

 PURINA  
PRO PLAN

# DOG Update

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# Snake Bites in Dogs

## REQUIRE EMERGENCY VETERINARY CARE

On opening day of Texas dove season, Susan Moses, along with a number of friends and family members, had enjoyed a wonderful hunt in the northwestern part of the state. The real star of the show had been Moses' 2-year-old black Labrador Retriever, "Cinco." He had not only retrieved dozens of birds but also had done it with style.

With limits filled and spirits high, the party traipsed back to their vehicles through the mesquite-dotted rangeland. Cinco was leading the way, a few paces ahead of Moses.

"He suddenly jumped about 5 feet straight up into the air and ran as fast as he could in the opposite direction," Moses recalls.

A moment later, she heard the angry buzz of a rattlesnake sounding off. It was a 6-foot-long Western diamondback rattlesnake (*Crotalus atrox*) that she likely would have walked right up on if Cinco, who had graduated from professional trainer Rody Best's snake-avoidance clinic exactly one week earlier, hadn't alerted her to its presence.

"If it wasn't for Cinco, I have no doubt whatsoever I would have been bitten,"

says Moses, of Georgetown, Texas. "Going through Rody's clinic with him was the best thing I ever did."

Anytime a dog is outdoors there is a danger of a snake encounter, and the possibility of being bitten can happen on land or water. Although there is no reliable data on the number of dogs bitten annually by snakes, it is important that owners and handlers know what to do if they suspect a dog has been bitten. Many variables impact the severity and outcome of a snakebite, and emergency veterinary care is essential.

“The amount of envenomation, or quantity of venom injected, is a critical variable in a snakebite equation,” says Michael E. Peterson, DVM, MS, of the Reid Veterinary Hospital in Albany, Oregon, who has written over 65 book chapters and lectured at veterinary conferences on the diagnosis and treatment of venomous snakebites in North America. “The location of the bite, the size of the dog, and the elapsed time between the dog being bitten and the arrival at a veterinary facility factor in as well.”

### Know the Indigenous Snakes Before You Go

Being aware of the types of snakes native to areas you are traveling to hunt or field trial is imperative. There are many online sources available to research this. Here are a few: [Reptiles magazine](#), [Venom-byte website](#), and [Backyard Nature website](#).

“You should know which species of venomous snakes are present, what habitats they prefer, and what kind of ‘personalities’ they have,” Dr. Peterson says. “Most snakes are fairly passive but a few, like the Southern Pacific rattlesnake (*Crotalus oreganus helleri*), can be very aggressive. While many states have only one or two species you need to be concerned about, if you’re hunting quail in parts of Southern California or Arizona, there could be as many as eight species.”

Although some snakes are described as “poisonous,” technically this is not correct. Snakes, along with other creatures that transmit their toxins via a bite or sting, scorpions and wasps are examples of the latter, are actually venomous. One or more species of venomous snakes are native to all 48 contiguous states, except for Maine, where the timber rattlesnake is no longer found. No venomous snakes are native to Alaska and Hawaii.

There are two categories of venomous snakes in North America. The pit viper is the largest in terms of number of species and geographical distribution. This includes rattlesnakes (*Crotalus* sp.), of which there are approximately 30 species; the water moccasin or cottonmouth (*Agkistrodon*

*piscivorus*); and the copperhead (*Agkistrodon contortrix*). The elapids category consists of three species of coral snakes (*Micrurus* sp.).

The coral’s venom is highly toxic, but it’s such as reclusive snake that less than 1 percent of human snakebite cases reported in the U.S. are attributed to it.

Thus, it’s reasonable to infer that dogs are bitten by coral snakes at a comparatively low rate.

