Hazards Of the Field

A summary of bites, stings, rashes and other hazards of outdoor work in Indiana

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Introduction

Working outdoors in Indiana is a wonderful thing, most of the time. However, there are some common and uncommon ways to be harmed in the field. Most of the ailments are minor and mainly involve lots of itching, but there are a couple severe illnesses and other hazards to keep in mind. If you're prepared and aware, all of these hazards pose little risk to you.

The hazards are presented in order from the ones you are most likely to encounter to those you are least likely to encounter. Information is also given on what part of the state you're most likely to run into some of these hazards, but there are few absolutes in the field. Expect the unexpected – hazards can pop up anywhere.

Driving

Statistically, by far the biggest hazard in outdoor work is driving to and from the field site. The sheer number of miles driven to get to field sites automatically increases the risk of vehicle accidents. Add to that a little tiredness after a long day in the field and a dash of inclement weather and you've got a recipe for trouble.

Keep yourself safe –

- Don't talk or text on cell phones while driving – pull over if you need to have a conversation.
- Make it a habit to do weekly vehicle checks– check all the lights, oil level, wiper fluid and all the other things that you'd hate to find out aren't working at a critical moment while driving.
- Take your vehicle in for regular maintenance – oil changes, brakes, belts, fluids, etc. It'll extend the life of the vehicle and save money in the long run, as well as make it less likely you're stuck on the side of the road someday.
- Rule of thumb - if the roads are wet, then drive like it's snowing. If the roads have snow, then drive like they're icy. If the roads are icy, then don't drive.
- It should go without saying, but – always wear seatbelts!

Sun-related Ailments

Summertime….and the livin' is easy. And the temperature is 100 degrees in the shade and it's only 10 am. Indiana's summer weather can make anyone uncomfortable, but if you're not careful it can make you very ill. Sun-related ailments include dehydration, sunburn, heat stroke, heat exhaustion, and sun poisoning.

Dehydration happens when you are not taking in enough water to replace the water you are losing from your body. Dehydration is very common during the summer field season, but fortunately it's very easy to fix.

Keep Yourself Safe –

- Do not leave the vehicle without at least a quart of water. On a hot day, you can go through a gallon of water to keep yourself hydrated, so carry with you what you need considering the temperature and the expected level of exertion.
- If you're very active on a hot day an energy drink can replenish lost electrolytes, but this is generally not necessary. Plain old water is usually best.
- Drink even when you're not thirsty; you may be unaware of how much water you've lost.

Sunburn can happen quickly on unprotected skin, and not just during the summer. Those spring wildflower hikes can expose you to a surprising amount of sunlight because those leafless trees aren't providing any shade. And those prairie sites? 100% sun, 100% of the time. Sure, clouds may intercept some of the UV, but plenty still gets through.

Keep Yourself Safe –

- When the sun goes up, the sunscreen should go on. Make sure you hit the ears and back of the neck. Replenish throughout the day.
- Cover up as much as possible – a light, long-sleeved shirt protects not only from sun exposure but thorns, brambles and poisonous plants.
- A hat with a brim is a good idea for the same reasons – it'll keep the sun off you, the ticks out of your hair, branches from snagging your hair, and so on.

Heat Exhaustion and Heat Stroke

Heat exhaustion is a form of heat-related illness that can develop after exposure to high temperatures and inadequate or unbalanced replacement fluids. Symptoms include **heavy sweating**, paleness, muscle cramps, tiredness, weakness, dizziness, headache, nausea or vomiting, and fainting. The skin may be cool and moist. The victim's pulse rate will be fast and weak, and breathing will be fast and shallow. If heat exhaustion is untreated, it may progress to heat stroke, which is a medical emergency.

Heat stroke is a more serious heat-related illness that can be fatal and immediate medical treatment should be sought. Symptoms include high body temperature, **the absence of sweating with hot red or flushed dry skin**, rapid

pulse, difficulty breathing, strange behavior, hallucinations, confusion, agitation, disorientation, seizure, and ultimately, coma.

Sun Poisoning

Sun poisoning is a severe, systemic reaction to sun exposure. Symptoms include intense pain, blisters, fever, chills, dizziness, and nausea. Be aware that some medications make sun poisoning more likely.

