



# St. Patrick's Day SCIENCE EXPERIMENT GUIDE

When you think of Leprechauns, images of little green guys with their funny shoes and buckets of gold instantly come to mind. In recent years, St. Patrick's Day has become more than just a special day to wear something green. St. Patrick's Day has evolved into a day to enjoy traditional Irish food, share stories, sing songs, dye everything imaginable green, and even try to catch one of those little Leprechauns in a homemade trap. Here's your chance to learn some of the secrets of the Leprechauns that are guaranteed to amaze your friends.

## Save 20% on the Leprechaun Science Kit!

As a way of saying thanks for purchasing this experiment guide, we would like to offer you a special **20% discount** on the purchase of our [Leprechaun Science Kit](#) at [SteveSpanglerScience.com](#). Just use discount code **LUCKY13** at check-out and save a nice chunk of change.

## A Word About This Experiment Guide

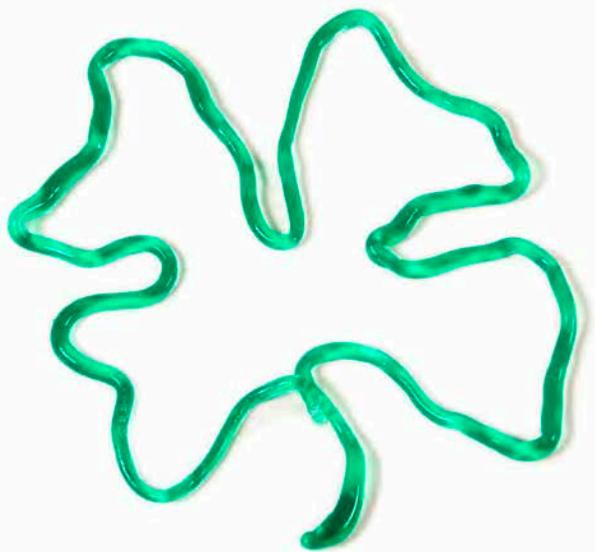
Great teachers never miss the opportunity to create a learning experience out of something that kids love – and that's exactly what this experiment guide is all about, connecting some fun science with a great holiday. The activities all have a great “gee-whiz” factor while introducing children to some cool scientific principles in a sneaky way. It's important to read through the brief instructions that accompany each activity to get the “flavor” and story before you begin.

We've created a section in the write-up for each activity called “St. Patrick's Secrets” – this is where you'll find secret tips and tricks behind the idea of Leprechaun Magic. If you're preserving the element of “magic,” you'll want to keep this information to yourself.

## A Word About Safety

Everything in this kit has been thoroughly tested and is not considered to be hazardous if used with adult supervision. That's right... the activities in this kit require adult supervision. This kit is not intended to be popped open and tossed at a kid with the instruction, “Have fun.” Instead, you might want to use this opportunity to interact with a few ankle-biters and learn a little science at the same time.

Remember that this is a science kit and science can be messy. There are liquids, so you will get wet. Stuff falls on the floor... so you'll need to clean it up so people don't slip and fall. Don't put chemicals in your eyes or ears and don't eat your experiment. Trust us, they don't taste good and it's a bad thing to do. The bottom line is that this science kit requires adult supervision and common sense – simple concepts that ensure a fun and safe experience.



## The Leprechaun Bag

Leprechauns are known for their magical talents, and you'll really fool your friends when you learn the secret of the Leprechaun Bag. This is no ordinary bag... it's a giant sandwich bag! A little known secret about Leprechauns is that they have an incredible appetite – yet they stay so tiny and slim. Ever seen a really chubby Leprechaun? Nope. That was a bit off topic... but this is a little trick Leprechauns perform using one of these very long sandwich bags.

### What You'll Need

- [Windbag](#)
- -OR-
- Diaper Genie bag roughly 6 feet long



### Let's Try It!

1. Tie a knot in one end of the bag. Invite a friend to blow up the bag, keeping track of the number of breaths it takes. Then, let all of the air out of the bag. Explain to your friend that you can blow up the bag in one breath... chances are they won't believe you. But that's all part of the fun!
2. Have your friend assist you by holding onto the closed end of the bag. Hold the open end of the bag approximately 10 inches away from your mouth. Using only one breath, blow as hard as you can into the bag. Remember to stay about 10 inches away from the bag when you blow.
3. Quickly seal the bag with your hand so that none of the air escapes. Tie a slip knot in the end of the bag, or let the air out and try again.



### St. Patrick's Secrets

The long bag quickly inflates because air from the atmosphere is drawn into the bag from the sides along with the stream of air from your lungs.

For you science enthusiasts out there, you are demonstrating *Bernoulli's principle*. In 1738, Daniel Bernoulli observed that a fast moving stream of air is surrounded by an area of low atmospheric pressure. In fact, the faster the stream of air moves, the more the air pressure drops around the moving air. When you blow into the bag, higher pressure air in the atmosphere forces its way into the area of low pressure created by the stream of air from your lungs. In other words, air in the atmosphere is drawn into the long bag at the same time that you are blowing into the bag.

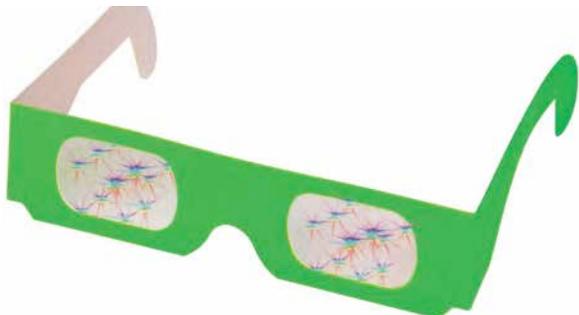
This little Leprechaun secret is the reason why your curtain tries to attack you in the shower. The steady stream of water is just like the fast moving stream of air that allows surrounding air to push toward the middle of the stream.

