

# POISON IV-Y-Y-Y-Y,

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*Measles make you bumpy*

*And mumps'll make you lumpy*

*And chicken pox'll make you jump and twitch*

*A common cold'll fool ya*

*And whooping cough can cool ya*

*But poison ivy, Lord'll make you itch!!*

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"Leaves of three, let it be." This seemingly innocuous vine has been the scourge of countless outdoor enthusiasts.

**L**et's bet you would need to go to a rather remote place on the planet to find someone who is not familiar with this song. And it would be harder to find anyone in the South who has not had an experience with the plant itself. For the lucky ones, perhaps the experience is only through a family member or classmate. In that case often a good laugh, right? If there were some way to tally up all the negative encounters with hornets, bees, poisonous snakes, sharks, disease-bearing ticks, skunks, jellyfish stings, lightning and perhaps even fire ants, I suspect rashes from poison ivy would outscore their combined suffrage.

Poison ivy is but one of over 700 North American plants known to be toxic to people or livestock. The list includes algae, fungi, lichens, ferns, horsetails, certain pines and various flowering plants. The majority of these are poisonous only if eaten, but poison ivy and its relatives are unusual in that their poison can be transmitted by simple contact with the plant. Did you ever wonder about all the products that boast "made of 100 percent natural ingredients?" Well, perhaps you should, because toxic plants are packed with only natural substances. So here is a little hint, don't try to eat poison ivy, the all-natural plant, as it can get you that way too.

Poison ivy, a ubiquitous species, grows throughout most parts of the eastern and central United States and southern Canada. It is found throughout the South. People become confused because this plant does not always take on its ivy-like growth habit. Poison ivy can grow into an ivy-like vine, a woody shrub or simply as little woody stems poking upward from the forest floor.

The syndromes caused by poison ivy have been known since the days of Captain John Smith and they have been described in various American Indian cultures. This plant was one of the earliest formally named North American species when Jacob Cornutus described it in his "Plantarum Canadensis" in 1635. Since then the taxonomic name has been revised several times, and the current name for the genus does not even have a Latin equivalent and dates back to one used by ancient Greeks for Old World plants with similar toxic traits.

So here are the ABCs of concerned people's most frequent questions.

#### HOW DOES THE POISON WORK?

The plant produces an organic oil called urushiol which causes an allergic skin rash on contact. This is known medically as urushiol-induced contact dermatitis. The skin rash causes intense itching and leads to the formation of blisters. Open blisters lead to sores and these sores can become infected. The urushiol produced by poison ivy is very potent and can remain active for several years after the plant is dead.

The toxin is a colorless to milky substance that is contained in the resin canals of the plant. It is found throughout the plant—roots, stems, leaves, flowers and fruits—and is only absent from the plant's pollen. The chemistry of the toxic substance is a 3-n-pentadecylcatechol, and the sensitizing compounds are alkylated dihydroxy phenols.

*She's pretty as a daisy but look out man she's crazy  
She'll really do you in  
If you let her under your skin*

See, you should have paid attention in organic chemistry class. There are actually four different poisons in the chemical chain. The combination of the toxin with skin proteins starts the reaction.

The words poisonous and toxic are used interchangeably even in the circular definitions of dictionaries. Biologically plants and animals that contain poison are poisonous (rattlesnakes, spiders, gila monsters, poison dart frogs, jellyfish, and mushrooms for instance). The poison can be injected or ingested. Toxic plants and animals are ones that secrete chemicals that then react with chemicals in our bodies (toxic plants, chiggers, licking toads and inhaling chemical fumes). But there are all sorts gray areas, and some things could be toxic to your skin and poisonous if you ate them. And then there is nuclear poisoning and all the various deadly transgressions they do in James Bond movies. So I think most people have just given up and

use whichever term gets the best attention. But if you come in contact with toxic ivy or toxic oak there is probably no immediate need to call the Poison Control Center's hot line.