Keep Yourself Safe –

- For heat exhaustion, heat stroke, and sun poisoning, cooling off is essential:
    - Get out of the sun and into the shade, in a breeze if possible.
    - Drink cool non-alcoholic beverages.
    - Take a cool sponge bath – wet your bandanna from your water bottle and dab it on all pulse points.
    - If possible, get into an air-conditioned vehicle.
- For heat stroke or sun poisoning, call 911 and get medical attention as soon as possible.

Ticks

If you venture into the outdoors, you're going to encounter these critters. **They are by far the most common animal field hazard in Indiana, and among the most dangerous**.

The three most prevalent species of ticks encountered by humans in Indiana are dog (or wood) tick (*Dermacentor variabilis*), deer tick (aka Lyme disease tick or blacklegged tick, *Ixodes scapularis*), and lone star tick (*Amblyomma americanum*). Lone star ticks are more common in the southern half of the state but have now moved into northern Indiana; the other two species are statewide, with the dog tick being much more common than the deer tick in most areas. Gulf Coast tick (*Amblyomma maculatum*) and Asian longhorned tick (*Haemaphylsalis longicornis*) have both been found in Indiana, but are not common. Brown dog ticks (*Rhipicephalus sanguineus*) are also found in Indiana; they are mostly found on dogs but can occasionally bite humans or other mammals.

Indiana Tick Identification Card

Lyme disease tick (*Ixodes scapularis*)
- Transmits Lyme disease, babesiosis, anaplasmosis, ehrlichiosis, *Borrelia miyamotoi* & Powassan encephalitis
- Widely distributed in the upper midwestern & northeastern U.S.
- Immatures active late spring-early summer, adult females active early spring and again in late summer.

American dog tick (*Dermacentor variabilis*)
- Transmits Rocky Mountain spotted fever & tularemia
- Widely distributed east of the Rocky Mountains & areas on the Pacific Coast
- Adult females most likely to bite humans and are active spring-summer

Lone star tick (*Amblyomma americanum*)
- Transmits ehrlichiosis, tularemia, Heartland virus & Southern tick-associated rash illness (STARI)
- Widely distributed in the southeastern & eastern U.S.
- Immatures and adults are active spring-summer

NOTE: ticks are not to scale

(From tickinsiders.org/id-card/)

I-64 is the informal northern boundary of “tick hell” in Indiana – while there are ticks across the whole state, south of that interstate you are much more likely to encounter great numbers of ticks, particularly in glades and barrens. Ticks can be out as early as January and as December, but it is in late June and July that they are most numerous.

After hatching from an egg, ticks go through a series of growth stages called instars. During the first instars as larvae and nymphs, they are really, really tiny – the size of the head of a pin. All species of ticks at this stage are commonly called ‘seed ticks’ or ‘turkey lice’.

Ticks hang out in grassy areas and in forest understory vegetation. They don’t actually jump on you; they use a ‘questing’ posture to reach out with their front legs to grab an animal or a person who walks by and brushes against them. They can also crawl onto you if you sit on the ground or a log.

Ticks can carry a variety of disease-causing organisms in their guts, and once they’ve gotten their mouthparts into you, they can transmit those organisms into your blood stream. Because the small ‘seed ticks’ haven’t had a blood meal yet, they are unlikely to carry any diseases. However, there are few things as unnerving as finding a patch of dirt on your ankle and, when it doesn’t brush off, realizing it is literally dozens and dozens of tiny, embedded ticks.

Diseases carried by ticks in Indiana --

Below are several diseases carried by ticks in Indiana (there are other diseases but they are less common). To see how prevalent each disease is in different parts of the state, consult this Indiana tick-borne illness dashboard.

Lyme disease –Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans by the bite of infected **deer ticks**. Typical symptoms include fever, headache, fatigue, and a characteristic skin rash in the shape of a bull's eye (however, there are many cases where Lyme disease does not cause a bull's eye rash). If left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on physical findings (e.g., rash), and the possibility of exposure to infected ticks; laboratory testing is helpful in the later stages of disease. Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics.

STARI - Southern Tick-Associated Rash Illness (STARI) is spread by the **lone star tick**. This disease has been identified relatively recently so there is little information on its prevalence. Patients bitten by lone star ticks will occasionally develop a circular rash similar to the rash of early Lyme disease. The cause of this rash has not been determined; however, studies have shown that is not caused by *Borrelia burgdorferi*, the bacterium that causes Lyme disease. The rash may be accompanied by fatigue, headache, fever, and muscle and joint pains. In the cases of STARI studied to date, the rash and accompanying symptoms have resolved following treatment with oral antibiotics. STARI has not been linked to any arthritic, neurological, or chronic symptoms.