For more information, check out the [Diaper Genie Balloon video](#).



## Rainbow Glasses

If Leprechauns knew that we were teaching you this secret, we'd all be in huge trouble. You see, everyone knows that Leprechauns hide their pots of gold at the end of a rainbow. When you see a rainbow in the sky, you can just follow it to the end and you'll find the gold... or can you? Why doesn't it ever work?!?! Leprechauns hide their pots of gold at the end of rainbows you normally can't see... unless you have secret rainbow detecting glasses!



**WARNING!** Please keep this secret to yourself. If you happen to find a pot of gold, leave it alone. These little guys work hard for their gold and the last thing they need is for anyone to steal it.

### What You'll Need

- [Rainbow Glasses](#) – cleverly disguised as paper glasses

### Let's Try It!

1. Start by going into a darkened room or turning off the lights before you put on the Rainbow Glasses. Be careful not to touch the lenses of the glasses.
2. Put on the Rainbow Glasses and turn on the lights. WOW... there are rainbows everywhere!
3. As you look around the room, you'll find more rainbows hiding in certain parts of the room.
4. Safety First! Never look at the sun with Rainbow Glasses (or anything for that matter).



### St. Patrick's Secrets

Rainbow Glasses have special lenses made out of a material called *diffraction grating* – a special material that bends and separates light into the colors of the spectrum. You probably noticed that there is a pattern to the colors of the rainbow you observe while looking through the glasses – red, orange, yellow, green, blue, indigo and violet (this is called ROY G BIV order). The diffraction grating material breaks up the light and we observe it in a spectrum, ROY G BIV order.



## Leprechaun Snow

It's not all that unusual to find a Leprechaun living in snowy regions of the world – just ask the kids up in Alaska. Lucky for you, we found some snow that once blanketed the land of Leprechauns, dehydrated the snow (turned it into a powder), and shared some with you in this kit. Don't be fooled when you open the jar... it looks like ordinary white snow... but just like a Leprechaun, it will surprise you!



### What You'll Need

- [Leprechaun Green Insta-Snow](#)
- Large plastic cup
- Small plastic cup
- Pitcher of water

### Let's Try It!

1. Use the blue scoop that comes in your kit to measure out 1 teaspoon (about 5 grams) of Leprechaun Snow powder into a large plastic cup.
2. Fill the small cup to the top with room temperature water (2 oz).
3. Quickly pour all of the water into the cup with the snow powder. Don't take your eyes off the erupting green snow!
4. The moment the water touches the snow, it turns green... and then it erupts into a pile of green snow.
5. Go ahead... put your fingers in the fluffy snow. What's that... you want to do it again? Pour the cup of snow into another container and do it again.
6. Here's a little secret – If you let the snow sit out, the water will evaporate and the once fluffy snow will turn back into the dry powder. That's right... it's reusable!



### St. Patrick's Secrets

Insta-Snow® powder is actually a safe and non-hazardous substance called a *superabsorbent polymer*. The word “polymer” means long chain of molecules. These molecules work together to absorb water like millions of tiny sponges. The Insta-Snow polymer not only absorbs water, but the long chains of molecules swell to an enormous size... 100 times its original volume! The polymer soaks up water, the water-filled molecules swell, and it looks like erupting snow. As you might imagine, the polymer chains have an elastic quality, but they can stretch only so far and hold just so much water. If you allow the water to evaporate, the Insta-Snow powder dries out and returns to its previous state, ready to be used again. The green coloring is a special additive to the original Insta-Snow® powder. Simply wash your hands after playing with the snow to remove any of the green coloring.

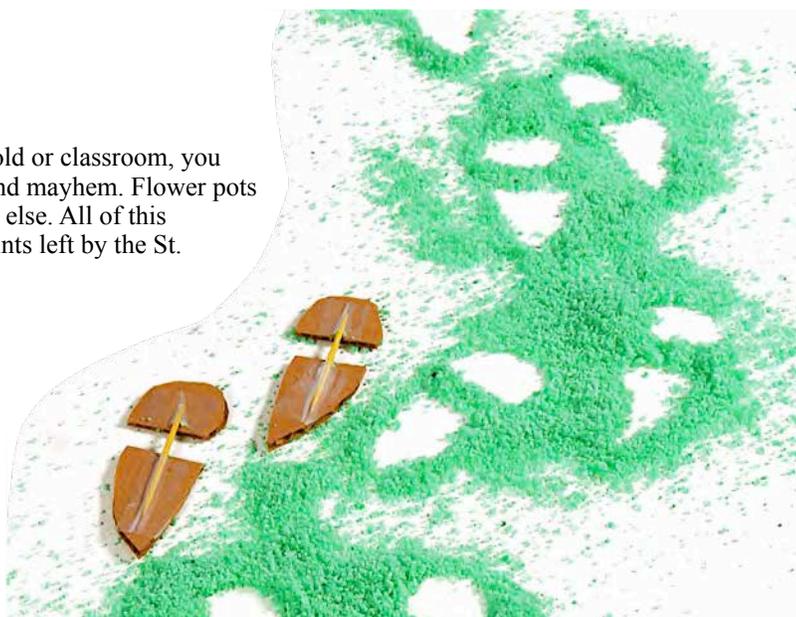


## Leprechaun Footprints

If you've ever had Leprechauns visit your household or classroom, you know that there's one tell-tale sign... destruction and mayhem. Flower pots are overturned, paint is spilt, and who knows what else. All of this mischief is also accompanied by tiny green footprints left by the St. Patrick's Day perpetrators.

