

Build Your Own Rain Barrel

Be a Stormwater Sleuth! Explore Ways to Recycle Running Rain!

With the help and permission of parents, redirect downspouts away from paved areas and onto planted areas; and build a rain barrel to use at home. For a group project, build a rain barrel as a team, then donate or raffle it during a water festival or Earth Day celebration. (Paint or decorate the barrel to make it more eye-catching). Hold a demonstration to teach others how to build a rain barrel and to share reasons to use one.



Background Information



Running Rain! Catch it! Use it!

During a one inch rain, up to 150 gallons of water could flow from each downspout of a 1000 square foot roof with four downspouts. That's a lot of water that could be put to good use rather than being sent down the storm drain. **Rain barrels** are containers used to catch and temporarily store about 55 to 100 gallons of rainwater. Rain barrels are a good awareness tool. They help people think about stormwater runoff in a new way; to see it as a resource to be used. Use a rain barrel to:

- Create a "conversation starter" to talk about **stormwater** runoff and water conservation
- Help reduce stormwater **runoff** from your yard
- Help conserve drinking water by collecting and using another source of water for watering plants



Instructions:



1. Visit with an adult about using a rain barrel to collect rainwater from the roof of a home or from another building; maybe at school or a fairgrounds.
2. Estimate how much water could flow from one of the building's downspouts during a one inch rain.
3. Decide where excess water will be directed, how the collected rainwater will be used, and who will take care of the barrel.
4. Learn how to build, install and maintain your own rain barrel.
5. Brainstorm ways you can share what you have learned with others or how you can help others build and use rain barrels.

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Estimating the amount of water that could be collected:

- A one inch rain can generate about 0.623 gallons of water per square foot of roof area
- Estimate the square footage of roof area by measuring the footprint of the roof/house from the ground. If it is a simple square or rectangular roof, divide the square footage by 4 (four) to estimate the square footage draining to the one downspout that will be used
- Multiply that square footage by 0.623 to estimate how many gallons will flow from the downspout during a one inch rain

Step 1: Gather supplies needed to build a rain barrel

Tools: (Have an adult help when using these tools)

Variable speed drill 15/16" spade bit Hole saw Jig saw
Hacksaw Pocket knife Tape measure Marking pen/pencil
Safety glasses, ear plugs, dust mask, leather gloves

Storage Container:

- 50 to 100 gallon food-grade plastic barrel, durable & opaque color

Outlet: (faucet to remove water from barrel)

- 3/4" male threaded hose bibb (also called a faucet or boiler drain)
- Thread seal tape and outdoor caulk

Inlet: (where water will flow into the barrel from the roof downspout)

- Plastic kitchen strainer with aluminum mesh

Overflow: (where excess water will flow out of the barrel once it fills up during a rain storm)

- 1.5" PVC pipe, about 5' in length
- Two 1.5" 90 degree PVC elbows
- 1.5" trap adapter (At the hardware store, make sure the PVC elbow fits the trap adapter. You may need a short piece of PVC pipe to connect them. Your hole saw also needs to match the size of the trap adapter.)

Rain barrels need to be durable, opaque in color, have a secure lid & be equipped with an overflow.

For a group project, it would be best to have the holes cut prior to the group assembly. Be sure whoever uses the power tools wears safety equipment.

Did you know?

- Rain barrels filled with water are very heavy. One gallon of water weighs 8 pounds. A 50 gallon container full of water weighs 400 pounds.
- For safety, place rain barrels on flat surfaces and secure them to a building to prevent toppling.



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Step 2: Make the needed cuts in your barrel

1. **Outlet:** Measure 3" up from bottom of the barrel and drill the outlet hole with 15/16" bit.
2. **Overflow:** Measure 3" down from the top of the barrel and cut the overflow hole with the hole saw.
3. **Inlet:** Mark around the strainer basket with marking pen. Drill a 15/16" hole inside the mark; then cut out the rest with a jig saw. Make sure the strainer fits tightly into the hole and will not slip through it.



Step 3: Assemble the Rain Barrel

1. **Outlet:** Screw the spigot into the lower hole. If the fit is really tight, very slightly clean/enlarge the hole with a pocket knife. If the spigot seems loose, unscrew it and wrap with thread seal tape, then screw back into the hole. Use caulk to seal around the spigot if needed.
2. **Overflow:** Screw the 1.5" PVC adapter into overflow hole. If desired, you can wrap the threads with thread seal tape or use caulk for a tighter fit. If using caulk, allow to dry. Attach a 90 degree PVC elbow, about 2 1/2' of PVC pipe, the other PVC elbow, and then the remaining PVC pipe. It's best to measure and cut the PVC pipe after you have installed the rain barrel.
3. **Inlet:** Place the strainer into the hole, and secure it with a screw drilled through the handle.



Step 4: Install Rain Barrel

1. Place the rain barrel on level ground. Elevate it with concrete bricks or other stable platform so there will be room to attach a garden hose to the spigot.
2. Position the barrel, then use a hacksaw to cut a section off of the downspout so it can empty into the inlet. An elbow can be attached to aid this.
3. Direct the overflow pipe away from the foundation to a planted area.
4. Clean the strainer basket regularly. A rain barrel must also be drained, rinsed and stored for winter. During winter, reattach the downspout section that was cut off using screws to secure it.



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Painting a rain barrel with an adult's help:

To paint a plastic rain barrel:

1. Wear the appropriate safety equipment (dust mask/respirator, safety glasses, and gloves).
2. Lightly sand the surface of the barrel.
3. Wipe the barrel with a cloth dipped in mineral spirits.
4. Use a paint formulated for plastic. It is best to use a plastic primer as the base coat. Let dry.
5. If you want to change the background color of the barrel, use paint in your choice of color. If using spray paint, you will likely need two cans to cover the barrel well. Allow to thoroughly dry according to directions from the paint manufacturer.
6. Students can use any good quality, non-toxic paint to decorate the barrel. Markers could also work.
7. Coat the barrel with a protective, clear top coat so the decorations will last. The decorative paint will still be subject to scratching and signs of wear, so handle with care.

Using harvested rainwater:

- Do NOT use harvested rainwater for drinking, cooking or bathing. Do not give it to pets or use it to wash garden produce.
- Rainwater is good for watering potted plants, flower gardens, shrubs, trees, and lawns. It has no chlorine, fluoride, or salts added to it which can build up to harm plants.
- Rainwater can be used for washing vehicles or to fill bird baths.
- Rain barrel water is not recommended for watering edible plants.

Discussion Questions:

1. Why does a rain barrel always need an overflow? (Think about how much water comes off of the roof.)
2. Why shouldn't you drink rain barrel water?
3. If you don't use a rain barrel, where could you direct your home's or school's downspouts to help reduce storm-water runoff from the yard?

Stormwater Sleuth Examines Careers

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