Rocky Mountain spotted fever – Rocky Mountain spotted fever is the most severe and most frequently reported rickettsial illness in the United States. The disease is caused by *Rickettsia rickettsii*, a species of bacteria that is spread to humans in Indiana by infected **American dog ticks**. Initial signs and symptoms of the disease include sudden onset of fever, nausea, vomiting, headache, and muscle pain, followed by development of rash. The disease can be difficult to diagnose in the early stages, and without prompt and appropriate treatment it can be fatal.

Ehrlichiosis –
Ehrlichiosis is caused by *Ehrlichia chaffeensis and E. ewingii*, which are transmitted by the **lone star tick**. The symptoms include fever and chills, muscle aches, and severe headache. Patients may also experience confusion, nausea, vomiting and joint pain. Unlike Lyme disease, STARI, or Rocky Mountain spotted fever, a rash is not common in adults, though it may present in children. Untreated ehrlichiosis can rapidly progress to a life-threatening illness.

Alpha-gal Syndrome

Alpha-gal syndrome is a serious allergic condition that can occur after a tick bite and causes an allergy to red meat. Current thinking is that it's the **lone star tick** that is responsible, but other ticks have not been ruled out. It is not caused by an infection; the symptoms occur only after an affected person eats red meat. While this syndrome is not tracked, it appears that it is becoming one of the most common tick-borne illnesses in southern Indiana. More information can be found here.

Anaplasmosis

Anaplasmosis is a tick-borne disease caused by the bacterium *Anaplasma phagocytophilum*. The bacterium was previously known by other names, including *Ehrlichia equi* and *Ehrlichia phagocytophilum*, and the disease was previously known as human granulocytic ehrlichiosis (HGE). The bacterium is transmitted by the **deer tick**. Symptoms include fever and chills, severe headache, muscle aches, nausea, vomiting, diarrhea, or loss of appetite.

Keep yourself safe –

- To keep ticks from traveling up the inside of your pant legs, tuck your pants into your socks. Keep hair pulled back and wear a hat.
- Wear light colors so ticks are visible and can be plucked off.
- Avoid brushing against vegetation.
- Use permethrin on your clothes (NOT your skin). Permethrin is a neuro-toxin sold as Permanone at many stores. It is applied to the clothing and does not repel ticks (and mosquitoes), but actually kills them. It is effective for up to 14 days or through 5 washings. You can also buy clothes that are pretreated with permethrin or mail your clothes off to be treated with permethrin through insectshield.com.
- In addition to using permethrin on your clothes, use picaridin on your skin. Picaridin is a highly effective insect repellent derived from the pepper plant. It lasts up to 12-14 hours, is odorless, non-greasy, and safe for plastic/gear and is considered a leading alternative to DEET.
- At the end of the field day, look carefully for ticks. Generally, a tick has to be attached for 24 hours before its mouthparts will reach your bloodstream, so checking every day can catch them before they cause you any trouble. Remember to look not only for the adult-sized ticks but for the tiny ones, which often attach in clusters.
- To remove a tick, use a tweezers and grab it immediately next to your skin – then pull it straight out. Do not put the tweezers over the midsection of the tick, as that will squeeze the contents of the gut into your bloodstream. Do not use lit matches or Vaseline to get ticks to back out. If you believe

the mouthparts have reached your bloodstream, identify the tick or save it in a small container in alcohol in case symptoms later develop.

- To remove patches of seed ticks from skin or clothes, duct tape is pretty effective.
- If you are bitten by a tick, watch for symptoms – fatigue, headache, fever, and muscle and joint pains, bulls-eye rash - and if you feel any of them, go to the doctor immediately. Tell them the species you were bitten by or bring the actual tick with you if you can.
- The tick bite will itch like crazy for a couple weeks – Band-Aid Anti-Itch Gel (formerly known as Rhuli gel), Super Ivy Dry, and Sarna Original Anti-Itch Lotion are pretty effective at minimizing the itching. Over-the-counter antihistamines like Benadryl can also reduce itching.

Chiggers

The good news is that chiggers don't carry disease. That's the end of the good news. These miserable arachnids can be found state-wide, but are much more prevalent in grassy areas in the southern half of the state – places like glades and barrens. Still, they can be found in open areas in northern Indiana. You can get chiggers from March through September. Unlike mosquito bites, chigger bites don't show up immediately; the welt appears and itching starts 12-24 hours after you encounter them.