### What You'll Need

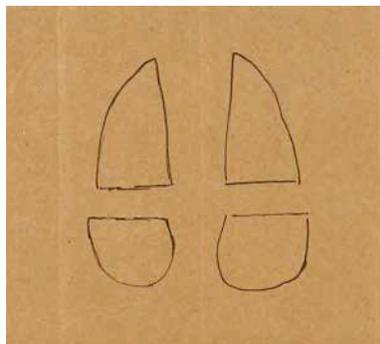
- [Leprechaun Green Insta-Snow](#)
- Cardboard or poster board
- Pens
- Scissors
- Toothpick (optional)
- Washable finger paint
- Paintbrush (optional)



### Let's Try It!

#### Green Snow Boot Prints

Leprechauns from the mountains of Ireland have been known to track snow throughout the house, leaving tiny boot prints of snow everywhere!



1. Find pictures of tiny boot prints and use them to draw or trace boot prints onto a piece of cardboard or poster board. You'll need a left footprint and right footprint if you want it to be as realistic as possible. You can also accomplish this by flipping the template over after you make each print.

2. Use a pair of scissors to cut out the boot prints. You can even make a two-part boot print if you use a toothpick, like in the photos!



3. You need the Green Insta-Snow that you made earlier, or you can mix up a new batch. (Check out *Leprechaun Snow* for mixing instructions.)
4. Lay the boot print cut-outs on the floor, countertop, or table where the Leprechauns caused their mischief.

5. Sprinkle the Green Insta-Snow around the boot print template. Be careful to keep a clean edge around the boot print cut-out... it makes the boot print more recognizable.



6. Gently pull the boot print template off of the surface and... voila! It's a boot print in green snow!

7. Repeat the process with the boot print for the opposite foot (flip your template, if you only have one) for as many boot prints as you want.

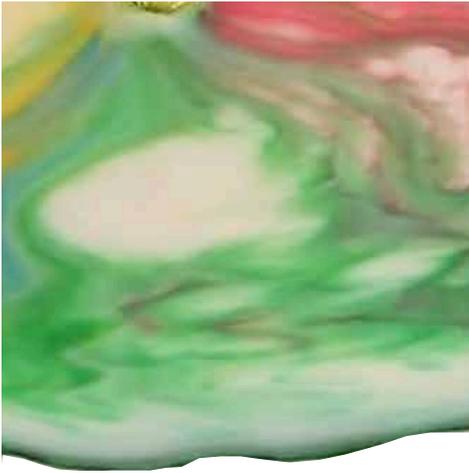
**NOTE:** You can also make entire boot prints of snow (instead of outlines) by reversing the cut out process. Instead of using the cut-out, use the piece of cardboard and fill in the cut-out portion with snow.



### **Green Paint Footprints**

When Leprechauns are from the lower altitude regions of Ireland, they often go barefoot while committing their mischievous deeds.

1. Pour a bit of washable green finger paint into a shallow container.
2. Make a fist with your hand, and lightly dip the outside (opposite of your thumb) into the paint. You can also use a paintbrush to paint the outside portion of your hand.
3. Stamp the outside of your hand onto a hard surface. (Please don't do this on carpet. That's a different type of mischief.)
4. All that's left to do is dip (or paint) a fingertip in the paint and add toes to the tiny footprint!
5. Repeat, alternating hands, until you're satisfied with the amount of Leprechaun tracks.



## Leprechaun Rainbow Milk

With a touch of their magic wand, Leprechauns can turn a few drops of food coloring and a plate of milk into a colorful explosion. It's one of the most breath-taking and spectacular tricks that a Leprechaun can perform, and you definitely don't want to take your eyes off of the rainbow in the plate!

### What You'll Need

- Milk (whole or 2%)
- Dinner plate
- Food coloring (red, yellow, green, blue)
- Dish-washing soap (Dawn brand works well)
- Cotton swabs

### Let's Try It!

1. Pour enough milk into a dinner plate to completely cover the bottom at a depth of about 1/4-inch and allow the milk to settle.
2. Once the milk has stopped moving around, add one drop of each of the four colors of food coloring - red, yellow, blue, and green. Try to place the drops at equal distances, close to the middle of the plate.
3. Find a clean cotton swab, also known as a Leprechaun magic wand, for the next part of the experiment. Predict what will happen when you touch the tip of the cotton swab to the center of the milk. It's important not to stir the mix. Just touch it with the tip of the cotton swab. Go ahead and try it. Does anything happen?



4. Place a drop of liquid dish soap on the other end of the magic wand. Place this soapy magic wand in the middle of the milk and hold it there for 10-15 seconds. Look at the burst of color... it's an entire rainbow in a plate of milk!
5. Add another drop of soap to the magic wand and experiment with placing it in different areas of the milk. Now that's some Leprechaun magic... the colors even move after you've removed the magic wand! What makes the food coloring in the milk move?



## St. Patrick's Secrets

Milk is mostly water but it also contains vitamins, minerals, proteins, and tiny droplets of fat suspended in solution. Fats and proteins are sensitive to changes in the surrounding solution (the milk).

The secret of the bursting colors is the chemistry of that tiny drop of soap. Dish soap, because of its bipolar characteristics (non-polar on one end and polar on the other), weakens the chemical bonds that hold the proteins and fats in solution. The soap's polar, or hydrophilic (water-loving), end dissolves in water, and its hydrophobic (water-fearing) end attaches to a fat globule in the milk. This is when the fun begins.

The molecules of fat bend, roll, twist, and contort in all directions as the soap molecules race around to join up with the fat molecules. During all of the fat molecule gymnastics, the food coloring molecules are bumped and shoved everywhere, providing an easy way to observe all the invisible activity. As the soap becomes evenly mixed with milk, the action slows and eventually stops.

Try adding another drop of soap to see if there's any more movement. If so, you discovered there are still more fat molecules that haven't found a partner at the big color dance. Add another drop of soap to start the process again.

For more information, check out the [Color Changing Milk video](#).





## Green Worms

In the world of Leprechauns, there are green things to eat, green things to drink, green snow, green toys and even green worms. Now, these worms aren't real... they're the ones a Leprechaun uses to go fishing for green fish. Get the idea? Just a little mixing and squirting and you'll have your own pet green worm.

