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Outsmarting Poison Ivy and Its Relatives

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An itchy, red rash can be a serious problem for persons working in the woods. Plants that cause the rash include: poison ivy, poison oak, and poison sumac. All three belong to the *Toxicodendron* (formerly *Rhus*) genus. Their resinous sap (found in leaves, stems, and roots) contains several components known as alkylcatechols, collectively called *urushiol* (pronounced oo-roo-shee-oh1) oil. This oil causes an allergic reaction on the skin (contact dermatitis) with itching, swelling, and painful blisters.

Highlights...

- Exposure to poison ivy, poison oak, or poison sumac is one of the hazards of working in the field.
- Employees who are extremely sensitive to these toxic plants may need to be assigned duties that do not expose them to these plants.
- Everyone should try to recognize and avoid these plants, relying not only on their distinctive leaf shapes, but also on black spots on their leaves.
- IvyBlock (figure 1), a lotion, can help prevent allergic reactions to the toxic compounds released by these plants if IvyBlock is applied at least 15 minutes before exposure.

The only places where outdoor workers and recreationists might not encounter these plants are Hawaii, Alaska, the rain forests of Washington, and some desert areas in the West. Wildland firefighters and forestry workers particularly run the risk of exposure to these plants.

The U.S. Department of Agriculture, Forest Service, Safety and Health Information Portal System (SHIPS) analyzes and tracks trends from all CA-1 incident forms for injury, illness, or near misses submitted by Forest Service employees. During 2005 and 2006, about 8 percent of the more than 9,000 individual incident reports received by SHIPS were from employees who came into contact with these plants.

The urushiol oil from damaged plants can be spread directly to the skin or from tools, boots, gloves, or shirt sleeves that carry the oil and transmit it to the skin. Urushiol oil sticks to most surfaces and can cause allergic reactions years later.

Reactions, treatments, and preventive measures are the same for all three of these toxic plants.



Figure 1—IvyBlock is approved by the U.S. Food and Drug Administration as a product that can prevent allergic reactions to poison ivy, poison oak, and poison sumac.

In 1981, the Missoula Technology and Development Center (MTDC) published a report and pamphlet, *Preventing and Treating Poison Oak and Poison Ivy*. Many of the recommendations made then still apply, but now IvyBlock lotion can be used to help prevent allergic reactions caused by contact with poison ivy, poison oak, and poison sumac.

The Plants

It is important to be able to recognize poison ivy and its relatives during all seasons. The leaves on all three of these plants are shiny. The plants usually grow below 4,000 feet in elevation. They can look quite different from each other, and their appearance may vary across the United States.

The fragile stems and leaves are easily damaged by wind, animals, and chewing insects.

The urushiol oil that exudes from damaged plants attempts to seal the damage. Urushiol oil oxidizes when exposed to the air, usually within 30 minutes. The oil starts as a clear fluid, becomes cream-colored, then red-brown, and finally turns black as it oxidizes. Damaged leaves look like they are wearing spots of black enamel paint. Look for the black spots.

Poison ivy is common throughout the United States, growing in fertile, well-drained soil. It may be a vine or a woody shrub. In the Western United States, poison ivy (figure 2) has leaves with serrated-edges (figure 3). In the Eastern United States, poison ivy (figure 4) has leaves with smoother edges (figure 5) than those in the West. Although



Figure 2—Western poison ivy.



Figure 3—Close up of western poison ivy leaves. The leaves have serrated edges.



Figure 4—Eastern poison ivy.



Figure 5—Close up of eastern poison ivy leaves. The edges of the leaves are smoother than those of western poison ivy.

poison ivy usually has three leaflets per stem, it can have as many as nine. The leaves are yellow-green in the spring, green in the summer, and red in the fall. Poison ivy has yellow or green flowers and white berries. Don't mistake the woody vine of Virginia creeper for poison ivy. Virginia creeper usually has five leaflets and its berry resembles a dark blue or black grape.

Poison oak grows in the Southeast and Western United States, Canada, and Mexico. In the West, it can grow up to 6 feet tall as a shrub (figure 6) or up to 30 feet long as a vine. It grows as a low shrub in the Southeast. The oak-like leaves (figure 7) are smaller than those of oak trees and grow in clusters of three. Poison oak has yellow berries.

Poison sumac thrives in boggy areas in the southeastern United States and in southeastern Canada. It can be a gangly shrub up to 15 feet tall, with 7 to 13 smooth-edged leaflets (figure 8). Pale yellow or cream-colored berries grow



Figure 6—Poison oak can grow as a shrub or as a vine.



Figure 7—Poison oak leaves are smaller than the leaves of an oak tree.



Figure 8—Poison sumac has 7 to 13 smooth-edged leaflets and berries that grow between the leaves and the branches. (Photo courtesy of Ted Bodner at the USDA-NRCS PLANTS Database, James H. Miller, and Karl V. Miller. 2005. *Forest plants of the southeast and their wildlife uses*. University of Georgia Press, Athens.)

between the leaves and the branches. Poison sumac looks similar to nonpoisonous smooth sumac. Smooth sumac has fuzzy red berries that grow at the ends of its branches.

How These Plants Poison Us

Workers can contact urushiol oil in three ways:

Direct Contact—When urushiol oil comes into direct contact with skin, it begins to penetrate in minutes. A reaction usually starts in 12 to 48 hours. The rash may appear as streaks or lines. The immune system recognizes the urushiol as foreign and begins to destroy skin cells, producing severe itching, redness, and swelling, followed by blisters. Oddly enough, the urushiol oil itself would be harmless if the immune system didn't react to it.

Indirect Contact—The urushiol oil can stick to the fur of animals, to tools, sports equipment, or to any object that comes in contact with it.