Chiggers are tiny red relatives of ticks. They are generally not large enough to be visible to the naked eye, and you will not know you have been attacked until you start itching about a day later. Chiggers feed by injecting fluid into your flesh that dissolves tissue and then sucking up the liquified tissues. The human immune reaction to a bite prevents the chigger from obtaining adequate nourishment. They rarely survive long enough to complete a meal.

There will be red welts at the bite sites that itch for several days to a few weeks. Ankles, behind the knees, waistband – wherever you have clothes that are tight to your skin, these guys will find it and bite.

People mistakenly believe that chiggers embed themselves in the skin or that the welts contain chiggers. They don't, so the topical preparations like Chiggarid or nail polish that are supposed to smother the chigger are useless.

Keep Yourself Safe –

- Sublimed sulfur is very effective at keeping chiggers from sticking their mouthparts in you – and it's cheap and nontoxic. Get this stuff at a drugstore, put it in an old sock, and, before you get dressed, pat it over all the areas likely to be attacked. The key is to remember to do this BEFORE going into those chigger-infested areas.

- As with tick bites, Band-Aid Anti-Itch Gel (formerly known as Rhuli gel), Super Ivy Dry, and Sarna Original Anti-Itch Lotion are pretty effective at minimizing the itching.
- Itching can result in secondary infection; be on the lookout for symptoms of infection (red streaks from the bite site) and seek medical attention if infection sets in.

Poisonous Plants

There are several poisonous plants to be aware of in Indiana. Here's information on them, listed in order of the likelihood that you'll encounter them:

Poison ivy and poison sumac – Both plants contain the same chemical and cause the same reaction.

Poison ivy (*Toxicodendron radicans*)- This is one of the most common plants in Indiana. It's everywhere – sand dunes, floodplain forests, prairies, flatwoods. The leaves are often glossy and they have three leaflets; the plant itself can be a vine or a shrub, and the shrubs can be anywhere from 1 foot tall to 6 feet tall. The plant produces many small, white, waxy berries which stay on the bare stem into the winter. All parts of the plant contain urushiol oil which causes an allergic skin reaction. It is spread by direct contact with the plant or by inhaling smoke from the plant. It will appear on the affected area as small blisters and redness about 12-48 hours after exposure, and all affected areas will be very itchy. It will continue to spread over time until all exposed areas are blistered and itchy.

Poison sumac (*Toxicodendron vernix*) – This is one of the more uncommon plants in Indiana, but it contains the same urushiol oil as poison ivy and causes the same blistering and itchiness so it's being presented with the much more common poison ivy. Many would argue that the urushiol oil in poison sumac is either more abundant or more potent, as it seems that a very small exposure can cause a much greater reaction than with poison ivy. Poison sumac is found primarily in the fens of northern Indiana and is a shrub or small tree with pinnately compound leaves with 7-13 leaflets and white berries on drooping stems. The leaves may be shiny.

Keep Yourself Safe –

- After being exposed, wash the affected area with Tecnu or Zanfel outdoor skin cleanser as soon as you can. This will remove the oil. Regular soap can be effective as well, but only if the area is scrubbed with a soapy washcloth. Imagine you are trying to remove axle grease from your skin – that's the kind of pressure you need to use.
- If you get a rash, use Band-Aid Anti-Itch Gel (formerly known as Rhuli gel), Super Ivy Dry, or Sarna Original Anti-Itch Lotion to minimize the itching.
- If you've never gotten the rash after exposure, don't assume you are safe. Over 70% of people are allergic to urushiol, and the more often you are exposed to it the more likely you are to develop a rash and blisters. Avoid the plant and wear long sleeves and pants.
- If you are exposed to a great amount of urushiol oil, you can develop a systemic reaction to this allergen that causes your whole body to itch. Seek medical attention; often an oral corticosteroid such as prednisone is prescribed, which will eliminate the symptoms within a few days.

Poison Hemlock (*Conium maculatum*)

Poison hemlock is a biennial member of the carrot family. First year plants have a rosette of finely divided leaves; second year plants produce large mounds of highly dissected leaves and a green flowering stem with purple spots that bears white flowers in umbrella shaped clusters. Flowering stems can be from 3-10' tall. The leaves look somewhat like Queen Anne's lace, but poison hemlock is a much larger plant and has hairless leaves.