The pit viper snakes are the ones that dog owners should be aware of and most concerned about. The term “pit viper” derives from the prominent pitlike cavity located between these snakes’ eyes and



Eastern coral snake



Water moccasin (cottonmouth)

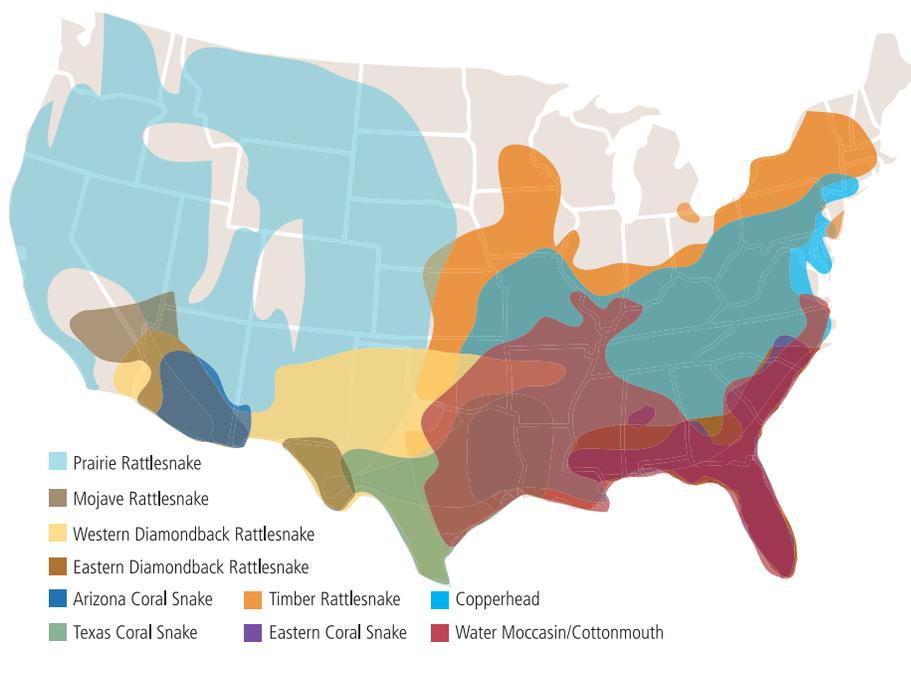


Copperhead



Mojave rattlesnake

## Venomous Snakes in the U.S.





Timber rattlesnake

## Signs of a Snakebite

- Bleeding, bruising and swelling around the bite
- Color changes from red and blue to black as tissues die around the wound
- Pale gums, cool skin and tremors
- Weakness, lethargy, confusion, and lack of coordination
- Vomiting
- Slow respiration

nostrils. The site of heat-sensing organs called thermoreceptors, they enable these snakes to locate prey at night. Triangular heads, elliptical pupils and retractable fangs are other characteristics shared by pit vipers.

The venom of pit vipers is a complex cocktail of enzymes, proteins and polypeptides that immobilize prey animals and break down their tissues in order to facilitate digestion. Most venoms are hemotoxic, attacking the vascular walls and essentially causing the victim to leak blood internally. Not surprisingly, most snakebite deaths in the U.S. result from cardiac arrest triggered by extremely low blood volume. The venom of some pit vipers, notably the Mojave rattlesnake (*Crotalus scutulatus*), also have neurotoxic properties that disrupt the function of the nervous system.

The Mojave rattler has the most toxic venom of all North American pit vipers, as measured by LD<sub>50</sub>, or the mean lethal dosage scale. The lower the number, which is expressed as milligrams of venom per kilogram of victim body weight, the higher the toxicity. While the Mojave's LD<sub>50</sub> is 0.23, at the other end of the spectrum, the copperhead, the least toxic of the pit vipers, has a comparatively tepid LD<sub>50</sub> of 10.92.

This helps to explain why copperheads, despite biting more Americans than any other venomous snake, account for very few deaths. The deadliest snake in North America, statistically, is the Western diamondback rattlesnake, which has an LD<sub>50</sub> of 2.18.

Although there is no way to know the amount of envenomation once the "strike" has been made, generally the larger the snake, the more venom it will inject. "We used to think that because larger, older snakes were more experienced, they'd 'meter out' only the amount of venom necessary to do the job," Dr. Peterson says. "Well, we've learned this isn't the case. There's a definite relationship between the size of the snake and the severity of the bite."

The snake's reason for striking also influences the amount of envenomation.

