

THE
ULTIMATE
Halloween
Science
Experiments



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The Ultimate Halloween Science Experiments

Mad Marc
(Wileman)



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Ultimate Halloween Science Experiments

Halloween will soon be upon us and no doubt you're looking for some spooktacular science experiments to add to the fun. Help is at hand with the Ultimate Halloween Science Experiments!

Mad Marc



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WARNING: (legal type stuff)

WARNING No 1:

You and your child may have the best Halloween ever and learn loads of science too!

WARNING No 2:

All these experiments are reasonably low risk however things can (and will) sometimes go wrong! Please follow the instructions carefully, make sure you have an adult on hand to help out and note that I or Sublime Science expressly disclaim all liability for any occurrence, including, but not limited to, damage, injury or death which might arise as consequences of the use of any experiment(s) listed or described here. Therefore, you assume all the liability and use these

science experiment projects at your own risk!



Mad Marc Says: Get a sane and sensible adult to help you - get stuck in - have a go and enjoy doing it!

INTRODUCTION:

What's it all about?

So many parents have asked for fun and spooky science experiments to add to the fun this Halloween. I'm honoured to be able to share The Ultimate Halloween Science Experiments with you!

Who wrote this thing?

Hi! I'm Mad Marc (Marc Wileman on more sensible occasions!) and I founded Sublime Science to show children just how awesome science can be!

I'm best known as that guy who faced the Dragons on Dragons' Den, firing smoke rings and making slime!

I'm proud to say we've made science awesome for more than 500,000 kids and have even received the Queen's Award from Her Majesty the Queen!

- Enough about me - Let's get started!



1. Unbelievable Bat

If you're putting up some Halloween decorations it's pretty likely there will be bats all over the place. What could be more spooky than bringing them to life with some static science?



What do I need:

- Balloon
- Tissue paper
- Tape
- Scissors

How do I do it?

STEP1 - Let's make our first bat! Get an adult to help out with carefully cutting your bat out of tissue paper.



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STEP2 - So that your bat 'flies' and doesn't just 'stick' tape your bat to the table.

STEP3 - Blow up your balloon.

STEP4 - Rub your balloon on your hair or on something woollen (like a scarf or a pullover) to charge it up.

STEP5 - It's time for our bat to fly! Put the balloon near to your bat and watch as your bat eerily comes to life and starts to fly!



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What's going on?

Not only is our Unbelievable Bat super spooky and the perfect way to bring our Halloween decorations to life but there's some real science in here too!

So why does your bat take flight? Well, as you rub the balloon on your hair you load it up with a static charge. When you bring your balloon close to your bat that charge attracts the opposite charge on your tissue paper bat.

This pulls your tissue paper bat towards your balloon and lifts it into spooktacular flight!

More Fun Please - Experiment like a real scientist!

- What's the biggest tissue paper bat you can get to fly? You could turn this into a spooky competition with your friends!
- How high can you get your bat to fly? What could you use to increase the range? More balloons? String?
- How many bats can you get flying at once?

2. Spooky Slimer

What could be more perfect for Halloween than making your very own Spooky Slimer. A quick twist on the legendary slime making experiment that's sure to make a spooky addition to your Halloween plans.



What do I need?

- PVA glue (clear is best)
- Food colouring (green!)
- Plastic eyes
- Cup
- Stick
- Borax (notes below)

How do I do it?

STEP1 - For this experiment you will need to get some Borax. You can either get this from your local pharmacy or online.

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STEP2 - Add a 2 cm covering layer of clear PVA glue to your cup.



STEP3 - Add a splash (about a teaspoon) of water and mix it in to your PVA glue to make it more runny!

STEP4 - Add around 5 table spoons of your borax to around 250 ml of water and stir well. Label it appropriately so no one drinks it.



STEP5 - Add a teaspoon of your borax solution to your PVA at a time and keep mixing. You will need to add around 3 teaspoons in total.

STEP6 - Add eyes to your Spooky Slimer and make sure to wash your hands thoroughly after experimenting!



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WARNING: You can't drink Borax so don't mix this in anything you'll use to drink from. Make sure that you wash your hands thoroughly after touching your Slimer.