Airborne Contact—Burning plants release urushiol oil particles into the air. These particles can cause reactions to exposed skin, the eyes, and the respiratory tract.

Who Is Sensitive

About 70 to 85 percent of the population will develop an allergic reaction to poison ivy, poison oak, or poison sumac. An allergic reaction seldom occurs on the first exposure. Sensitivity increases with each exposure. Some people are more sensitive to urushiol oil than others.

Sensitivity can change. People who are exposed to urushiol oil repeatedly may become more sensitive, reacting to lower and lower concentrations. However, people become less sensitive to urushiol oil as they get older.

Prevention

The first line of defense is to recognize the plants and avoid them. Employees who are assigned outdoor duties should be able to identify poison ivy and its relatives. This training should be part of the job hazard analysis for their work activity. Workers who are sensitive to urushiol oil

should attend plant identification classes and take extra precautions when working in the field. Some workers who are especially sensitive may need to be assigned to duties that do not expose them to these plants.

In 1985, Forest Service firefighters participated in tests to evaluate the effectiveness of bentoquatam (BEN-toe-kwa-tam) to help prevent reactions after exposure to poison ivy, poison oak, and poison sumac. These tests confirmed the effectiveness of bentoquatam as a preventive measure for those sensitive to urushiol oil. The U.S. Food and Drug Administration (FDA) approved the use of bentoquatam for prevention of allergic reactions to poison ivy, poison oak, and poison sumac.

Today, a barrier lotion with 5-percent bentoquatam is the only FDA-approved drug that can help prevent contact dermatitis from poison ivy, poison oak, and poison sumac. Enviroderm of Louisville, KY, manufactures bentoquatam under the trade name IvyBlock. It is available without a prescription. The bentoquatam is enveloped in a clay-like medium and contained in a lotion that should be applied to the skin at least 15 minutes before exposure to poison ivy,



Bentoquatam should not be used after someone develops a rash from poison ivy, oak, or sumac.

It is only used to prevent the rash, not to treat it.

poison oak, or poison sumac. When the lotion dries, it forms a clay-like barrier that protects against or reduces the severity of the rash caused by these plants. Bentoquatam should be reapplied every 4 hours for continued protection.

Bentoquatam can be removed with soap and water. It is not recommended for children under the age of 6.

When working in areas with poison ivy, poison oak, or poison sumac, minimize skin exposure by wearing pants,

gloves, and a long-sleeved shirt. Once urushiol oil gets on the skin, clothing can trap the oil and compound the problem.

When You Are Exposed

Clean the skin with large amounts of isopropyl (rubbing) alcohol within 10 minutes. Wash with cold water without soap. Using soap alone can lift the urushiol oil and move it around the skin.

Wear disposable gloves when you are cleaning boots, tools, and anything else that may have been exposed to urushiol oil. Wipe any exposed items thoroughly with rubbing alcohol and water. Do not use detergent or soap. Wash clothes, even shoelaces, with hot water, detergent, and two wash cycles. Discard the gloves.

Treatment

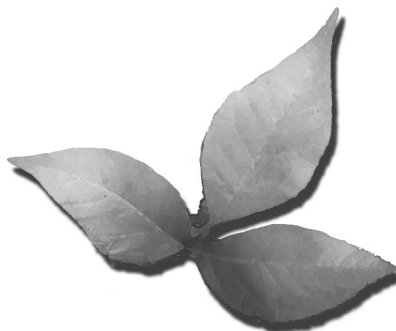
If the skin isn't cleansed quickly or thoroughly enough, redness and swelling will appear in about 12 to 48 hours. Blisters and itching will follow. The rash, itch, and blisters will disappear in 14 to 20 days without treatment. But few people can tolerate the itching without some relief. Over-the-

counter corticosteroids with 1 percent hydrocortisone help relieve itching. For severe cases, when 30 percent or more of the body is affected, physicians may prescribe an oral corticosteroid.

Products to help relieve itching and dry up the oozing blisters include calamine lotion, soaking in bath water with colloidal oatmeal, baking soda, and zinc oxide. Blisters do not contain urushiol oil. For additional information visit the American Academy of Dermatology Web site (http://www.aad.org/public/Publications/pamphlets/Poison_IvyOakSumac.htm).

Conclusions

Exposure to poison ivy, poison oak, or poison sumac is one of the hazards of working in the field. Some people who are extremely sensitive to urushiol oil in these plants may need to be assigned to duties that do not expose them to these plants. Everyone should be able to recognize and avoid the plants, being especially alert for black spots on a plant's leaves. IvyBlock, a lotion, can help prevent allergic reactions if the lotion is applied at least 15 minutes before contact with these plants.



About the Author

Mary Ann Davies received a bachelor's degree in mechanical engineering with a minor in industrial and management engineering from Montana State University. She worked in the Pacific Northwest Region as a facility engineer and as a tramway engineer. Davies has worked in fire management as a crewmember and as a crewboss. She worked for 5 years with the Rocky Mountain Research Station in the fire chemistry and fire behavior groups before coming to MTDC in 1999.

Library Card

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Exposure to poison ivy, poison oak, or poison sumac is one of the hazards facing forest workers throughout most of the United States. During 2005 and 2006, about 8 percent of the individual incident reports for injuries and illness in the Forest Service were filed by employees who had allergic reactions after contacting these toxic plants. This tech tip explains how to identify these plants and what employees should do after they contact them. A lotion, IvyBlock, can help prevent allergic reactions if it is applied at least 15 minutes before exposure.

Keywords: allergies, bentoquatam, IvyBlock, poison oak, poison sumac, safety at work, sensitivities, *Rhus*, *Toxicodendron*, urushiol

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