Poison hemlock is highly toxic if ingested, or if the sap of the plant gets into an open cut or the eyes. It generally does not cause blisters if the sap gets onto unbroken skin.

Wild Parsnip (*Pastinaca sativa*)

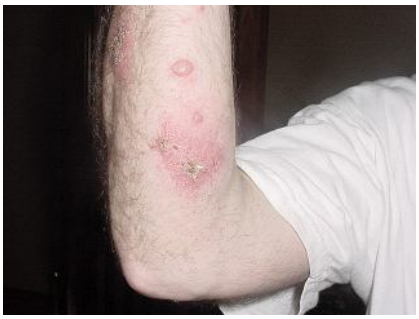
Wild parsnip is also a biennial member of the carrot family. First year rosettes grow close to the ground and bear leaves averaging six inches in height. The plant has a long, thick taproot, which is edible. Flowering plants produce a single, thick stem that contains hundreds of yellow umbellate flowers. The lateral flowers often overtop the terminal flowers. Depending on the habitat and growing conditions, individual flowering plants range to over four feet in height. Leaves are alternate, pinnately compound, branched, and have saw-toothed edges. Each leaf has 5-15 ovate to oblong leaflets with variable toothed edges and deep lobes.

This plant can cause severe blistering of the skin. Unlike poison ivy and sumac, just touching the plant will not cause a reaction. The sap of the plant has to get on your skin to cause blisters, which generally only happens if the stem or leaf is broken.

The following information is taken from an article by David Eagen at http://www.wnrmag.com/stories/1999/jun99/parsnip.htm

There are chemicals in wild parsnip called psoralens (precisely, furocoumarins) that cause what dermatologists call "phyto-photo-dermatitis." That means an inflammation (itis) of the skin (derm) induced by a plant (phyto) with the help of sunlight (photo). When absorbed by skin, furocoumarins are energized by ultraviolet light (present during sunny and cloudy days) causing them to bind with nuclear DNA and cell membranes. This process destroys cells and skin tissue, though the reaction takes time to produce visible damage

In mild cases, affected skin reddens and feels sunburned. In more severe cases, the skin reddens first, then blisters rise -- some are impressively large -- and for a while the area feels like it has been scalded. Places where skin is most sensitive (arms, legs, torso, face, neck) are most vulnerable. Moisture from perspiration speeds the absorption of the psoralens.



Blisters appear a day or two after sun exposure. Soon after blisters rupture and the skin begins to heal. One of wild parsnip's "signature" effects is a dark red or brownish discoloration of the skin in the area where the burn occurred. This hyper-pigmentation can persist in the skin for as long as two years.

Keep Yourself Safe –

- Learn to recognize poison hemlock and wild parsnip. They have become very common along most roadsides and other rights-of-way in Indiana. They are unlikely to be in a high-quality nature preserve but could certainly be on disturbed edges.
- If you think you've gotten the sap of wild parsnip on your skin, wash vigorously with soap and water as soon as you can.
- If you get a parsnip burn, relieving the symptoms comes first. The affected area can be covered with a cool, wet cloth. If blisters are present, try to keep them from rupturing for as long as possible. To avoid infection, keep the area clean and apply an antibiotic cream.

- For serious cases with extensive blistering, consult a physician. Some doctors recommend a topical or systemic cortisone-steroid for extreme discomfort.

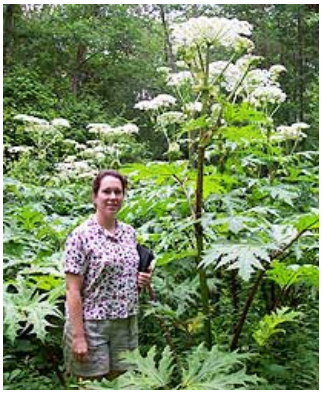
Stinging Nettle (*Urtica dioica*)

When you encounter stinging nettle you will know it immediately through the tingling and burning of the affected skin. Fortunately, this impact fades within several minutes though it may leave reddened patches on the skin for a few hours. Stinging nettle is 2-5' tall with coarsely toothed leaves and the stinging hairs are evident on the stem and leaves. You will most likely encounter stinging nettle in moist fields, along creeks and ditches, and in disturbed areas. You might find relief by rubbing jewelweed (*Impatiens* sp.) leaves onto the affected area.