In humans, it's estimated that up to 25 percent of snakebites are dry bites, or bites in which no venom is released. "They're the equivalent of warning shots across the bow," explains Dr. Peterson. "The snake's not feeling especially threatened; he's just letting you know he's there and telling you to leave him alone."

Dry bites in dogs are not easily identified. "If you're hunting with a pointing dog, and he gets a dry bite when he's making a cast over a hill, you may never know he was struck," Dr. Peterson says.

Dry bites, even those in which venom is released, are "defensive" strikes and typically less severe than "offensive" strikes. These are strikes in which the snake responds aggressively to a perceived threat.

The worst strikes are "agonal" strikes, or those made when the snake is literally in its death throes or even technically dead. "The severed head of a rattlesnake can still strike out of reflex for up to one and a half hours. And when it does, it pumps out all the venom it has left," Dr. Peterson says.

## Enroll in a Snake-Avoidance Clinic

Putting a dog through a snake-avoidance program helps to prepare the dog to react to an offensive strike. "You can't eliminate all the risk," says Dr. Peterson. "If your dog's running full-tilt downwind, he may bump into a snake before he senses it's there. The good news is that this kind of encounter typically results in a defensive bite that tends to be less severe. On the other hand, a dog that hasn't been 'snakeproofed' may try to actively engage with a snake, and this is likely to result in a more serious offensive strike."

Snake-avoidance training — also known as snake-aversion training, snakeproofing and even desnaking — is a relatively straightforward process. The idea is to condition a dog to give any snake he or she encounters, whether via sight, smell, sound, or some combination thereof, the widest possible berth.

In a controlled setting, a dog is led toward a live snake, one that's healthy but

has been rendered temporarily incapable of delivering a venomous strike. Rattlesnakes are generally preferred because the buzz of their rattle adds a sound association. Whenever the dog shows the slightest interest in the snake, he receives a firm correction. Through repetition and reinforcement, the dog learns that snakes are bad and should be avoided.

Many hunting dog clubs and sporting organizations, particularly in the South and Southwest, sponsor snake-avoidance clinics or seminars with professional trainers. Some professional trainers, such as [Rody Best of Best Retrievers](#) in Paige, Texas, where Moses' retriever Cinco trained, host snake-avoidance clinics as well.

"We hold our clinic every year at the end of August," Best says. "About 100 to 130 dogs, mostly those that field trial, hunt and do hunt tests, go through our snake-proofing clinic. The dogs learn quickly to associate negativity with the sight, smell and sound of the snakes. We encourage owners to enroll their dogs two years in a row, and then every other year, to reinforce the training."

Despite efforts to avoid snakebites, sometimes this isn't possible. The majority of canine snakebites, says Dr. Peterson, occur on the legs and face. The prognosis for bites in these areas is generally good, though bites to the face can result in grotesque swelling. Bites to the body trunk are typically more serious, and the worst place of all is the tongue due to its abundance of blood vessels. Fortunately, such bites are rare.

The amount of swelling at the site of the strike is not a reliable indicator of the bite's severity. A relatively mild bite can result in significant swelling, while a very serious bite can show little or no swelling.

"The bite of a Mojave rattlesnake, the most toxic snake in North America, can look like a simple puncture wound," says Dr. Peterson. "Because you simply never know, the biggest take-home message is that if your dog's been struck by a venomous snake, don't second-guess. Drop everything and go to a veterinary facility as fast as you can. I often tell people

that the only 'snakebite kit' they need is their car keys. There's nothing you can do in the field that will improve your dog's outcome. You just need to keep calm and get him to a veterinarian."