#### OK, IT CAN BE BAD STUFF; SO HOW CAN I AVOID IT?

You can stay indoors or perhaps move to Greenland. Otherwise it's hard to stay away from poison ivy, as it grows pretty much everywhere. Your best bet is to learn to identify the plant. The plant's appearance can be deceptive because of its various growth forms.

The leaflets of poison ivy are usually arranged in groups of three, but they may also appear in fives or sevens. In each cluster, the middle leaflet grows on a stalk that is much longer than those on the sides. The leaflets in the compound leaf are usually fairly equal in size, but the individual leaflets can vary greatly in size—from one-half to 2 inches long. Their edges may be slightly notched or smooth. They are shiny when young and turn a brilliant red in fall. The flowers of poison ivy are yellowish to greenish-white, about one-quarter inch in diameter and grow in clusters on a slender stem. Small, berry-like, whitish or greenish fruit, about one-sixth of an inch across, appears after the flowers have faded and are glossy when ripe.

#### WHAT ABOUT SIMILAR APPEARING NON-POISONOUS PLANTS?

OK, so you have no desire to become a backyard botanist. Just avoid anything you think might be poison ivy. Recall all the fun everyone had at summer camp when poison ivy was an endless source of pranks and jokes, mostly at others' expense. But you can learn to distinguish poison ivy from other native plants by means other than a trial-and-error approach.

There are a number of woody vines and shrubs that have compound leaves that are superficially similar to poison ivy. Many of them grow in the same habitats, often side by side with poison ivy. The trifoliate (three leaflets) leaves of poison ivy are arranged in an alternate fashion, and this combination alone eliminates many of the plants that one

might confuse with poison ivy. Additionally, other plants have a variety of flowers, fruits and seedpods that are not anything like the small greenish white flowers or the white berries—actually drupes—of poison ivy. The simplest thing is to just learn what poison ivy looks like and then avoid any plant that you think even looks like it.

#### WHAT OTHER TOXIC PLANTS DO WE NEED TO WORRY ABOUT?

Other poisonous plants similar to the poison ivy include poison oak and poison sumac. For many people, including botanists, there is some confusion regarding names of our toxic plants. This won't help one bit, but you should know that poison ivy is not an ivy and poison oak is not an oak. They, like poison sumac and other sumacs, are members of the family Anacardiaceae.

In its shrub form, poison ivy is often called poison oak. Then there is a second species also found in the South that is named poison oak. It never takes on vine-like growth; it's simply a plant with woody stems that grows in dry sandy habitats where poison ivy does not grow. Many botanists believe that this "poison oak" is simply a variety of poison ivy and not a true species. True poison oak is a plant found only on the Pacific Coast of the United States and of Canada. Our poison oak is found in dry woodlands, thickets and abandoned fields of the Coastal Plain and lower Piedmont. And then there is poison sumac, another plant closely related to poison ivy. It grows in swamps, bogs and pocosins in the eastern North America. It can grow up to 15 feet in height, and like other sumacs has compound leaves with seven–11 leaflets.

#### HOW DOES ONE GET POISON IVY?

The following are the ways by which poison ivy can infect the body:

- Skin contact with a poison ivy vine or shrub, with secondary spreading to other skin surfaces by urushiol on the sufferer's hands. Try to avoid rubbing eyes with your hands.
- Skin contact with items such as clothing or garden tools that have been exposed to urushiol from poison ivy.
- Skin contact with people or animals that have been exposed to poison ivy. Animals are usually immune to poison ivy. Secondary



Poison ivy most often has groups of three leaves, but it may have five or seven. The leaves may be notched or have smooth edges. Poison ivy berries become glossy when ripe. A big hairy vine growing up a tree is a very visible warning sign.

exposure is from contact with the toxins themselves, and generally not contact with the rash that develops later.