### What You'll Need

- Bottle of Insta-Worm Goo
- Bag of Worm Activator
- Blue scoop
- [Jumbo Test Tube with cap](#) (or similar container)
- Green food coloring
- Water

You can buy the all-inclusive [Clear Insta-Worm Kit](#) at [SteveSpanglerScience.com](#).

### Let's Try It!

1. Let's start by making the Worm Activator solution. Fill a Jumbo Test Tube  $\frac{3}{4}$ -full with water.
2. Measure one blue scoop of Worm Activator powder into the water. Twist on the test tube cap and shake the liquid until most of the powder dissolves.
3. Take off the cap to the Worm Goo solution. With the cap off, add 4-6 drops of green food coloring, putting more coloring in for a more intense green. This step is optional if you don't have any food coloring. Replace the cap, shake the Worm Goo, and you're ready to start making worms.
4. Have a friend hold the test tube containing the activator solution. Squirt a small stream of the Worm Goo into the Activator solution – kind of like squirting out a stream of mustard. Notice how the Worm Goo immediately turns into a long, stringy worm.
5. Go ahead... you know you want to... touch it! Use your finger to swirl the worm in the liquid, but leave it in the water solution for at least 30 seconds for best results.
6. Carefully pull the worm out of the Activator solution to see what you made. Don't worry if the worm breaks... just dip the gooeey end back into the Activator solution to seal it up. Now that's Leprechaun magic!
7. You can make Leprechaun dots by just carefully dripping "dots" of Worm Goo into the activator solution. The little drips of goo will instantly turn into balls or dots.

The worms are safe to touch, but they may stain your hands from the green food coloring. Do not put the worms on any furniture or any surface that might be damaged by water. Keep the worms in the kitchen and you'll be fine. If you let the worms dry out, you'll get... well... dried out worms.



### St. Patrick's Secrets

When you make Insta-Worms, you're learning about the science of polymers. The creative scientists at Steve Spangler Science coined the name, Worm Goo, but the real name of this liquid is sodium alginate. Sodium alginate is a long chain of molecules called a *polymer*. More specifically, sodium alginate is a *polysaccharide* isolated from seaweed. Polymers are large molecules made by linking many smaller molecules together. Polysaccharides, such as starch and alginate, are made by linking together hundreds of glucose (sugar) molecules. Alginate is commonly used as a thickener for foods such as ice cream and fruit pies.

Now that you know this chemistry secret, take a look at food labels the next time you're at the grocery store to find out which other foods contain sodium alginate. Alginate compounds have many uses, including dental impression materials and wound dressings.. The sodium alginate (Worm Goo) immediately changes from a liquid to a solid the moment it touches the Worm Activator solution. The Worm Activator solution contains calcium, which serves to link the long polymer chains together. Scientists call this "cross-linking." When the two chemicals meet, the calcium ions cross-link with the alginate molecules to form a long, worm-like chain.

TRY THIS – it's totally cool. Go to the refrigerator and see if you have any pickles... or even better, pickle juice. Believe it or not, pickle juice contains the same chemical that makes up the Worm Activator – calcium chloride. If you pour some pickle juice into a small bowl and squirt in some Worm Goo, you'll make instant worms. Too cool!

For more information, check out the [Clear Insta-Worm video](#).

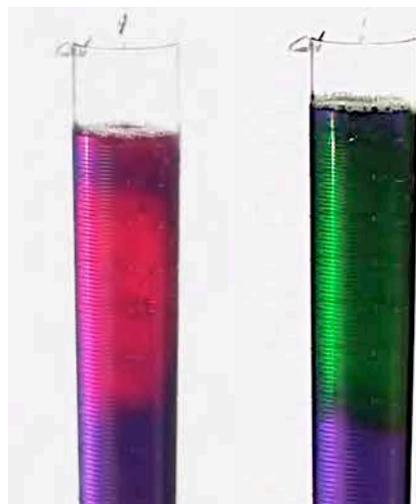


## Magical Leprechaun Cabbage - Rainbow Liquid

You may have wondered why Leprechauns are such big fans of cabbage. Well, it's because cabbage has magical properties. Besides being incredibly smelly, cabbage juice has the ability to change colors. That's why Leprechauns eat so much of the stinky vegetable... it's how they create rainbows! You can use red cabbage to create rainbows of your own, without having to eat it all of the time.

### What You'll Need

- Red cabbage  
(You can also use [Red Cabbage Jiffy Indicator](#))
- Water
- Blender
- Strainer
- Spoon
- Clear graduated cylinders or glasses
- White paper
- Apron or lab coat (avoid nasty stains!)
- Test chemicals: vinegar, baking soda, lemon juice, washing soda, laundry detergent, soda pop, Alka-Seltzer



### Let's Try It!

1. Peel off 6 big cabbage leaves and put them in a blender with 12 cups of water. Liquify! (Depending on how much Rainbow Liquid you want to make, use the optimum ratio of 1 cabbage leaf to 2 cups of water.)
2. Pour the purplish cabbage liquid through a strainer to filter out any big chunks of cabbage. Make sure you take a moment to get a whiff of the fantastic smell. Wow... Leprechauns actually eat this stuff all the time!
3. Set out two graduated cylinders or glasses, side by side, and fill each container half-full with Rainbow Liquid.
4. Now it's time to see why red cabbage juice is called Rainbow Liquid. Pour a little bit of vinegar into the first container. Stir the liquids in the container and watch as it magically turns red!
5. Stir washing soda or laundry detergent into the other container and the liquid will magically turn green!
6. With your remaining Rainbow Liquid, mix in other things like baking soda or lemon juice. What colors do they make your Rainbow Liquid?