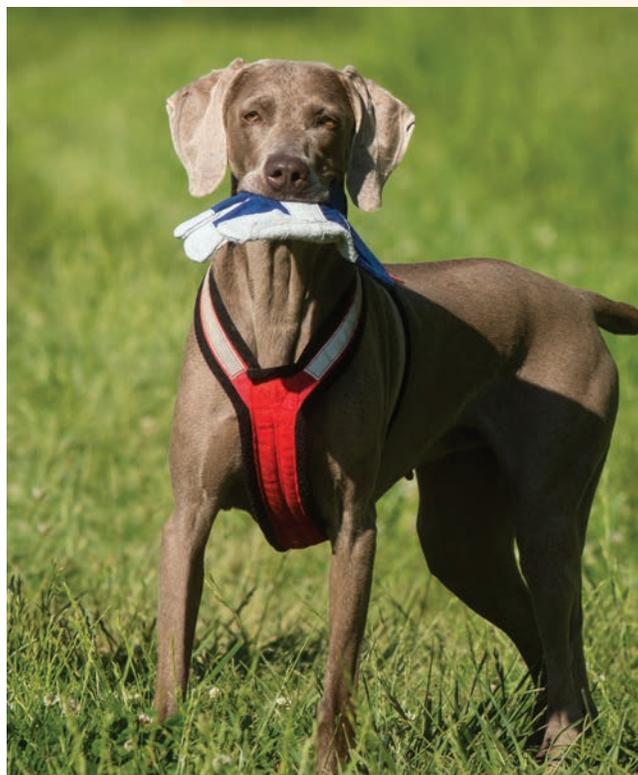
The only specific antidote for the effects of snake venom is anti-venin, sometimes called antivenom. Many cases of canine snakebite are treated successfully without it, though it is important that the anti-venin option is available.

Although a rattle-snake vaccine is available, its efficacy has not been proven. It is considered most effective against the Western diamondback rattlesnake and may also protect against several other species of rattlesnakes and the copperhead. It does not protect against the venom of the Mojave rattlesnake, water moccasin (cottonmouth), or coral snake.

"The vaccine appears to be safe, and it's relatively inexpensive," says Dr. Peterson. "It may moderate the symptoms of bites from certain species of snakes and in that respect help buy time. Because the level of protection of the vaccine is unknown, it is still vitally important to get a dog with a snakebite to a veterinarian as quickly as possible."

The most desirable scenario, of course, is for your dog not to get bitten in the first place. Investing in snake-avoidance training, as did Moses, could pay off in a big way. Her experience after having Cinco snakeproofed made her a believer in the process and impassioned advocate for it.

"Everybody who lives or hunts in snake country should attend a snake-avoidance clinic," she says. "It's the best thing you can do for your dog." ■



## What to Do for a Dog Bitten by a Snake

- Seek immediate emergency veterinary care
- Do not apply ice or heat to the wound
- Do not attempt to cut into the wound or suck out the venom
- Do not apply a tourniquet to the bite area
- Restrain and calm your dog to help slow the spread of venom
- Although not imperative, it may be helpful to identify the snake that bit your dog

## Purina Pro Plan Incorporates NATURAL Formulas Into Existing Platforms

**P**urina Pro Plan is integrating existing NATURAL formulas, as well as adding new formulas, to the already strong FOCUS, SPORT and SAVOR platforms. Containing no artificial colors, flavors or preservatives and no poultry byproduct meal, the formulas are made without corn, wheat or soy, and include grain-free options. Additionally, two new formulas made without corn, wheat, soy, artificial colors or flavors, or poultry byproduct meal will be added to the BRIGHT MIND platform. Look for the formulas this summer.

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Handlers stack Standard Poodles during judging at the Poodle Club of America National Specialty in April at the Purina Event Center in Gray Summit, Missouri.

## Purina Event Center Adds Amenities

**R**ecord-setting entries at the Poodle Club of America National Specialty, held in April at the Purina Event Center in Gray Summit, Missouri, helped confirm to club officials that holding the event in the Midwest after many years in the East was a good move. Recent upgrades to the classy dog show venue include improved cellphone reception, expanded Internet service to support live streaming, and an enhanced Wi-Fi connection with increased bandwidth that allows for easy photo and video sharing on social media. Video monitors throughout the facility allow exhibitors to watch the action in the show rings in real time. Located about an hour from St. Louis, the Purina Event Center, which was custom built to support the dog fancy, opened in 2010.

[TAKE A VIDEO TOUR](#)

## Upcoming Events

**C**heck out upcoming Purina-sponsored show and sporting events at venues across the country. These events are great opportunities to meet dog enthusiasts, canine experts and Purina representatives who can answer questions about *Purina Pro Plan* dog food and *Purina Pro Club*.

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