- Inhalation of airborne urushiol that can occur when a lawnmower or trimmer is used to cut down poison ivy vines or shrubs. Inhalation of urushiol causes the rash to appear on the lining of the lungs causing severe pain and respiratory distress.
- Inhalation of smoke from burning poison ivy.
- Eating poison ivy.
- While it is widely believed that one can infect other areas of their body from the weeping blisters or that it spreads from scratching, this is not generally believed to be the case. Nor can people spread the infection from one person to another. Fluids oozing out from the blisters cannot spread the rash on you or to another person. The oozing blisters are mostly

just body fluids. But be careful of what you learn from books. I know a colleague that published a paper in the prestigious medical journal, *The Lancet*, on infection to his partner as a result of sexual transfer. Bet you never thought of poison ivy rash as a sexually transmitted disease. Good science experiments need to be confirmed by replicate research, but I am unable to find anything in the medical literature about follow-up studies. I suspect researchers had trouble recruiting volunteers for the follow-ups. I may be wrong but I bet some college students would raise their hands.

I was never one to dwell on the symbolic. I recall a final exam in American literature where the entire grade rested on answering the question "Explain the religious symbolism in Steinbeck's 'Grapes of Wrath.'" While this was intended to be a multi-level question my answer was short and simple "You guys could find religious symbolism in a Batman comic book!" I aced the test. I was in high school when The Coasters' "Poison Ivy" hit the charts, and because of my disregard for the symbolic even back then, I did not have any reason to believe that the lyrics were about anything but the rashes produced by the plant. Now I find out that many suspect the song is not about a plant at all, but rather a young lady with a social disease. The irony of my colleague's published findings can't be ignored.

And speaking of Batman comic books and females that make you itch, the idea of poison ivy being an evil female surfaces again. Poison Ivy, one of the more toxic of the Gotham City villains, is portrayed as an eco-terrorist, protecting the environment in ways that require Batman's intervention. Wearing her sexy ivy

*She comes on like a rose but everybody knows  
She'll get you in Dutch  
You can look but you better not touch*



Although often thought of growing as a vine, in some spaces poison ivy will grow as a shrub up to 3 feet tall.

wardrobe, her prominence grew in both the comic books and films as the feminism movement even created a demand for botanical female super villains. So let's never underestimate the powers of poison ivy.

#### WHAT CAN I DO IF I GET IT?

There actually is no cure, so prevention is still your best bet. Learn what the plant looks like, and wear sensible clothes when hiking and camping in the woods. To help learn the plant there are a couple of simple but helpful sayings: "Leaves of three, let it be." "Berries white, take flight."

Oh, no, I got it. Washing with soap will serve to remove the excess urushiol that could be translocated to other parts of the body or to other persons. For those who find you forgot to put the bar of yellow soap and bucket of warm water in your backpack there are any number of after-the-fact topical lotions and creams which soothe the itching and to some degree dry and control the extent of blistering.

So to make sure my advice was on the right track I brought my questions to my local pharmacy, Anderson Drug Store in Elizabethtown. Since this is a small pharmacy, not a big-box drug store, pharmacist Gene Anderson actually took the time to talk to me. He informed me that Burrow's solution helps to dry weeping sores. Oatmeal baths (Aveeno) and calamine lotion help to reduce itching if the lesions are dry. Avoid dressings as exposed skin will heal faster. If more than 25 percent of the body is involved then prescribed oral steroids may be in order.

Remember there is no known cure. In severe cases physicians may administer some cortisone derivative under carefully controlled conditions. For people especially prone to poison ivy, prevention by pre-exposure oral medications taken several months prior to contact are available, but the results are controversial and may have little effect. Severe exposure to the plant is serious, and secondary infections and other complications

are likely. On occasion exposure can have lethal results.

Many people who frequent the outdoors and find themselves exposed to poison ivy will rub the exposed area of their skin with the crushed leaves of jewel weed. Jewel weed can often be found in areas where poison ivy grows, so this is a quick and handy solution. OK, so now you need to learn what two plants look like, and since you obviously did not do a good job on learning *Rhus radicans*, you probably are not yet on a fast track to becoming a botanist. Jewel weed seems to work if done within minutes after exposure, but this probably varies somewhat based on an individual's sensitivity to the toxin in poison ivy.