### St. Patrick's Secrets

You probably noticed that Rainbow Liquid changes, primarily, between three different colors: purple, red, and green. These colorful changes have a very scientific explanation: acids and bases. The Rainbow Liquid you made is what scientists refer to as an *indicator*. Indicators react with different materials to determine whether those solutions are acids or bases. Rainbow Liquid turns green when it mixes with a base (a material with a pH greater than 7), like washing soda. When Rainbow Liquid turns red, that means that it was mixed with an acid (a material with a pH lower than 7), like vinegar. When Rainbow Liquid is purple, you're at a nice, even pH of 7.

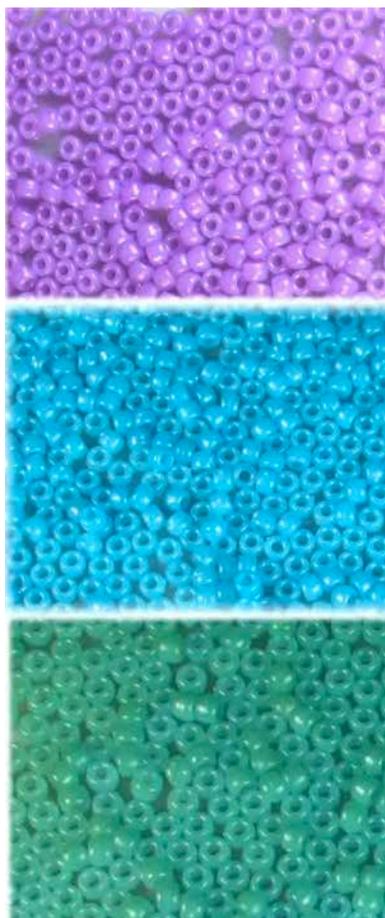


## Rainbow Beads

Leprechauns love to romp and play outside (otherwise known as goofing around and causing trouble) because Leprechauns love the sun. Yes, it's warm and makes it easy to see stuff, but the sun actually gives Leprechauns a special rainbow energy. We know it sounds strange... but you'll learn more about this by making your own Rainbow Bead bracelet.

### What You'll Need

- [UV Color Changing Beads](#)
- Pipe cleaners
- Sunshine



### Let's Try It!

1. It's best to start this activity indoors, away from any sunlight. Thread a few beads onto a pipe cleaner (or you can use a piece of string or leather rawhide for a more permanent bracelet).
2. Have an adult twist the pipe cleaner into a bracelet that goes around your wrist.
3. It's time to step outside and see if there's really hidden rainbow energy in the sun. Don't take your eyes off the beads as you expose them to sunlight. Like magic, the beads change from white to a rainbow of colors.
4. The final test is to see if the rainbow color vanishes from the beads when you go back inside. Don't worry... they'll change back and forth about 50,000 times!



### St. Patrick's Secrets

The science secret is hidden in the light of the sun – it's a type of energy called *ultraviolet light* (or UV light). The Rainbow Beads contain different pigments that change color when exposed to ultraviolet light from any source, including the sun. When you're indoors, the beads are normally white (unless there's some UV light sneaking in from outside or you have light bulbs that give off a little UV light). In UV light, depending on the pigment added to each bead, you will see different colors.

There are lots of cool experiments you can do using the Rainbow Beads. For example, sunscreen lotion smeared on the beads will change the way they change color... and that's just one idea!



## Leprechaun Eggs

So, which came first, the Leprechaun or the egg? Okay, no one really cares, but it's an interesting question. Included in this kit you'll find some Leprechaun Eggs. Unfortunately, they won't hatch into real Leprechauns (FedEx won't let us ship real Leprechauns), but these eggs are just like the real thing. The coolest thing is that the eggs actually become invisible in water... a perfect way for Leprechauns to hide. You'll uncover the growing secret and even use a special trick to find their hiding place.

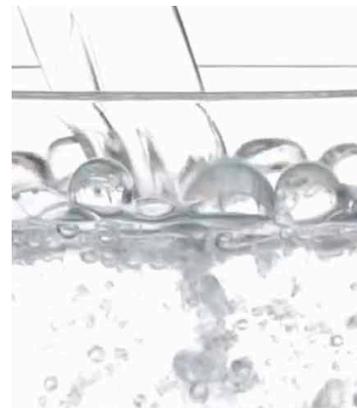
### What You'll Need

- [Jelly Marbles](#)
- [Jumbo Test Tube with cap](#) (or similar container)
- [Green Fizzers](#)
- Water

### Let's Try It!

1. Fill a Jumbo Test Tube  $\frac{3}{4}$ -full with warm water.
2. Open the Jelly Marbles and remove 6 of the tiny Leprechaun eggs and drop them into the water.
3. Here's the hardest part... you have to wait for a few hours for the eggs to soak up the water. Don't be afraid to pull a few out with a spoon every so often to check on their progress. Make sure to notice the changes in shape and size. As they grow, the spheres will take some very unique shapes along the way, but they'll eventually take on the shape of a clear sphere.
4. While you're waiting for your Leprechaun Eggs to grow, put the cap on the Jumbo Test Tube and set it on a flat surface cap down. The test tubes are water tight and won't leak.
5. The Leprechaun Eggs should reach their maximum growth at 5-6 hours, but leaving them overnight will be even better.
6. After the clock hands have gone around and around... take a look at the test tube. It might look like it's just filled with water, but the eggs are huge! Go ahead and carefully pour off the water to reveal the clear eggs.
7. Try this... fill a second test tube  $\frac{3}{4}$ -full with water. Reach into the other test tube and take out a fully grown Leprechaun Egg. Drop the egg into the water and watch it vanish! Drop in a second one... and a third one. They vanish like magic.
8. If you want to make the eggs re-appear, add a Green Fizzers to the water and watch what happens. The eggs become visible.
9. This kit comes with lots of Leprechaun Eggs, so have fun experimenting. In fact, there are enough Leprechaun Eggs in this kit to completely fill the large plastic bucket... and then some!
10. Try this... fill one of the test tubes  $\frac{3}{4}$ -full with water and add 3 Green Fizzers. Drop in a few of the dehydrated eggs and allow them to grow overnight. Grow your own leprechaun eggs to share with friends.
11. Leprechaun Eggs will bounce... and they will also shatter! If this happens, just clean up the pieces and throw them away.
12. If you let the Leprechaun Eggs sit out for a few days, the water inside the egg will evaporate and the eggs will shrink down to their original size.

