

# Keeping Moisture Out and Letting It Out

## Top Ten Ways to Keep From Getting Wet:

1. Get in out of the rain.
2. Drink from a cup, never from a water fountain.
3. Stop crying; laughing too hard is risky too.
4. Don't walk near water puddles and creeks.
5. Never break a sweat; don't hike.
6. Go to the restroom.
7. Don't wash your hands or take a bath.
8. Don't visit Old Faithful or other geysers.
9. Never coach a winning football team and, even if you coach a losing one, watch the Gatorade bucket.
10. Stay home, under a new roof, on a hill, in a desert.

Otherwise, you might consider some bits that following.

**Seriously**, one of the most perplexing problems for newbies is keeping things dry -- both themselves and their gear. One common fallacy is to seek the "ONE" solution to this problem rather than to think in terms of redundant moisture barriers. What is described below is a system of redundant steps to keep things dry. For example, the combination of properly fitted pack cover, water resistant pack fabric, and waterproof packaging provides good assurance against moisture spoiling packed gear. Redundancy may add some weight, but plastic bags, the usual efficient solutions, are light in weight relative to other gear -- and a lot lighter than water soaked gear. Additionally, redundant bagging is good storage for those "extra" bags packing lists usually call for. When not needed, they provide security. When needed for alternative uses, you rely upon the primary system. A useful mental exercise is to imagine your pack dropped into a creek and which of the contents would still be usable afterward. Weight conscience backpackers, after gaining experience and confidence in their "primary system" procedures and packing abilities, can peel selected redundancies off on less crucial gear -- but not from your sleeping bag. You can be comfortable for a long time under adverse conditions with just a water- diverting canopy (dining fly, tent fly, military poncho) and a dry sleeping bag to keep you warm and cozy. Without it, before very long, you are miserable and risk hypothermia. **DON'T TAKE CHANCES WITH KEEPING YOUR SLEEPING BAG DRY.** As an additional precaution, it is recommended that newbies use synthetic-fill bags, so that they can recover quickly if they do falter.

## Things to consider about moisture (getting wet) while backpacking:

- **Packaging in waterproof (Ziploc) bags.** Packing several small similar items together in heavy plastic (Ziplock) bags organizes items that could get "lost" inside the pack and keeps the contents dry even if the pack gets soaked. When clothes and other pliable material are rolled tightly and placed in these bags they become more rigid, less spacious and waterproof. If you sit on the bag while zipping the lock, when you get off it will have that "vacuum-sealed" look, be less "puffy", and store in about half the space. This is your primary defense if your pack does drop into a creek and you hope to use the contents afterward.
- **Gooseneck closure.** Goose necked heavy plastic bags should be used for items that must be kept dry but are too large for Ziplock bags, like a sleeping bag. The gooseneck closure is formed by twisting the bag end, folding it over, then fastening it in place with a rubber band or twine. Note that, unless the bag is completely submerged, water would have to run uphill to get in. If a stuff sack lined with a plastic bag is going to be compressed further using webbing straps & buckles and the gooseneck twist is wound real tight, a small pin hole in the bag may be necessary to allow the air to escape unless the compression is done in slow incremental steps.



- **Raingear (for you).** It should be "vented", or else the moisture you avoid from outside will be replaced by moisture from your body that can't escape. Traditional raingear includes mesh vents protected by overhanging flats across the back and under the armpits. New, and more expensive, solutions are raingear made of waterproof "breathable" materials like Gore-tex. You can improvise raingear by cutting a head and two armholes into a heavy garbage bag. Two approaches to raingear are a jacket & pants "rain suit" combination and use of a poncho. Regardless of the approach, at the first sign of rain, stop and don your rain gear and cover your pack. Don't assume it will be a short, light rain. Raingear doesn't function well inside your pack or once you are wet.
- **Military-type poncho.** This is one of the most versatile pieces of gear you can pack. Although specialized equipment does each function better, it can serve as raingear, unfold into a ground cloth and be used in lean-to fashion as an effective dining fly when hiking self-contained. Sturdy ones are made of coated nylon and should have side snaps to form raingear when folded and tie down corner grommets for when used as a cover or shelter (cost \$15 – \$30). Vinyl ones just aren't durable enough for repeated use. Some are available with a "hunchback" specifically intended to cover the hiker and pack together. With a little care, this type of poncho can eliminate the pack cover. However, unless weight is a paramount concern, continuing to use a pack cover is a good idea.
- **Pack cover.** Your pack cover should always be accessible. Nylon coated ones are readily available and a heavy garbage bag can be fashioned into one.
- **Hanging a bear bag under a plastic cover.** That can help keep contents dry. Contents that might be damaged should already be in waterproof bags from when they were in the pack. Although not always necessary, the redundancy could help. It might also somewhat inhibit climbing rodents from coming down the rope.



- **Hanging pack under a cover.** Water will run off. A pack on the ground may accumulate water. Below are photos of a completely waterproof way of hanging a pack or bear canister using a garbage bag, 2 feet of cord and a "bulb" end with a hole. The first one shows three types of "bulbs"; a plastic mustard lid with a hole; a complimentary hotel shampoo bottle with a lengthwise hole (attached to pack); and an office tape core. After the bulb is attached to the pack, the bag is placed over the bulb and pack and a rope is placed around the bag below the bulb (where it won't slip), then hung from a tree -- as shown in the second photo. Because nothing passes through the bag, there is no hole for water to get in. For added protection when windy, use a long bag and tie the bottom shut.
- **Water resistant pack fabric.** Quality packs will have some kind of coating (urethane or silicon) to make the bag moisture resistant -- but don't count on it keeping everything dry by itself. Few or none are totally waterproof, at least not at the seams and compartment openings, so a pack cover is a necessity. Further, the best assurance of dry food, clothes and sleeping bag is to pack them in Ziplock or "goose necked" plastic bags. [Go to discussion of backpack criteria]