Not everyone who comes in contact with poison ivy reacts to it, and only about half the population is sensitive to mild contact with the plant. Somewhere between 15 and 30 percent of the population is immune, or think they are. Recall the stereotype of the male student in movies; loud, brash know-

it-alls, who everyone, including the teacher hates. Well we know from experience that they really do exist and it's an unusual class that does not have at least one. I had the good fortune to have one in my college botany class, and then another years later in a class I was teaching, who each took delight in showing everyone on respective field trips that they were immune and vigorously rubbed poison ivy leaves on their arms and legs. In the days that followed it was clear that they were mistaken about their super powers, and we all acquired a new level of appreciation for the plant. OK, I probably should have informed my student of the changing nature of one's body reaction to the plant, but it's hard to ignore a good teaching moment. You have got to love nature.

Actually no one gets a reaction on first exposure, but your body becomes sensitized to it, and some people require repeated exposures before their skin reacts to the plant's oils. However, most if not all people who continue to have no allergic response will become sensitized over time with repeated or concentrated exposure to urushiol. Studies conducted in the mid-70s showed that about 40 percent of people exposed to the quantity of urushiol in just a piece of a leaf one-quarter inch in diameter will have a reaction. This increases to about 75 percent in stronger doses.

Even minor reactions are annoying and unpleasant. You can always just scratch, but it does not do a bit of good, although it feels good while you are doing it. You do have to be concerned about the secondary skin infections resulting from your scratching later.

#### SOME OTHER STUFF YOU MIGHT WANT TO KNOW

To those susceptible to poison ivy the news is increasingly bad. As a result of land clearing and global warming, the plant is increasing in abundance and toxicity. Poison ivy needs sun and it thrives in open situations and along the edges of woodlands. In our yard in Raleigh, the plant was everywhere when we purchased the property in the mid-70s, but as the forest matured and the property became more shaded it mostly died out. Today the plant grows entirely near the edges of our woods in the form of large woody vines. The ivy climbs high into the pines and oaks, vines the size

of my arms climb 40 feet and more into our trees. Back in the woods, 20 to 30 feet away from the edges, the ivy totally disappeared. Global warming is altogether another issue. Warmer temperatures makes plants more toxic, as does increased levels of carbon dioxide. Both have a positive effect on the concentrations of urushiol. Years back, the first summer I worked in Florida, I had an extremely bad reaction to poison ivy. At the time I did not understand why the same plant that had I frequently encountered many times in Maryland with mild reactions, in Florida caused severe swelling and large oozing blisters. Studies comparing the chemical composition of the principal active components of the urushiol in poison ivy leaves from New York, Maryland and Mississippi showed that there is considerable geographic variation in the plant's potency.

The plant is not without merit. Poison ivy is a native species and it does have ecological utility. A number of songbirds eat the berries in the winter. Downy woodpeckers also eat the berries and deer can eat the poison ivy plants and not be affected by the toxins. Birds that feed on the plant's fruit disperse the seeds in their droppings. Since I like listening to the songbirds, enjoy watching woodpeckers and deer and like venison, I guess the fact that these animals may find poison ivy enjoyable to eat gives the plant some redemption—but not much. In the fall the red hues of their colorful leaves add contrasting colors to fall landscapes. And for those of us who enjoy the outdoors, we need to appreciate poison ivy, poisonous snakes, hornets, biting insects, skunks and bears. There are vast numbers of people who never venture into the woods. The biting, stinging and irritating flora and fauna collectively act to keep city folks and their unattended children out of our woodlands and in shopping malls, bowling alleys and at home with their video games. ♡

Regular contributor David S. Lee is director of the Tortoise Reserve, an international turtle conservation organization.



## TREATMENT

Without treatment the dermatitis will clear up in 10 to 21 days. Depending on the severity, contemporary treatment options are as follows:

1. Removal of the antigen from the skin with alcohol or alkali soap.
2. Application of cold water compresses to alleviate inflammation.
3. Applying commercial lotions to reduce itching.
4. Local or systemic administration of cortisone drugs.
5. Use of antihistaminic drugs to reduce itching.
6. Use of antibiotics to minimize secondary bacterial infections.