Remember to never put the Leprechaun Eggs in your mouth. When you're finished playing with them, simply dispose of them in the trash can.





### **St. Patrick's Secrets**

Leprechaun Eggs start out as hard crystals, but when you drop them in water, they expand by absorbing 300 times their weight in water. The secret is a special, water-absorbing polymer that expands to form the amazing clear sphere (what we're calling an egg). When these spheres are finished growing, they're almost 99% water.

If you look closely, you can barely see the outline of the sphere in the test tube of plain water, but colored water will reveal their outline. That's because light passing through the sphere is only refracted (or bent) by the edge of the sphere. Without this refraction along the edges, the Leprechaun Eggs will seem to vanish altogether.

As with everything in this kit, make sure to keep the spheres away from small children because they can be a choking hazard. There's some amazing science with these spheres. Please take the time to learn more.

For more information, watch the [Jelly Marbles video](#).

## Leprechaun Breakfast - The Real Green Eggs

There are some things that Leprechauns enjoy just like humans, like eggs for breakfast. When Leprechauns chow down on a couple of eggs (sunny side up, of course) their eggs are green. After eating a couple of traditional Leprechaun breakfasts, however, we noticed that the green eggs were one of their tricks... not magic. Now we can show you the trick and how you can pull one over on your friends and family, too.

### What You'll Need

- Eggs
- Empty plastic water bottle
- Bowls or plates
- Green food coloring
- Fork
- Super glue



### Let's Try It!

1. Before you're ready to trick your friends, you need to prep your Leprechaun Green Eggs. Start by cracking an egg into a bowl or plate. Be extremely careful not to break the yolk.
2. In your hand, lightly squeeze an empty plastic water bottle. Do your best not to compress the water bottle all of the way.
3. With the bottle lightly squeezed, gently press the bottle's mouth onto the yolk.
4. Slowly release your squeeze on the bottle and watch as the egg yolk jumps up and into the empty water bottle!
5. Since you've separated the yolk, you can now add the food coloring to the egg white. Depending on how green you want your eggs, put 1-5 drops of green food coloring in the egg white and mix it up with a fork.
6. Once you're happy with your egg whites (or are they egg greens?) you can replace the egg yolk by lightly squeezing the bottle, again.  
**NOTE:** *Make as many eggs as you want, but remember that if you plan on eating them, they won't be edible for very long after you've opened them.*
7. All that's left to do is enjoy the look of shock on the faces of all your St. Patrick's breakfast guests.



If you really want to sell your trick, you can try to find a way to carefully replace the egg back into its shell and seal the egg up the best that you can. It might be a good idea to have super glue close by. Don't worry if you can't recreate a perfect egg, it just needs to be convincing to the people you're trying to trick.

### St. Patrick's Secrets

There's no abracadabra spell to turn normal eggs into Leprechaun Green Eggs, but your breakfast guests don't need to know that. The magic behind this trick is all about the preparation and presentation... and that starts with the method you use to separate the egg yolk from the white.

When you squeeze the bottle, you are decreasing the air inside. If you squeeze the bottle while the mouth is facing towards you, you'll even feel air rush out. Releasing the squeeze on the bottle does the opposite, allowing air to rush back into the bottle. If you cover the mouth of the bottle with the egg yolk prior to releasing your squeeze, the available volume inside the bottle is filled by the egg yolk, rather than air. The egg yolk separates easily from the egg white because of their differing viscosity, or measurable thickness. While the egg white is runny and slimy, the yolk is more similar to a solid. The yolk's higher viscosity enables the entire yolk to enter the bottle as the egg white runs off, back onto the plate or bowl.



## Color Changing Carnations

When a lucky Leprechaun lad finds a beautiful Leprechaun lass, he acts much like a human would. He buys her presents, stuffed animals, and flowers. But a Leprechaun won't give his special lady just any kind of flower. He has to take the time to turn his flower green... the color of Leprechaun love.

### What You'll Need

- 3 White carnations
- 3 Plastic cups
- [Green Fizzers](#) (green food coloring is okay)
- Knife (ask for an adult to help)
- Water

### Let's Try It!

1. Fill three plastic cups half-full with water and add 5-10 Green Fizzers to a cup of water. In this case, the more Green Fizzers the better.
2. Before placing a flower in the green water, have an adult trim the stem of each flower at an angle to create a fresh cut. For cut flowers, it is important for the stem tubes to be filled with water. If air gets in the tube no water can move up the stem. Many gardeners and florists cut stems under water so no air bubbles can get in to break the tube of water and make the flower wilt.
3. Place a freshly cut white carnation in the cup colored with Green Fizzers. What do you think will happen? Over time, the carnation's white petals will turn green. Save the other carnations for the next step.
4. Another popular trick is called "Split Ends" and requires some more adult help. Have the adult use a sharp knife to slit the stem straight down the middle. Fill two more cups half-full with water. Make one green but keep the other one clear. Put one half of the stem into the green water and the other half into the clear water. Remember to make fresh cuts on the ends and keep the ends wet at all times. You'll notice that only half of the carnation's petals are changing to green, while the other half is remaining white.



### St. Patrick's Secrets

Okay, now it's time to get technical. There are two things that combine to move water through plants -- *transpiration* and *cohesion*. Water evaporating from the leaves, buds and petals (transpiration) pulls water up the stem of the plant. This works in the same way as sucking on a straw. Water that evaporates from the leaves "pulls" other water behind it up to fill the space left by the evaporating water, but instead of your mouth providing the suction it is due to evaporating water. This can happen because water is very sticky--to itself (called water cohesion) and because the tubes in the plant stem are very small (in a part of the plant called the xylem). This process is called capillary action. When we split the stem, we saw that the xylem are actually continuous and run all the way from the bottom of the stem to the petals.