Giant Hogweed (*Heracleum mantegazzianum)*

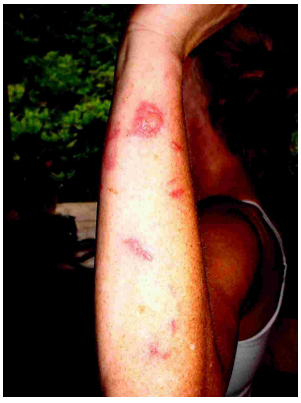
Giant hogweed is extremely uncommon in Indiana; it has been reported from only two sites (near Warsaw and near Lakeville) and both have already been controlled. However, other unreported sites could exist.

Coming into contact with the sap of giant hogweed, followed by exposure to sunlight, can produce painful, burning blisters. Hogweed stems contain a large amount of juice that squirts out when stems are broken or cut.



Giant hogweed can be as tall as 15 feet, with leaves spanning 2-5 feet. It has a thick green stem with purple areas. The stem, leaf and flower stalks are hairy. It has small white flowers in very large clusters (the size of dinner plates), looking like Queen Anne's Lace on steroids. In late summer, small green fruits that quickly turn brown replace the flowers. Giant hogweed seeds are easily windblown or carried by water and spread to new areas. It grows in rich, moist soils along roadside ditches, stream banks, tree lines and wooded areas.

Keep Yourself Safe –



- If you are exposed to the plant sap of giant hogweed, wash it off immediately and avoid sunlight. Using sunscreen on affected areas may help prevent further reactions from occurring when outside.
- Call your doctor for any severe reactions. He or she may prescribe a steroid cream to relieve swelling or

inflammation. For skin irritation, wet dressings or compresses soaked in an aluminum acetate mixture (your pharmacist can help you find this) may offer relief.

Poison oak – This species does not occur east of the Mississippi River; when someone calls a plant in Indiana 'poison oak', it's usually poison ivy (see above). In some parts of southern Indiana, people refer to Virgina creeper, a native vine, as poison oak.

Other Miscellaneous Plants – Some people are sensitive to Virginia creeper, staghorn sumac or other plants that don't cause a reaction in most people. In general, wear gloves and long sleeves when encountering plants if you think you might have greater sensitivity to plants.

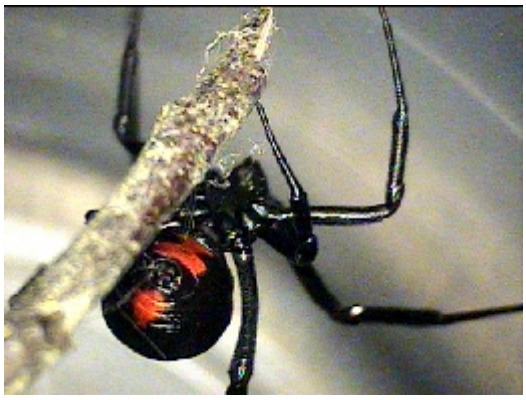
Spiders

Spider bites are fairly uncommon (some would say VERY uncommon) even though doctors will often blame spiders for any bite they see. Any spider bite can cause a reaction; at a minimum, there can be a red welt and slight itching at the bite site. However, some people react strongly even to nonvenomous bites with severe swelling, itching, and aching. And as with any break in the skin, there is also the chance of infection from a spider bite.

Of more concern are the venomous spiders you might encounter. Of the approximately 367 species of spiders documented in Indiana, there are three venomous species. There are two species of black widow and one species of brown recluse. The following information about these spiders is taken from http://kaston.transy.edu/poisonous.html

Black Widow (*Latrodectus mactans* and *Latrodectus variolus*)

There is a northern (*Latrodectus various)* and southern *(Latrodectus mactans)* black widow spider that are both found in Indiana. These shiny black web builders are identified by the pattern of red coloration on the underside of their abdomen.

