

## DIRTY ROTTEN ROT



LEFT TO RIGHT: A clogged gutter and absent downspout drove water into this corner of the building, making it necessary to replace the post at a cost of thousands of dollars; water splash off the granite threshold has rotted door trim work; ice dams caused by heat leaking out of a building can drive water under building materials; moisture penetration has left this sill rotted.

### RESOURCES:

Locally, System Three is available at Hamilton Marine in Portland. Paint Pot in Portland carries the Advanced Repair Technologies line of epoxy products. Online resources include: [www.oldhousejournal.com/notebook/npsbriefs/brief39.shtml](http://www.oldhousejournal.com/notebook/npsbriefs/brief39.shtml).

### EPOXIES:

[www.systemthree.com](http://www.systemthree.com)  
[www.advancedrepair.com](http://www.advancedrepair.com)  
[www.abatron.com](http://www.abatron.com)

### BORA-CARE:

[www.nisuscorp.com](http://www.nisuscorp.com)

### BY NOELLE LORD CASTLE

**L**OTS OF TIMES when I get going on an article, I look up the topic I am researching in the dictionary. It helps to get me focused, gives me some key words. This was the seventh entry for “rot”: the state of being rotten; decay; putrefaction: the rot of an old house. I’m not kidding.

### WHY WOOD ROTS

Most people know what causes rot. Water, right? Well, almost. Although water is the root of all evil when it comes to building deterioration, it’s the presence of wood-eating organisms that cause wood to deteriorate and decay into a state we refer to as “rot.” Basically three things have to be happening to cause wood rot: the presence of a food source (wood), an environment organisms want to live in (continuous dampness), and wood-eating organisms (fungi, insects). Take one of these three things away and wood won’t rot. Obviously the only one we can really control is the environment.

Brief exposure to water will not cause wood to rot; you need a chronically moist condition for fungus and insects to take advantage. Rot takes place when long-term moisture saturation of wood is allowed and fungi begin to grow and consume the wood as their nutrient. Insects such as ants, beetles and termites also love wet wood because it is soft and they get necessary water nutrients at the same time that they are getting their food.

### WHAT ABOUT DRY ROT?

No such thing as “dry rot,” a misnomer we hear all the time. You often find rotten wood that has dried out and is powdery because it has just

stopped rotting – either all the wood nutrient has been eaten or the problem of continuous moisture has been resolved and the fungi have died due to lack of food or insects have moved on.

### REPAIR VERSUS REPLACE

At what point do we need to replace rotten wood? Many things are already under-built in older buildings and we usually can’t afford to lose any support. A corner post is responsible for supporting a tremendous amount of weight; once rotten, it cannot possibly do its job and the other structural elements it supports will also begin to suffer. Anytime structural members of a building have significant rot, replacement, at least partial, is recommended.

We can’t really “fix” rot because the damage to the wood has been done. What we really do is stabilize the wood remaining, treat it to make it unsavory for future organisms, and take steps to prevent future damage.

Repairing rot, most commonly referred to as wood conservation, stabilizes wood and restores its integrity using treatments (fungicides and penetrating cell-bonding treatments) and epoxies (fillers). Sometimes fitting in new pieces of wood where rot is too extensive is also part of the process.

Epoxies restore the surface of a piece of wood you want to conserve rather than replace. Wood should be dried out prior to applying any epoxy treatments as epoxy can not displace water. All epoxies are not created equal (I even noticed some at the grocery store the other day). Good quality ones are expensive but well worth the investment

for a long-lasting repair. Most come packaged as a “system” to consolidate and then fill wood using a two-part epoxy custom mixed at time of repair. System Three Rot Fix is a great system. It is a multi-part process that uses a consolidant to fortify the wood and polymerize on its surface, then a two-part epoxy filler to restore (fill or rebuild) the surface. See Resources at the end of the column for more suppliers.

It is a good idea to use some kind of fungicide/insecticide when repairing rot to discourage future infestations. Borate-based treatments such as Bora-Care, a fungicide and insecticide, are natural products that are safe for the environment, people, pets and plants (sprinkle borax along your kitchen counters in summer for safe ant removal). These treatments are water soluble so if you continue to let water access the wood it will eventually wash away. Use them as part of a complete rot repair effort.

### To complete a wood conservation repair:

1. Remove the source of the water infiltration.
2. Scrape loose paint, remove crumbling wood and wash/vacuum loose debris from area.
3. Treat area with Bora-Care. Allow to dry completely.
4. Apply epoxy treatment including a wood consolidant/pre-treater and two-part epoxy filler.
5. Complete final touch ups by sanding surface flush and possibly applying additional wood filler to slight blemishes.
6. Seal an exterior repair area with protective coating (prime, paint).
7. Maintain your repair through regular inspection and annual maintenance work on the building.

*(continued on next page)*

## Dirty Rotten Rot

(continued from previous page)

### **HOW TO PREVENT ROT**

Eliminating moisture is stunningly obvious, but difficult to do. Pay attention to your building following a hard rain: check for leaks and note exterior wet marks, which signal areas where water is getting too much access. Also consider the broader consequences of architectural changes, home “improvement” decisions, and delayed (closely related to denial) maintenance. Sometimes we make changes that do more harm than good, such as additions that change the direction of runoff or drainage, adding blown-in insulation that will inevitably settle and trap moisture, or we never get around to some tasks, like cleaning out the leaf-filled gutters that direct water *toward* your house instead of away from it.

### **WHERE IS THE WATER COMING FROM?**

Moisture accesses our homes through the exterior and interior sources. Although we can't stop the rain, most exterior weaknesses can be resolved by making some changes and conducting proper maintenance.

#### **Exterior Culprits:**

- Faulty or damaged construction, masonry or flashing
- Loose or missing siding
- Active leaks
- Lack of adequate coatings (paint) or caulking
- Faulty gutters and downspouts
- Vegetation and landscaping materials too close to the building
- Poor grading or drainage (including splash)
- Moisture entering the basement/crawl spaces
- Water used in maintenance (power washing, sprinklers)

Interior sources are a fact of human inhabitants, but proper control of water access (caulking, basement drains and dehumidifiers), moisture cleanup and good ventilation is critical to prevent excess moisture from remaining in your house. Warm air holds more moisture and seeks out cooler temperatures (this is why we see condensation on the backside of our windows or on the interior of storm windows). As it migrates out of the building it condenses on the back side of building materials as it hits the cooler temperature. This is called dew point. This is important because we want to keep the dew point as far out of the building as possible, but we often trap it inside the building allowing moisture to dampen insulation and sit on structural materials.

#### **Interior Culprits:**

- People, pets and plants
- Showers and sinks
- Cooking
- Laundry
- Climate control systems (HVAC)
- Active leaks
- Wet basement or crawlspace

Final words: water always wins. Get rid of it, redirect it, ventilate it. ■

---

Very sincere thanks to preservation carpenter Caleb Hemphill of Falmouth for his significant technical contributions to this article.

---

Noelle Lord Castle, operates Old House C.P.R., and shares her passion for helping owners of older buildings discover how to take good care of them through consulting, teaching and writing. She can be contacted by visiting [www.oldhousecpr.com](http://www.oldhousecpr.com).