For more information, watch the [Color Changing Carnations video](#).



## Leprechaun Treasure Polish

What do you find at the end of a rainbow? That's right, a big pot of Leprechaun treasure! Leprechauns take so much pride in their treasure that they polish it all of the time. As you can imagine, the cost of polishing all of their coins started to add up, so they found a new method... taco sauce! It might sound crazy, but just wait until you give this polishing technique a try. Once you've cleaned a some treasure, hold on to it. We're going to use it to catch Leprechauns!

### What You'll Need

- Dirty pennies
- Taco sauce  
(mild sauce from Taco Bell works well)
- Small plates
- Water

### Let's Try It!

1. Gather up a bunch of dirty pennies from your piggy bank, in between the couch cushions, or ask your parents for a few. The dirtier the pennies are, the better you'll be able to see the taco sauce at work.
2. Once you've found plenty of dirty pennies, place two or three of them on a small plate and cover the top-sides of the coins with taco sauce.
3. Allow the taco sauce to sit on the pennies for 2-3 minutes.
4. Once you're ready, take the pennies off of the plate and rinse them in water.
5. Compare the side of the pennies that were covered in taco sauce with the non-sauced side. This is no St. Patrick's Day myth... the taco sauce really does the trick.

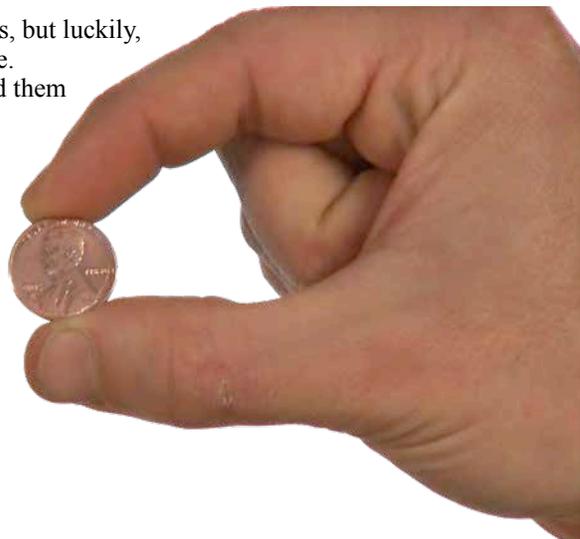


### St. Patrick's Secrets

It's no wonder that Leprechauns have turned to taco sauce for all of their treasure polishing needs... just look at the job taco sauce did on those dirty pennies! The truth is that Leprechauns did their research on the ingredients included in taco sauce. In particular, Leprechauns know that taco sauce contains vinegar and salt. When salt is dissolved in a vinegar solution, the salt breaks down into sodium and chloride ions. The chloride ions combine with the copper in the penny to actually remove the dirt and tarnish from the surface of the penny. The results are evident in that shiny piece of Leprechaun treasure that you've made.

Now, we realize the we haven't made gold out of these pennies, but luckily, Leprechauns are so greedy that they won't know the difference. Hopefully you've made a few shiny coins, because you'll need them to attract a Leprechaun to your Leprechaun Trap!

For more information, watch the [Taco Sauce Penny Cleaner video](#).

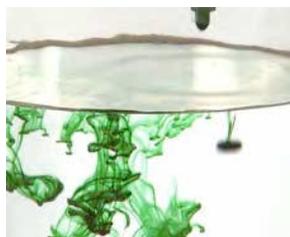


## Green Quicksand - Leprechaun Trap

If there's one thing that Leprechauns can't resist, it's a bunch of shiny coins. Since you just learned how to clean pennies using taco sauce, you have exactly what you need to lure some tiny, green men! Now you need to figure out a way to trap them. We've got just the thing... Green Quicksand. Once you've perfected the mixture, we'll help you set up a foolproof Leprechaun trap!

### What You'll Need

- Box of cornstarch
- Large bowl
- Water
- Food coloring
- Spoon
- Small, plastic toy
- Zipper lock bag



### Let's Try It!

1. You'll want your quicksand to have a familiar green hue if you're going to successfully catch a Leprechaun, so add 3-5 drops of food coloring to a pitcher of water.
2. Pour 4 oz of cornstarch into the large bowl and slowly add 1/2 cup of your green water. You can stir the mixture up with a spoon, but you'll get better results (and have more fun) if you use your hands.
3. Continue to add cornstarch and water in small amounts until you get a mixture that feels like honey. It might take a little work, but you'll want the perfect Leprechaun-catching consistency. (A good ratio will end up being about 10 parts cornstarch to 1 part water, so you'll probably end up with an entire 16 oz box of cornstarch mixed with 1-2 cups of water.)
4. Once you're comfortable with your quicksand's consistency, sink your hand into the bowl. Compare what it feels like to move your hand slowly around the mixture, and then very quickly. You won't be able to move your hand very fast. In fact, the faster you try to move your hand, the stronger the quicksand seems to become.
5. It's time to simulate trapping a Leprechaun in the quicksand. Drop a small, plastic toy into the quicksand and let it sit for 5-10 seconds. Now try and pull it out... it's tough, even for an experienced quicksand mixologist! That means this quicksand is perfect for trapping Leprechauns.

### St. Patrick's Secrets

Green Quicksand's ability to act like a solid sometimes and like a liquid at other times is the perfect substance for catching Leprechauns. You saw how effective Green Quicksand was at grabbing the small plastic toy! So how does quicksand imitate both a solid and a liquid?

Actually, Green Quicksand is an example of what is called a *non-Newtonian fluid*. Non-Newtonian fluids defy Sir Isaac Newton's law of viscosity. *Viscosity* is the measurable thickness or resistance to flow in a fluid. When you pour a pitcher of water you are witnessing a fluid with a low viscosity, and if you try the same with honey, you see what a liquid with high viscosity looks like.

