

Chapter 1: Water

Lily: "Looks clean? Could still have germs. Boil it first!"

Water keeps us alive, but water that looks clear can still carry tiny germs that make tummies sick. Rangers learn to make water safe, keep it safe, and keep their hands clean.

What Rangers know

- **Germs are invisible.** Clear water is not always safe water.
- **Pick the best water you can find.** Running water or a tap from helpers is better than still, green or smelly water. Never drink from a bottle that once held fuel or chemicals.
- **Settle and strain.** Let muddy water sit so the dirt sinks, then pour it through a clean cloth. The cloth takes out dirt, **not** germs (EP04 "Cloth Is Not Enough").
- **Boil: a grown-up's job.** A grown-up brings the water to a big rolling boil and keeps it there for about one minute (longer high in the mountains). Rangers stand one step back and count the bubbles out loud. Let it cool with the lid on.
- **Sun bottles (SODIS).** A clean, clear plastic bottle of clear water lies in full sun for 6 hours, or 2 days if it is cloudy. It only works with clear water and clear bottles.
- **Catch the rain.** With a grown-up, catch rain in a clean, covered container. Let the first rain wash

the roof, and keep the cloth and container clean (EP07, taught by Mr. Ezra).

- **Keep it safe.** Use a clean container with a lid, kept off the ground and in the shade. Pour; don't dip your cup or hand in. One container is for "drinking water only".
- **Clean hands.** Wash with soap and safe water before eating, before touching drinking water, and after the toilet. Scrub for as long as it takes to sing a short song.
- **Drink often.** Dry mouth, a headache or dark pee mean "drink and tell a grown-up".
- **Latrines and toilets.** Always use the latrine or toilet, never the open ground near water or tents. At night, go with a buddy and a light, and tell a grown-up if a toilet is broken, dark or unsafe. Wash hands after (Chapter 9).
- **Don't play in still, dirty water** (puddles, ditches, ponds). It can carry germs, and mosquitoes breed there.
- **Lots of watery poo is a "go now" sign** (Chapter 2).

Ranger checklist

- ☐ I use the latrine, and go with a buddy and a light at night.
- ☐ I don't play in still, dirty water.
- ☐ I can say why clear water may still have germs.
- ☐ I can show settle, strain, then grown-up boil, from one step back.
- ☐ I know a cloth takes out dirt but not germs.
- ☐ I can set up a sun bottle with a grown-up.
- ☐ I can point to our family's "drinking water only" container.
- ☐ I pour, I don't dip, and I keep the lid on.
- ☐ I wash my hands with soap at the right times.
- ☐ I know the thirsty signs.

Earn your badge (Clean Water  · Safe Storage  · Water Hero  · Clean Hands)

Level	Clean Water	Safe Storage
 Heart	Say: "Looks clean can still have	Say: "Lid on, pour, don't

Level	Clean Water	Safe Storage
	germs."	dip!"
 Bronze	Show the steps from Card #001 or #002 with props, one step back from the fire.	Show washing the jug, lid on, and pouring.
 Silver	Make safe water 3 times with a grown-up (the grown-up boils, or a sun bottle).	Keep a family jug clean, covered and labelled for a week.
 Gold	Teach Card #001 to a younger child.	Make a picture sign for the water corner.
 Platinum	Help a grown-up run a water station for a group.	Help a group set up safe storage.
The Water Hero pack award comes when you hold the same level in both columns (EP05 quiz).		

Watch and learn

- EP01 Boil It First · Card #001

- EP02 Clean Bottle, Covered Water · Card #002
DIY Filter
- EP03 Sunlight Bottles · Card #003 Sun Bottle
- EP04 Cloth Is Not Enough · Card #004 Keep It Clean
- EP05 Wash Your Hands / Water Hero Check · Card #005
- EP06 Keep It Covered · Card #006
- EP07 Catch the Rain (guest teacher Mr. Ezra) · Card #007
- EP08 Sun Drops · Card #008
- Planned: Water Points and Latrines; Ranger Clean Hands; Clean Water, Clean Food
- Go Bag: the water bottle is item one in Card #GB1 "Ready by the Door".

Grown-up note

Boiling, chlorine or bleach, and any treatment tablets are adult-only. When local helpers give out treated water or tablets, use those first; follow the tablet packet. Boil for 1 minute, or **3 minutes above about 2,000 m (6,500 ft). Bleach, if nothing else:** plain unscented household bleach (5–9% chlorine), about **2 drops per litre** (8 drops of 6% per US

gallon). Stir and wait **30 minutes**; it should smell slightly of chlorine. If the water is cloudy, settle and strain it first, then use double. Store bleach locked away from children. Sun bottles need clear water and clear PET bottles **no bigger than 2 L**, laid flat; very cloudy water must be settled and strained first. Sun bottles **don't work in steady rain**, so boil instead.

Fact-checked Oct 21, 2026, approved by David McKellips.