What's going on?

Not only did you just make slime but you also just did a chemical reaction! The 'P' in PVA glue stands for 'Polymer' and you just did a chemical reaction where the glue stuck to itself which is what turned it into slime!

Technically it's a cross-polymerisation reaction. Your PVA glue is a polymer and that just really means that it's made of long chains of stringy molecules. By adding your borax you cause a chemical reaction that 'tangles' those long polymer chains which is what turns your goo into glue.

More Fun Please - Experiment like a real scientist!

- What's the perfect mixture to make the perfect slime?

3. Apple Eruption

Bobbing for apples is an absolute classic at Halloween but why not try something different this year and make yourself an Apple Eruption instead.

What do I need?

- Apple
- White vinegar
- Baking powder
- Green food colouring
- Plate
- Knife



How do I do it?

STEP1 - The first thing is to make our apple volcano and we'll need to have an adult help out. Get an adult to carefully carve out a hole in the top of your apple.



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STEP2 - Fill about half of the hole you just made with 3 teaspoons of baking powder.



STEP3 - Place your apple on a plate or somewhere that you don't mind making a mess.

STEP4 - Mix a few drops of green food colouring into your white vinegar to make things even more disgusting.

STEP5 - Let's start our Apple Eruption! Fill the rest of the hole in the top of your apple with green vinegar...



STEP6 - Sit back and relax and enjoy your Apple Eruption.

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What's going on?

Hope you enjoyed your Apple Eruption but what's going on?

This is a Halloween twist on the classic volcano experiment. It's the age-old 'acid/base' reaction. Our white vinegar is our acid and the baking powder is our 'base' (otherwise known as an alkali).

When the acid and the base mix together we get a chemical reaction. We can tell there's a chemical reaction going on because of all the bubbles we can see within our 'green lava' as it flows over our apple. These bubbles are full of carbon dioxide.

More Fun Please! - Experiment like a real scientist!

- What other (safe!) acids could you test out instead of white vinegar?
- What's the perfect combination of baking soda and vinegar to make the perfect Apple Eruption?
- Could you take the Apple Eruption up a notch? How about using a pumpkin?!?

4. Flying Bat Rocket

What could be more fun than making your own rocket launcher? Well, as it's Halloween, how about making a spooky flying bat rocket?

What do I need:

- Bottle
- Sellotape
- Straw
- Blu-Tac
- Scissors
- Scrap paper
- Black paper



How do I do it?

STEP1 - The first thing is to assemble your rocket launcher and the very first step is to wrap a ball of Blu-Tack around your straw taking care that the straw stays 'open' so the air can get through.

STEP2 - Seal the Blu-Tack ball into the top of the bottle so that it's just about airtight.



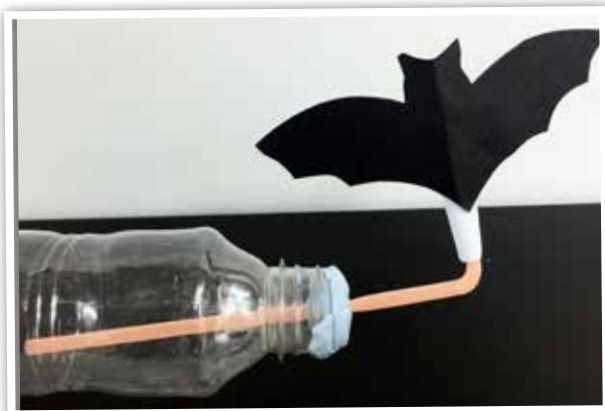
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STEP3 - Now let's make our rocket chassis. Cut a small piece of scrap paper about 5cm long and roll it into a tube that fits (not too tightly) around your straw.



STEP4 - Fold the top of your paper chassis over and tape it down.

STEP5 - Now, it's time to add our bat! Cut out a bat shape from black paper (or just use regular paper and colour your bat in) and tape your bat to your paper chassis.



STEP6 - To launch your flying bat rocket simply 'bash' your bottle down and watch your bat go flying off into the air!

What's going on?

Your flying bat rocket is awesome, right? But how does it work?