Newton stated that viscosity can only be changed by altering the fluid's temperature, like when you heat up a bottle of honey. The same is true for non-Newtonian fluids, but their viscosity can also be changed by applying pressure. This is why, when you try moving your hand quickly through the quicksand, it becomes incredibly difficult. When you move your hand slowly through the quicksand, or just try pouring the mixture, it moves just like a liquid.



## Quicksand Mote - The Leprechaun Trap

So you've created shiny Leprechaun treasure to lure a tiny green man into your clutches and a batch of Green Quicksand to make sure he doesn't get away. All that's left is to set up your Leprechaun Trap! Before you know it, you'll have a Leprechaun stuck in your quicksand, ready to lead you to his pot of gold.

### What You'll Need

- Clean, shiny coins
- Green Quicksand
- Chip-and-dip bowl  
(You can also use two bowls)
- Cardboard
- Various craft supplies

### Let's Try It!

1. Let's trap those tricky little Leprechauns! Place your shiny pennies in the "dip" portion of a chip-and-dip bowl. (You can also use two bowls. In this case, place your shiny pennies in the smaller of the two bowls.)
2. Once you've got your Leprechaun luring coins in place, pour some of the Green Quicksand into the "chip" portion of the chip-and-dip bowl.
3. Leprechauns are pretty tiny, so you might need to construct a ladder for them to get to the lip of your bowl. You can use almost anything you want. We suggest cardboard because it's quick and easy.
4. It's also a good idea to add Leprechaun-friendly decorations. Use craft paper, cardboard, markers, and paint to add things like rainbows, clovers, and green decor.
5. On the night of March 16th, set up your Leprechaun Trap where you know you'll lure some Leprechauns. We've found that they love counters and tables, but your house or classroom might be different.
6. Leprechauns have been known to come out at almost anytime on St. Patrick's Day, so make sure you check your trap regularly!



### Disposing of Green Quicksand

Never throw quicksand down the drain. Eventually the cornstarch will separate from the water as a solid clump and this clump will clog pipes and drains. When you're done with quicksand, pour it into a zipper-lock bag and throw it in the garbage



## **Leprechauns Strike Again**

This entire story is boring and really only intended for adults. So, if you're a kid, it's probably best that you skip this one and go back and play with the cool stuff in this kit. Just let your boring adult friend read this story...

### **Steve Spangler's St. Patrick's Day Experience**

I will never forget St. Patrick's Day 2006. That morning I woke to the screams of our almost four year old twins, Mark and Scott.

"Daddy, wake up! Look at what those Leprechauns did," yelled Scott.

I jumped out of bed to find the twins picking up green and gold coins that peppered the living room floor. Traces of gold dust covered the counter top, and a glass of water that was left next to the sink was now green. By this time, our seven year old, Jack, was scouring the house in search of more evidence of Leprechauns.

"Mom! Dad! Bring the boys here. Look at what I found in the toilet," screamed Jack.

You guessed it... the toilet water was green. This was sufficient evidence for the twins that our home had been visited by Leprechauns – they took the bait hook, line and sinker. As I glanced over at Jack, I could see his wheels were spinning. While he never said anything out loud, his facial expression told me that he wasn't buying this whole Leprechaun thing.

"What do you think about those Leprechauns?" I asked. "Oh, it's pretty cool," Jack replied. Then he whispered to me, "Daddy... I kind of know that Mommy just colored the water with food coloring."

For the first time as a parent I felt his disappointment. He wanted so badly to believe, but his ability to think and reason was getting in the way of him believing in Leprechauns. My little boy was growing up – figuring things out – becoming wise to the ways of the world. In the meantime, Jack's brothers were caught up in the frenzy, searching each toilet and sink for more green water. In a split second I had to respond. "Jack, you're probably right. But let's keep it our little secret... deal?"

Jack seemed fine with the deal, but his face told a different story. The magic was gone. I walked Jack over to the kitchen sink and handed him an empty glass.

"If Leprechauns were real, the water coming out of the faucet would be green," I said, with a sense of defiance in my voice. Just then I turned on the faucet and the water began to flow... and it was green!

"Oh my gosh! Daddy! It's green! Mommy, come here... right now! Mark, Scott, get over here!" This time the screams of excitement were real. "Mommy, the Leprechauns are real. They really colored our water. Look at this..." A wonderful sense of fun filled the house as the boys ran from faucet to faucet to check the water supply. In each case, the water came out green.

Call me sappy, but I could feel the hair on the back of my neck stand up as I looked over at Mommy who was holding the glass of green water.

"The water came out green," Renee said, with a smirk on her face. "I know the Leprechauns must have visited last night."





But there's more ... **It's probably best that you stop reading this if you still want to believe.**

If you want to know how we made the water turn green, keep reading. The secret is nothing more than a few coloring tablets secretly hidden in the screen of the faucet. The tablets are called Fizzers and you have a package of 108 Green Fizzers in this kit.

**If you want to pull off the greatest St. Patrick's Day leprechaun trick of all time, look no further.**

1. Unscrew the screen piece from the end of a faucet that your leprechaun hunter is sure to check.
2. Dry the screen with a paper towel and place two or three Green Fizzers in the reservoir.
3. Twist the screen piece back onto the end of the faucet.
4. When you turn on the water, the tablets dissolve and color the water. Remember, this only lasts a short time and the color is the most vivid during the first few seconds.

Some things you might want to know when executing this trick:

- The Green Fizzers won't stain and are perfectly safe for the little ones. You'll be amazed at the giant memories that such a small and simple trick can produce.
- Remember that it only lasts for a short time before the coloring tablets completely dissolve, and the color is the most vivid during the first few seconds. Be sure to collect a sample to prove that it really happened!
- It's amazing to me that something so small and easy to do can make a memory as unforgettable as this. I hope the Leprechauns find their way to your home.