequently to eliminate odors that may make honey bees more aggressive.

Personal Protective Clothing

- (1) Long sleeved shirt and long pants
- (2) High socks

- (3) High top boots
- (4) Full bee suit with veil and gloves

Avoid wearing the following

- (1) Perfumes, sunscreens, insect repellents
- (2) Scented products of any kind (after shave, deodorant, etc)
- (3) Felt, natural fur, fuzzy fabrics, dark fabrics, exposed hair
- (4) Wrist watch, rings, bracelets
- (5) Dirty, smelly clothing

Foraging bees

Foraging bees are not aggressive, and are actually very docile. If a foraging bee is nearby simply be aware it is there, but do not panic or swat it away. If the bee lands on you, gently move your hand toward it and it will fly off.

Approaching honey bee hives

If you know the typical behavior and temperament of the honey bees in a particular hive, it may be possible to interact with the bees in the hive with less concern about aggressive behavior and stinging. However, in most cases it is wise to always approach hives that contain honey bees from the side or back, out of the flight path of the bees and away from the entrance that the guard bees are protecting. Also, it is highly recommended to have a smoker on hand to apply a few puffs of smoke to the bees before going into the hive. This will help to calm the bees and reduce the risk of aggravating the colony.

Bee spills

Bee spills are cases when hives are dropped or knocked over and the colony becomes exposed to the outside. This could be the result of vandals, bears, storms, etc. A worst case example is when a flatbed truck carrying hundreds of hives full of honey bee colonies has an accident and the entire load is thrown from the truck onto a road. Such a situation should only be dealt with by professionals. One should move away from the area immediately and professionals should be contacted for proper recovery. Experienced Bayer employees of the BBCC, local beekeeping chapters bee recovery teams, and many Emergency Response Services are knowledgeable about how to deal with bee spills.

Swarms

Swarms are generally not aggressive, however, becoming surrounded by a cloud of thousands (potentially, 10s of thousands) of swarming bees does increase the risk of accidental stinging. Stay calm and move out of the swarm as quickly as possible. **DO NOT SWAT AT THE BEES AND DO NOT PANIC.** A professional beekeeper should be called immediately for proper removal of the swarm once it lands and forms a cluster.

If one encounters a swarm that has come to rest on a fence post, on a tree limb, or other exposed location, simply avoid it by giving it a wide berth. Resting swarms are normally not aggressive; however, if they have been grounded for several days because of bad weather or inability to find a suitable protected site to establish a nest, the bees may be quite defensive. Typically a swarm will only rest for a few hours to a day or two and then move on. Only an experienced beekeeper should handle a resting swarm. They will make collection of the swarm look easy, but that is because they understand honey bee behavior, and how to protect themselves.

11 How should bee stings be treated?

Emergency response to bee stings

- Get the stung person to the **nearest safe place** such as a building, or vehicle. Have the person sit down, monitor their reaction and breathing, and **promptly remove** all jewelry, and restricting items, before swelling occurs. If in a vehicle, lower the windows a crack and put A/C on high cooling. This will prevent aggressive bees from entering the vehicle, and bees already in the vehicle will be able to escape the cold air through the crack at the top of the windows.

- Remove the stinger. Do not pull the stinger out with your fingers, tweezers and or forceps. This will squeeze the venom sac that is still attached to the stinger and force more venom into the sting site. Instead, scrape the stinger out with your fingernail, the edge of a credit card, dull knife edge or other straight edged object.
- Once the stinger has been removed, wash and gently clean the affected area with mild soap and warm water, or cleansing wipes. After the wound is cleaned, apply sting relief cream or lotion as needed to relieve pain and itchiness, e.g. hydrocortisone, calamine, baking soda/water, Benadryl. Cold ice packs work extremely well at reducing pain and swelling, so should be applied immediately, even if a cream or lotion has been applied.
- Continue to monitor the person for 20-30 minutes to determine if the reaction is local, systemic, or worse. Also, watch for signs of hyperventilation and shock. **If the reaction is systemic or worse, or the stung person starts hyperventilating, suffers from vasovagal syncope, or shows signs of shock, call 911 immediately, and then use First-Aid methods to treat until help arrives.**
- The area around a sting may become swollen, red, and itchy. Avoid scratching the itchy area; this will help reduce the risk of infection.
- Benadryl/antihistamine pills may also be used to reduce the swelling. If available, make these pills available to the stung person so he/she can decide for themselves to take them or not. **Do not take the pills if creams or lotions containing the same active ingredient have been used.**

Essential first-aid kit for bee stings

Ice or ice packs, sting scrapper, ethanol wipes, anti-itch/antihistamine cream or lotion, Benadryl pills, Epi-pen (if prescribed), emergency phone numbers and addresses including hospitals and persons, mobile phone. Consider using the ICE App for putting your own emergency contacts and medical information on the lock screen of your mobile phone for quick access by emergency personnel.

12 If I know I am allergic to bee stings, what precautions should be taken?

Anyone who experiences any kind of severe local, system, or anaphylactic reaction can be considered allergic. First, know the typical type of reaction you normally experience. If it is local, then no need to panic when stung. However, monitor the swelling and treat to reduce swelling, calm itching, and prevent infection. For more severe reactions, consider a desensitization program and always carry an Epi-Pen. If not desensitized, then reduce your risk of getting stung by bees by avoiding them as much as possible.

13 EpiPen Basics (Consult Teresa Calhoun, Bayer Medical Director Region NA, for training and guidance)

Topics Teresa will cover:

- Indications and usage: Emergency treatment for allergic reactions to stings, bites, food, drug, and latex.
- Signs and symptoms of allergen reaction
- Direction for use of EpiPen Auto Injector 0.3 mg
- Adverse Reactions and side effects from EpiPen
- Contraindications: There are no contraindications to use the EpiPen in life threatening situations
- Disposal of spent and outdated injectors

Additional information:

- http://www.medicinenet.com/insect_sting_allergies/article.htm
- <http://www.webmd.com/allergies/guide/insect-stings>
- http://www.epipen.com/?utm_source=google&utm_medium=cpc&utm_term=ub_sting%20allergy&utm_content=Sting&utm_campaign=Unbranded%20-%20Sting
- http://www.medicinenet.com/bee_sting_treatment/views.htm



Figure 1. A severe local reaction as the result of being stung on the eyelid. Getting stung on the face is painful, generally results in severe local swelling, and you will probably want to postpone your company head shot photo.



Figure 2. This is where a former colleague ended up when he had a systemic reaction to a single sting on the neck during a bee health investigation. After four hours on epinephrine drip and fluids, he was able to return to the field. Getting stung can disrupt important field studies. Even local reactions as in Figure 1, can delay data collection and performance of critical project tasks, as well as put personal health at risk. This incident highlighted the need to take all possible precautions.