- **Ground cloth.** A ground cloth under your tent does two things: (1) it provides a moisture barrier between the cold ground and your warm body and (2) it smoothes out any imperfections in the ground under your tent by "stretching" across the dimples. It also protects your tent floor from jagged rocks and sticks.
- **Sleeping pad.** It acts as a moisture barrier, but also elevates you above any moisture that might seep into your tent. Self-inflatable pads are convenient but relatively heavy, especially full-length ones (2 - 3 lbs.). Closed-cell ones are lightweight (10 - 16 oz.) and cost about 25% of self-inflatables. However, it is bulky. Bulkiness is less of a problem if it is rolled and lashed on the outside. Newer closed-cell designs fold like an accordion.
- **Avoid the low ground.** Consider the terrain around your tent. Be careful not to set up over an indentation because water will accumulate there and standing water is likely to penetrate your tent before water that is running off. Setting up on a slight "knob" results in water running away from your tent, but don't dig a trench around it. Also, be careful not to camp too near streams that could rise in a flash flood -- where the valley is narrow but drains a large area. Although you want to avoid low ground, you may want to avoid the tops of bald hills when there is the possibility of lightening.
- **Full-coverage tent fly.** Water "beads" and runs off a properly coated fly. This process is interrupted when a "wick" is provided to draw the moisture through the minute fabric holes remaining. (The reason for "seam sealer" or "taped seams" is to fill the bigger ones around stitches.) An object against an outside wall provides that "wick" to draw moisture in. Even though a single-walled section of a tent can be made of the same material as the fly, double wall construction puts a space between the wet fly and the sleeping compartment (which is often made of breathable lighter cloth or screen netting). Full-fly construction puts this space between you (your gear) and the wet fly all over the tent. A partial ("umbrella") fly leaves a single wall down where you and your gear are, can touch the single wall, and potentially provide a wick to draw in moisture. The full coverage fly also drops the water off a little away from the tent, which somewhat inhibits it from running or wicking back under the tent. Full-coverage flies come in two general types of construction; one uses a tent pole attached to the fly across the top to create an "awning" over the door and rear window (for ventilation) and the other stakes the fly directly to the ground all around to create a covered vestibule (storage area) in front of the door. Full coverage usually costs a few ounces in weight. If you are using a partial fly tent, use caution not to have anything touching the single wall.
- **Wide-rimmed hat.** You wouldn't think a cloth hat would keep you dry, but it does. Water is wicked to the edge of the rim, where it falls off. Non-felt water-resistant coated ones are also available. The wide rim also provides an effective sunshade and prevents things from "dropping down your neck". Vents are a feature to look for. They allow body moisture to escape during warm weather and when high humidity would otherwise trap it. Rain will run around grommetted vents and off. Gore-tex lined hats provide moisture protection and some degree of breathability even without vents.
- **Dining fly.** It is an optional item that comes in handy for the crew to "get under shelter", packs and all, in a hurry to wait out a flash downpour. During a persistent rain, this may be your only escape from your tent to meet with other scouts and to prepare and eat food. **WARNING:** don't even think about using your stove in a tent and, even with a dining fly, the stove should be kept outside the edges. A small polyethylene tarp gives protection at reasonable weight. Nylon coated rainflies/tarps have reduced weight at a price.
- **Gaiters.** One problem with hiking in the rain is that your socks can "wick" the moisture into your shoes even if they are waterproof. Waterproof pants that cover the boots will prevent this. Another solution, especially if you are hiking in shorts, is to use gaiters. These are like pants legs from the knee down and attach at the top with elastic and/or a draw string and often strap under the boot to prevent them from "riding up with wear". They are also good protection in brushy areas -- and some protection from low-lying poisonous plants or animals.
- **Waterproofed boots.** Leather soaks up moisture unless treated. Several preparations, including silicon- and grease-based coatings/penetrators, are available. The other solution is waterproof breathable liners in the boot. Examples are Gore-tex liners sewn into the boot lining or in sock form. Even plastic bread-bag liners work for short periods, but aren't breathable. Rubber/plastic over boots tends to be heavy and or not durable enough for rocky trail work.

- **Polypropylene/synthetic liner socks.** When combined with wool socks, they allow the moisture from your feet to be "wicked away", leaving your feet dryer. They also allow friction to occur between the sock layers rather than against the skin, reducing the chance of blisters. Wool retains some insulating qualities when wet.
- **Polypropylene/lycra or other synthetic under shorts.** Cotton holds sweat/moisture and dries slowly, allowing bacteria to grow and creating an irritating surface for "chaffing". That can be a particularly real problem for people with oversized thighs. Polypropylene or Lycra shorts (short workout tights, form-fitting biking shorts without the pads) are non-absorbent and allow the moisture to escape. Further, because they typically are longer than boxers or briefs and have a "slippery" surface, they eliminate the skin-to-skin rubbing that causes chaffing. They dry incredibly fast. This is the idea behind Lycra lined (double-layer) mountain biking shorts.
- **Synthetic-fill sleeping bag.** This is more in the category of "getting the moisture out" once it is in. Synthetic fill tends to dry quicker, retain insulating properties better when wet, and retain water weight less than down or cotton.
- **Hand warmer.** Consider carrying a "Hot Hands" type disposable warmer (hunting and construction worker item) with the crew first aid kit to put into a sleeping bag for dealing with hypothermia or to help in drying it out. Because they entail combustion, they are not recommended for using them with a person in the bag except for the emergency hypothermia case.