Your flying bat rocket is a great example of pressure. As you squash your bottle you increase the pressure and there is only one way out, through the tiny hole at the end of your straw. This makes the air come out quickly and pushes your flying bat rocket across the room.

More Fun Please - Experiment like a real scientist!

- Which is the best size of bottle to make your flying bat travel furthest?
- Which type of straw works best? A party straw? A smoothie straw?
- How can you design the best rocket to fire the furthest? How far can you make it fly?
- If you want to see how the air flows you can fill up your bottle with water and try the experiment out. Do this somewhere you don't mind making a mess!

5. Biohazard Brain In A Bag

Halloween is all about being gory, right? Well, what could be more gory than doing brain surgery on your very own Biohazard Brain In A Bag. Let's get cracking!

What do I need:

- Sandwich bag
- 3 pencils
- Red food colouring
- Pen
- Plate



How do I do it?

STEP1 - The first thing to do is to draw your 'brain' onto our sandwich bag.

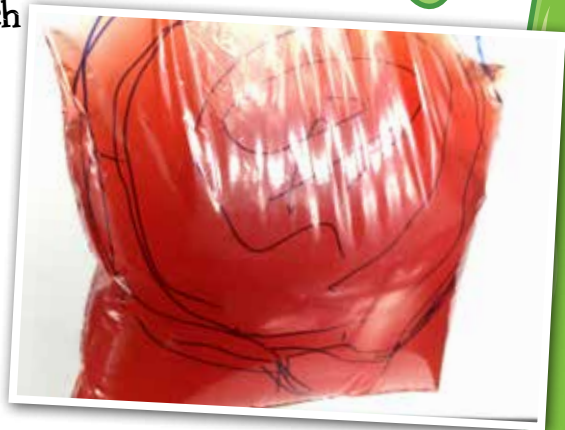
It's almost impossible that you'll be worse at drawing than me so just take this as a rough idea and make sure yours looks way more awesome!



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STEP2 - Fill your sandwich bag with water.

WARNING: Make sure that you do this experiment somewhere where you don't mind making a bit of a mess. The kitchen might be perfect!



STEP3 - Add some red food colouring to make your brain look even more disgusting.

STEP4 - It's time to attempt brain surgery on your Biohazard Brain In A Bag!

STEP5 - Carefully push your pencils through your brain in a bag...does it leak? Why not!?!?



What's going on?

Pretty nerve-wracking putting that first pencil through your brain in a bag wasn't it? Did you feel sure that your brain in a bag was going to leak everywhere?

How does it work? Well, what happens when you take the pens out? (Best to try this over the sink!) As soon as you remove the pens you create a space and the water comes out. But with the pens still in there's no room for the water to squeeze out as the plastic sandwich bag stretches around the pens, forming a tight seal!

More Fun Please - Experiment like a real scientist!

- Does putting more or less water in your brain in a bag change things?
- What else could you try this experiment with? Apart from pencils?
- Does it make a difference if the top of your sandwich bag is open or closed?

6. Explosive Ghost Rockets

If ghosts are pretty awesome and rockets are always awesome then just imagine how awesome making Explosive Ghost Rockets is going to be. Don't panic if you don't have any of those 'old school' film canisters (from when I was a kid) - there's a simple way round it that works just as well!

What do I need:

- Film canisters (or children's fizzy vitamin container)
- Alka-Seltzer
- Glass of water
- Marker pen

How do I do it?

STEP1 - Use your marker pen to quickly decorate your film canister so that it looks like a ghost!



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STEP2 - Go outside!!! - You must be **OUTSIDE FOR THIS EXPERIMENT.**

STEP3 - Half fill each of your film canisters with water.



STEP4 - Pop half an Alka-Seltzer tablet in each canister, put the lid on, and then flip the canister upside down.



STEP5 - Stand back and enjoy as your Exploding Ghost Rockets fly off into the air.

NOTE: - if you don't have any film canisters remember that the containers for children's fizzy vitamin tablets work just as well and are in all the main supermarkets.



What's going on?

Did you notice that as soon as you put your tablet into the water it started to fizz? Well, those bubbles are happily escaping into the air, until you put the top on!

