Poison Ivy Dangers: Preventable Occupational Health Costs

Purdue Road School 2014
What does Poison Ivy look like?

Poison Ivy, the most common of the three plants, is characterized by a compound leaf with three pointed leaflets. Leaves can have fine or coarse serrations. The leaves turn bright colors in the fall, turning yellow then red.
Figure 2 - *T. Radicans* demonstrating trifoliate leaves with three leaflets each. Brown rootlets can also be seen clinging to the bark of the tree.

*Need permission – Photo from Jere Guin – University of Arkansas - 501-228-0770*
Figure 5. Urushiol on leaf, oxidized to black. Urushiol self-melanizes on exposure to oxygen. The 'black-spot test' helps identify toxic Anacardiaceae, but it also increases one's likelihood of contracting a nasty dermatitis! Use a stone to thoroughly crush plant contents, especially the leaf stalks, between the folds of white paper. Urushiol turns dark brown within 10 minutes and black by 24 hours.
Figure 3B. White fruit on poison ivy in the winter.

Photo courtesy of Jere Guin, MD Need permission – Photo from Jere Guin – University of Arkansas - 501-228-0770
Figure 9. Early shrub version of *T. radicans*.
Virginia Creeper: a woody vine with 5 leaves, which frequently grows near poison ivy. The sap can contain oxalate crystals which can cause skin irritation. Does not contain urushiol.
There is no Poison Oak in the state of Indiana

Source: USDA Plants Database  http://plants.usda.gov/java/profile?symbol=TOPU2

Eastern Poison Oak (Toxicodendron toxicarium)
What does Poison Sumac look like?

Poison Sumac has seven to 13 leaflets per leaf. Mainly found in the eastern U.S., poison sumac grows in peat bogs and swamps as a shrub or a small tree. The large allergen-containing fruit is white and grows between the leaf and the branch.
Poison Sumac (Toxicodendron vernix)
Figure 15B – Poison sumach (*T. vernix*). Note flowers growing from an axillary position.

Photo courtesy of Jere Guin, MD Need permission – Photo from Jere Guin – University of Arkansas - 501-228-0770
Figure 4. Non-allergenic *Rhus glabra* (Common sumac) growing on the campus of Kansas State University in Manhattan, KS. Note the terminal, red fruiting structure (inset).
Allergy to Urushiol: What is it?

- Poison ivy, oak and sumac belong to a family of plants that produce one of the most common allergic skin reactions in the United States.
- Poison ivy and its relatives contain an toxin called “urushiol”, which is both an allergen and an irritant.
- The reaction, known as “urushiol-induced allergic contact dermatitis,” occurs after the urushiol toxin bonds with skin cells after a person’s direct or indirect exposure to the plant’s oil. The toxin molecule remains bonded to skin cells for 2 – 3 weeks after exposure.
- In sensitive individuals, a white blood cell mediated immune response follows.
Symptoms of Urushiol Induced Allergic Contact Dermatitis

Symptoms include:
- severe itching
- rash
- swelling
- fluid filled blisters
- clear yellow drainage
- red leathery skin

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Onset of Symptoms

• Itching is usually the first symptom, followed by redness, raised areas, drainage (oozing), small and large blisters.

• Outbreak of a urushiol induced rash usually occurs 24 to 48 hours after exposure, but the onset of the rash can happen as long as 9 to 14 days after exposure in less sensitive individuals.
TYPICAL MILD-TO-MODERATE REACTION TO URUSHIOL OIL

IF NEW LESIONS DO OCCUR ON DAY 4 OR 5, YOU MAY HAVE A SYSTEMIC REACTION AND SHOULD SEEK IMMEDIATE MEDICAL TREATMENT.

CONTACT WITH PLANT

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16-18

DAY

POISON OIL CYCLE ENDS IN 8-10 DAYS

SYMPTOMS PEAK AND THEN BEGIN DECREASING

EXISTING LESIONS BECOME WORSE

NEW BREAKOUTS MAY OCCUR

LESIONS APPEAR FOR 12-48 HOURS

INCUBATION PERIOD: SYMPTOMS FOR 1-2 DAYS

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Figure 35A. Note pattern of transfer from this photo to the next in a young women with poison ivy dermatitis.