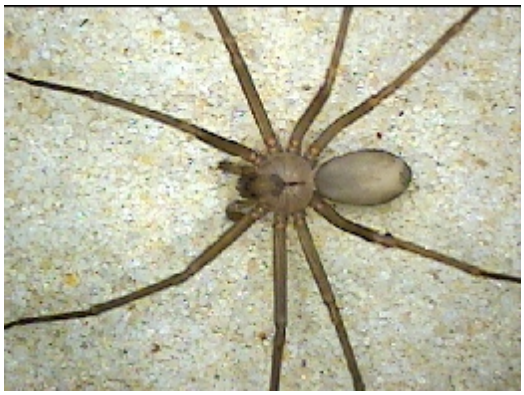


Black widows are very timid spiders and are not known to aggressively bite humans. However, the venom of black widows is a neurotoxin and it may interfere with the nerve impulses to muscle tissue. After being bitten by a black widow one may feel painful rigidity in the muscles of the abdomen and a feeling of tightness in the chest. Other symptoms include an increase in blood pressure, a rise in body temperature, nausea, and sweating. Death is

uncommon (less than 1% of the reported cases), but in the elderly or very young death may occur from asphyxia 14-32 hours after being bitten. Without medical attention the symptoms can last 5 days and a complete recovery may take weeks.

The black widow spider rarely, if ever, builds their cob-webs inside a house. Black widow webs are an irregular tangled mesh built in dark spots sheltered from the weather. Typical web sites include spaces under large rocks or logs, in holes in dirt embankments and occasionally in barns, outhouses (always check under the seat), and other out-buildings.

Brown Recluse (*Loxosceles recluse)*



The brown recluse (*Loxosceles reclusa*) is a small tan-colored spider (length of female body averages 9 mm) with long slender legs. They are relatively hairless spiders with a smooth sleek appearance. Because of violin-like dark pattern on their back (dorsal side of the cephalothorax) they are also known as fiddle or violin spiders. Another characteristic to use in identifying brown recluse spiders from other common house spiders is their eye number and arrangement. They have 6 eyes arranged in three doublets unlike most spiders which have eight eyes.

The physical bite of the brown recluse is fairly painless with maybe only a slight stinging sensation being felt. In contrast, the venom is ultimately quite destructive. The symptoms from the venom appear about six to eight hours after the bite. Local reaction includes redness of the skin, tenderness and possible blistering. About 12-24 hours after being bitten one may feel malaise, chills, fever and nausea. The venom contains the enzyme *sphingomyelinase* which is a necrotic substance. The localized cell death from this enzyme can result in large open wounds that take a long time to heal. The poison also destroys red blood cells (hemolytic) and may cause death by liver and/or kidney failure.

Brown recluse build irregularly shaped webs under logs, stones, or piles of lumber. It is not uncommon for them to move into a house where they prefer dark corners found in trunks, piles of stored clothing, or inside garage and basement storage areas.

Keep Yourself Safe –

- While you're not that likely to encounter these venomous spiders on Indiana nature preserves, it is possible. They are most likely to be under logs and rocks.

- If you see a spider bite you, try to collect it for later identification if symptoms develop. However, often you won't notice the initial spider bite.
- If you develop a red welt at the bite site and start having any of the symptoms described above, seek medical attention and note that you may have been bit by a spider.

Mosquitoes

Compared to many parts of the country, Indiana does not have many mosquitoes. At most sites, they are hardly noticeable during daytime, as they mostly fly at dawn and dusk. An exception, surprisingly, is the black oak sand savannas of north central Indiana where a species of mosquito that live in tree boles are quite numerous and aggressive.

In addition to that annoying whine and the itchy bites, some species of *Culex* mosquito carry West Nile virus, and there is a chance of catching that disease in Indiana.

In humans, symptoms generally occur three to 15 days following the bite of an infected mosquito. Most people who get infected with West Nile virus will have either no symptoms or mild symptoms. A few individuals will have a more severe form of the disease, encephalitis (inflammation of the brain) or meningitis (inflammation of the tissues that cover the brain and spinal cord). Although the virus has been reported in people ranging in age from nine months to 99 years old, severe disease has been most often present in individuals over 50 years old or those with weakened immune systems.

You should see a doctor immediately if you develop symptoms such as high fever, severe headache, neck stiffness, muscle weakness or paralysis, nausea, vomiting, sore joints, or confusion.

There is no specific treatment for West Nile virus, and no vaccine is available for humans. In severe cases, intensive supportive therapy including intravenous fluids, airway management, respiratory support, prevention of secondary infections (pneumonia, urinary tract, etc.) and good nursing care are indicated.

Keep Yourself Safe –

- When possible, avoid places and times when mosquitoes bite.
- Use an insect repellant containing picaridin.
- Wear shoes, socks, long pants and a long-sleeved shirt when outdoors for long periods of time, or from dusk to dawn, when mosquitoes are most active. Clothing should be light colored and made of tightly woven materials to keep mosquitoes away from the skin.