Then there's nowhere for the bubbles to go. More and more bubbles get crammed in until the lid can take it no more and explodes off. This fires your canister rocket into the air and makes a mess! Awesome, right?

More Fun Please - Experiment like a real scientist!

- What temperature water makes your rocket fly highest?
- How much water should you put in each canister for it to go highest?
- How many tablets make your rocket fly highest?
- Do the Alka-Seltzer or the vitamin tablets work best?

7. Exploding Ghoul

Ghouls are spooky enough at the best of times but what if there was a way that we could make our ghouls explode? And do our own chemical reaction too? Welcome to the Exploding Ghoul...

What do I need:

- White vinegar
- Toilet roll
- Baking powder
- Marker pen
- Sandwich bag
- Plate



How do I do it?

STEP1 - Before we get started we need to turn our sandwich bag into our ghouls ready to explode. Grab your marker pen and your sandwich bag and show the world you're 10 times the artist I am!



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STEP2 - Pour some white vinegar into your sandwich bag so that there's a layer a couple of cm thick at the bottom of your bag.

WARNING: Make sure that you explode your Ghoul outside!



STEP3 - Wrap up 3 teaspoons of baking powder inside a piece of your toilet roll.

STEP4 - Now for the slightly tricky bit. Hold your baking powder in toilet roll inside your sandwich bag but above the vinegar and pull the zip closed.



STEP5 - Release your toilet roll baking powder and watch as your ghoul starts to expand...it's time to stand back!

What's going on?

Why does your ghouL explode? This one is all to do with pressure.

Could you see the bubbles when you dropped your baking powder into your vinegar? Those bubbles tell us that there is a chemical reaction going on. Our vinegar is an acid and our baking powder is an alkali and when they mix together there's a chemical reaction and carbon dioxide is given off.

This carbon dioxide fills up our sandwich bag until our ghouL can take it no more and explodes!

More Fun Please - Experiment like a real scientist!

- How can you make your ghouL explode more quickly?
- How does adding more vinegar change your experiment?
- How about adding a different amount of baking powder?

8. Spooky Teabag Rocket

Normally, there's not much better in this life than a decent cup of tea. Unless, of course, we're approaching Halloween. Then it makes perfect sense to abandon a brew in order to make yourself a Spooky Teabag Rocket!

What do I need:

- A teabag!
(A specific type of teabag which can be unfolded into a cylinder shape - I used PUKKA)
- Plate
- Scissors
- Matches or a lighter
- Marker Pen



WARNING: Adult help is required for this experiment as it involves using fire.

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How do I do it?

STEP1 - Use your marker pen to make your teabag rocket look a little more spooky.



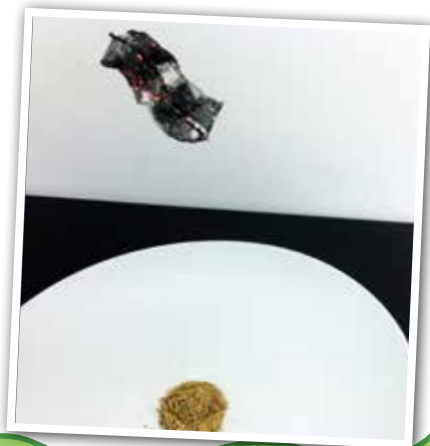
STEP2 - Get an adult to chop the top off your teabag with a pair of scissors and unravel your teabag to make your teabag cylinder.



STEP3 - Use your tealeaves to make a little launch pad on your plate and make sure your teabag rocket is pointing straight up.

STEP4 - Get an adult to help out and light your teabag cylinder and stand back...

STEP5 - Watch your teabag rocket fly beautifully into the air!



What's going on?

You know how hot air rises? If you ever forget think of a hot air balloon and the fire they light to make those launch!

As your teabag is on fire this heats up the air and that hot air rises. The 'normal' surrounding air gets 'sucked' in to fill that gap and this lifts your teabag up.

This is a great example of convection. As your teabag is on fire it obviously heats up the air around it. This means that air expands, gets less dense and so rises up.

This lowers the pressure around your teabag rocket and the surrounding air rushes in to equalise the pressure lifting your teabag rocket into the air!