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Photo courtesy of Jere Guin, MD Need permission – Photo from Jere Guin – University of Arkansas - 501-228-0770
Figure 36A. Hand transfer pattern of urushiol to forearm.

Photo courtesy of Jere Guin, MD Need permission – Photo from Jere Guin – University of Arkansas - 501-228-0770
Figure 43.  Acute linear edema and vesicles in phytophotodermatitis.

Need permission.  Bologna Figure 18.6
Figure 43. Acute linear edema and vesicles in phytophotodermatitis.

Need permission. Bologna Figure 18.6
Incidence of Poison Ivy

Peak poison ivy season is between Memorial Day and Labor Day, yet people suffer from poison ivy exposure throughout the year. Even in winter, the dormant plants are still toxic.
The poison ivy toxin, urushiol quickly bonds with skin cells:

Once urushiol touches the skin, it begins to penetrate in minutes. It is completely bound to the skin within 60 minutes.

# Prevention of Poison Ivy Rash by Cleaning with Regular Soap and Water

<table>
<thead>
<tr>
<th>Time of Washing After Exposure</th>
<th>Extent of Removal of Poison Ivy Oil (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immediately</td>
<td>100</td>
</tr>
<tr>
<td>10 min</td>
<td>50</td>
</tr>
<tr>
<td>15 min</td>
<td>25</td>
</tr>
<tr>
<td>30 min</td>
<td>10</td>
</tr>
<tr>
<td>60 min</td>
<td>None</td>
</tr>
</tbody>
</table>

How to Prevent a Scratchy Situation

• **Know what to look for and educate your staff.** Before you head outside, make sure everyone knows how to identify these plants so they can avoid them.

• **Wear protective clothing.** Clothing, including long pants, long-sleeved shirts, hats and gloves, can help protect you from exposure.

• **Do not burn any suspicious plants.** Burning the problematic plant and inhaling its smoke can cause a systemic reaction, which can be deadly.

• **Stop the symptoms before they start.** If you know you’ve been exposed to poison ivy, cleanse the area immediately with regular soap and water to remove any urushiol which hasn’t already bonded with the skin.

• **Use laundry detergent and water (washing machine) to remove urushiol from clothing.** Failing to decontaminate clothing or gear will result in continued exposure to the urushiol toxin.
Decontamination

- Poison ivy affected personnel must **shower & apply clean clothing daily** to stop the re-exposure cycle.

- Contaminated clothing, sleeping bags, gear, etc., should be washed daily to stop the re-exposure cycle. Use of a typical washing machine and laundry detergent should be sufficient.

- Any surface (car seat, mower, bunk, etc.) that contacts contaminated clothing or gear should be cleaned with regular soap and water to prevent continual re-exposure to the urushiol toxin.
# Treatment Options

<table>
<thead>
<tr>
<th>Product</th>
<th>Time of Application</th>
<th>Duration of Action</th>
<th>Frequency of Use</th>
<th>Product Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antihistamines</td>
<td>At Onset of Symptoms</td>
<td>4 – 6 Hours</td>
<td>Every 4 – 6 Hours</td>
<td>Limited by side effects; profound drowsiness, etc.</td>
</tr>
<tr>
<td>Calamine Lotion</td>
<td>At Onset of Symptoms</td>
<td>Variable</td>
<td>As Needed</td>
<td>Burns off the skin when a person sweats.</td>
</tr>
<tr>
<td>Topical Steroid</td>
<td>At Onset of Symptoms</td>
<td>4 – 6 Hours</td>
<td>Every 4 – 6 Hours</td>
<td>Can’t be applied to open rash, negative effect on the skin.</td>
</tr>
<tr>
<td>Soaps</td>
<td>First 60 Minutes After Exposure</td>
<td>Indefinite</td>
<td>Once</td>
<td>Must be applied within 60 minutes of exposure to be effective.</td>
</tr>
<tr>
<td>Teena Wash</td>
<td>2 – 8 Hours After Exposure</td>
<td>Indefinite</td>
<td>Once, or After Rash Appears</td>
<td>Cannot be applied to open rash, or for 3 days after hydrocortisone. Limited window of effectiveness.</td>
</tr>
<tr>
<td>Zanfel Wash</td>
<td>Anytime After Outbreak of the rash</td>
<td>Indefinite</td>
<td>Once or Twice</td>
<td></td>
</tr>
</tbody>
</table>
Zanfel Poison Ivy Wash

• **Zanfel** is the only product clinically shown to remove “urushiol,” the toxin found in poison ivy, oak and sumac, from the skin **anytime** after outbreak, while relieving itching within 30 seconds.