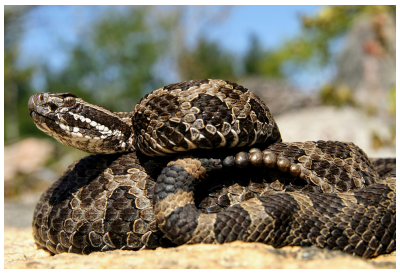
Snakes

Harold Allison, Indiana naturalist and journalist, has bragged about having been struck by all four poisonous snakes in Indiana – copperhead, timber rattlesnake, cottonmouth, and massasauga rattlesnake. The reason he brags about it is because there are so few of these snakes around that it's extremely unlikely you'll see all four, let alone have them strike at you. This is just not a likely field hazard, but for completeness' sake…

Copperheads (*Agkistrodon contortrix)* are found in the wooded hills of west central and southern Indiana. They are somewhat aggressive if confronted. While the bite is very painful, the venom of the Copperhead appears to be only mildly toxic and fatalities are almost unknown. Maximum length is 4 feet and an average of 2 ½ feet.

Timber rattlesnake (*Crotalus horridus)* is state endangered and limited to south central Indiana. It's generally not very aggressive and does a good deal of rattling before striking; however, its venom is fairly toxic. Fatalities are known from the bite of this snake. Average length 3½ feet, maximum length 6 feet.

Massasauga (*Sistrurus c. catenatus)* is state endangered and limited to fens in far northern Indiana. The snake is considered to be very non-aggressive, but its venom is highly toxic. There are authenticated fatal bites in man. The massasauga can reach 3½ feet long with an average length of 2 feet.



Cottonmouth (*Agkistrodon piscivorus)* were once found in Indiana but have not been reported in the state for many years.

Descriptions and effects of bites. Each individual will experience symptoms somewhat differently. The following symptoms are the most often reported:

- Discharge of blood from the wound
- Marks in the skin and swelling at the site of the snake bite
- Severe pain around the bite site
- Diarrhea
- Convulsion of varying severity
- Blurred vision, weakness, dizziness and fainting

Keep Yourself Safe –

- Watch where you put your hands and feet. You are the one who will unknowingly invade the snake's space – the snake would rather you never

wandered into its part of the world. So step carefully and don't put your hand into places you can't see!

- Wear sturdy footwear in the field that protects your feet and ankles.
- If bitten, stay calm. The calmer you are, the slower the venom will spread in your bloodstream. Keep in mind that even the most poisonous snake doesn't necessarily deliver a full dose of venom in one strike.
- If possible, identify the species that bit you. If it's a non-venomous species, wash the wound well with soap and water and watch for signs of infection.
- If the bite was from a venomous snake, get to a medical facility. Let them know the species involved and doctors can determine if you'll need anti-venom and treat the symptoms.

Hazardous Waste

There are many meth labs in Indiana, and remote nature preserves are tempting places to set them up or use as dump sites for the refuse. The refuse from meth labs is considered hazardous waste and contains material that can cause severe burns. Meth lab dumps may include propane tanks or other pressurized cylinders; strong ammonia odors; containers of acetone, toluene and Coleman Fuel; starter-fluid spray cans; shredded lithium batteries; Red Devil Lye (drain cleaner); muriatic and/or hydrochloric acid; empty cold-medicine packages or containers; and plastic tubing, glass jars, funnels, coffee filters and hypodermic needles. Some dump sites may have only a few of these items, along with typical household waste.

A number of items may look like useful junk that could be re-used, especially propane tanks. But tanks used in manufacturing meth are often corroded and have jury-rigged valves and tubing that can fail, spraying ammonia gas or hydrogen-chloride gas that attacks eyes and lungs. First responders have found fire extinguishers, scuba tanks, soda dispensers and all kinds and sizes of pressurized cylinders used in producing meth. The tanks can be very unstable and must be properly assessed and disposed of by hazardous-materials responders.

Keep Yourself Safe –

- If you suspect you've found a meth lab or refuse from a meth lab, leave the area immediately and call the Indiana Meth Hotline at (800) 453-4756. For more information go to https://www.in.gov/meth/
- Even if you are just picking up trash, be careful of discarded needles and 'bottle bombs' made by a mixture of chemicals in plastic bottles that will explode when agitated.