More Fun Please - Experiment like a real scientist!

- What other types of teabag could you try?!?
- See which type of teabag goes highest?

9. Growing Ghost

If regular ghosts are spooky and cool then just imagine how cool it would be to make your very own ghost and have it grow in front of your eyes!

What do I need:

- White vinegar
- Baking powder
- Spoon
- Balloon
- Marker pen
- Plastic bottle



How do I do it?

STEP1 - Time to be amused by my complete lack of artistic skill as you take your marker pen and turn your balloon into a more ghostly fellow!



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STEP2 - This bit is a little tricky but you need to get around three teaspoons of baking powder into your balloon.

STEP3 - Half fill your plastic bottle with some white vinegar.

STEP4 - Keep your balloon upside down (so the baking powder stays in) and stretch the neck of the balloon round the top of the bottle.

STEP5 - Lift your balloon up so that the baking powder falls down into the vinegar.

STEP6 - Stand back and admire your Growing Ghost!



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What's going on?

What causes our ghost to grow? In other words, what causes our balloon to fill up?

We know that our balloon starts to fill when we turn the balloon over and so we know that it must be caused by our baking powder mixing with our white vinegar.

When our vinegar (which is an acid) mixes with our baking powder (which is an alkali) we get a chemical reaction. This reaction gives off carbon dioxide which fills up our balloon and causes our ghost to grow!

More Fun Please - Experiment like a real scientist!

- How big can you grow your ghost? Be careful of your ghost actually exploding!
- Does the temperature of the white vinegar make a difference?
- Does it make a difference how much baking powder we put in our balloon?

10. Giant Bat Rocket

If you thought that the Flying Bat Rocket was cool then just wait until you make yourself a Giant Bat Rocket. I reckon you've already got everything you'll need. Let's get cracking.

What do I need:

- Two * 2 litre plastic bottles
- Sellotape
- Scissors
- Black paper
- Marker pen
- Toilet roll



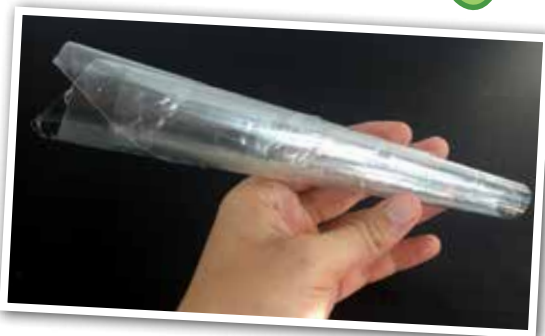
How do I do it?

STEP1 - Make your bat by folding and taping your toilet roll down. You can also add wings and a face for extra awesome points!



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STEP2 - Make your connector. Make sure you've got an adult to help out. Squash the bottle flat and have an adult use the scissors to remove both the top and bottom of your bottle.



STEP3 - Now you'll have a plastic rectangle. Twist your plastic round until you make it a cylinder of just the right width to fit perfectly into the end of your other bottle.

STEP4 - Tape your cylinder inside of your main bottle. Pop your bat on top and get ready...

STEP5 - Stomp on your main bottle to fire your bat!



What's going on?

Hope you love your Giant Bat Rocket?!

You tell me? What happened when you stomped on the bottle? Where did the air go?

That's right, straight out of the nozzle. So, if you've got a bat rocket on the end it will get blasted across the room! As you stomp on the rocket you increase the pressure. As the nozzle is relatively thin the air comes out really quickly, takes the rocket with it and flies across the room.

More Fun Please - Experiment like a real scientist!

- Test out different size bottles.
- How can you build the perfect rocket? Use cardboard? paper? How about adding some weight with some Blu-Tack?
- How can you make your rocket fly furthest?
- What could you set up and knock down for target practice. Not strictly science but plenty of fun!

Don't Let The Fun Stop!

I hope you loved the book but let's keep the fun going!

Claim your **FREE** digital copy of "Don't Eat Your Slime" - it's 5 star reviewed on Amazon & packed full of more awesome experiments. Grab your copy **FREE** at:

www.DontEatYourSlime.co.uk

Kids Party Coming Up?

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