• **Evidence Based** – Two randomized, controlled, double-blind, studies (St Luke’s Med Center 2003 & 2007) have clinically shown the effectiveness of Zanfel Poison Ivy, Oak and Sumac Wash’s patented formula.


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Zanfel Facts

- Zanfel is a soap and is effective at any stage of the allergic skin reaction. It is never “too late” to use Zanfel.
- Zanfel works as both a treatment and a post-exposure prophylaxis for urushiol induced rashes.
- Zanfel is effective for eliminating itching and pain associated with mosquito bites, chigger bites, and insect stings.
- In many cases, one washing is adequate for each affected area (For mild to moderate reactions).
- Zanfel is safe for the face and genitals, and can be used by children and pregnant or nursing women.
- Once the urushiol toxin has been removed from the skin by Zanfel, itching stops and the body is put in a position to begin the healing process.
- Zanfel has a 10 year shelf life.
Zanfel Directions

Zanfel is easy to use: (The following directions are for an area the size of an adult hand or face.)
For best results, use Zanfel in a shower or sink where it is easy to thoroughly rinse off the product.

1. Wet the affected area.
2. Squeeze 1 and 1/2 inches (no less; see ruler at right) of Zanfel onto one palm. (Product will not work if less than 1 and 1/2 inches is used)
3. Wet and rub both hands together for 10 seconds, working the product into a paste. (This will activate the ingredients. Do not bypass or modify this step.)
4. Rub both hands (up to 3 minutes, if needed) on the affected area, working Zanfel into the skin until there is no sign of itching. (15 seconds is typical for mild to moderate reactions).
5. Rinse area thoroughly.

This tube contains enough Zanfel to wash approximately 15 patches the size of an adult hand or face.
Note: Severe reactions (that typically look like thick leathery burns) will probably require additional washings.
If symptoms persist, re-read the Q&A insert and see a healthcare provider.

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Zanfel Benefits and Savings to the Employer and Employee

**Zanfel Provides:**
- Rapid return to work after exposure.
- Significant and immediate cost savings to the employee and employer as opposed to other treatment options.

**Zanfel Savings:**
- Typical cost associated with treatment of an employee:
  - Clinic visit, time with healthcare provider, medication, hospitalization, decreased availability for work: 
    - $500 - $1,000 per day, average length of treatment of three days.
  - Treatment with ONE tube of Zanfel Poison Ivy Wash at the workplace: $40 (MSRP)

<table>
<thead>
<tr>
<th># of Events</th>
<th>Clinic Visit Cost</th>
<th>Zanfel Cost</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Event</td>
<td>$3,000</td>
<td>$40</td>
<td>$2,960</td>
</tr>
<tr>
<td>100 Events</td>
<td>$300,000</td>
<td>$4,000</td>
<td>$296,000</td>
</tr>
<tr>
<td>500 Events</td>
<td>$1,500,000</td>
<td>$20,000</td>
<td>$1,480,000</td>
</tr>
</tbody>
</table>

*Potential Cost Savings To the Employer is HUGE!*
Zanfel Benefits

- Use of Zanfel allows an individual affected by poison ivy, poison oak, poison sumac, insect/ant bites or stings to return to work/activities immediately, in an itch-free and healing state.
- Zanfel treats poison ivy, oak & sumac without the side effects associated with corticosteroids or sedating antihistamines.
- A Zanfel washing can be done in the field, provided there is access to a small amount of water.
- One application can be completed in 3 minutes.
- For a typical case of poison ivy, oak or sumac, Zanfel reduces healing time from days to hours.
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Zanfel Results

24 hours prior to using Zanfel
5 hours after using Zanfel
2 days after using Zanfel

It Works!

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Questions?