

The Green Frog News

Professor Lou's Lab - a special edition of The Frog!

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TGFN is a project of the Hohokam Resource Conservation and Development Area, Inc.

slime

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Occasionally, during the summer, gardeners notice a growth on their bark mulch which closely resembles - should I say it - dog vomit.

Known as slime mold, these fungi were once considered to be animals due to their ability to move around.

Mycologists (those who study fungi) now consider these strange organisms to belong to a class called Myxomycetes; myxa (slime) and myketes (fungi).



Slime Mold on Bark Mulch



Professor Lou's Lab

The slime molds live in cool, shady, moist places on decaying wood, leaves or other organic matter still holding lots of moisture. Bark mulch in a flower garden or shrub bed certainly fits that description! The same type of organism is often seen in the woods on decaying logs. Over 700 species are reported as existing.

Careful where you step!



Hi! I'm Professor Lou, and welcome to my lab! In this issue, we are going to investigate my favorite topic - sticky stuff!

I am going to show you some really cool molds, frogs, insects, fish, and how you can make OOZE.

Have you ever looked in your home, backyard or classroom for really cool slimy things? Why do you think things are sticky or slimy? Well, it's time for you to become **slime detectives** and find out! Things like peanut butter and honey are a great place to start, but what else can you discover? Have fun!

-- Your friend, Lou

Oh, and by the way, **What is YOUR favorite sticky thing?**

The Green Frog News is published as a project of the Hohokam Resource Conservation and Development Area, Inc., a (501)(c)(3) agency.

Our site, <http://www.thegreenfrognews.com>, offers **free science** resources for educators for grades K - 8 including coloring, experiments, newsletters, fact sheets, and much more. Our newsletters are designed to augment existing curriculum, and are downloadable, and reproducible.



Frog Staff: Angie, Blake, Simon, Amigo the Frog, Professor Lou, Keith, Dianne, Robert and Lisa

Contributors: Curtis Swift - Colorado State University, The Exploratorium, Sundew Matt, SPLASH, NOAA, Rachel Smith

We would love to hear your comments and suggestions. You can contact us at: (480) 250-9030 or greenfrognews@yahoo.com

Sticky Search



Adhesives are used to stick things together. Many adhesives we use every day are made in factories. Others occur in nature and have important uses for plants and animals.

Look inside your home, in your backyard and in your classroom - list five things that are or use adhesives.



1. _____

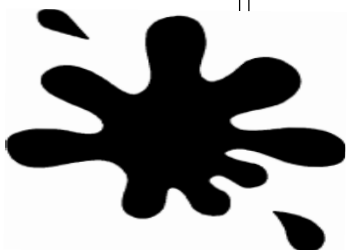
2. _____

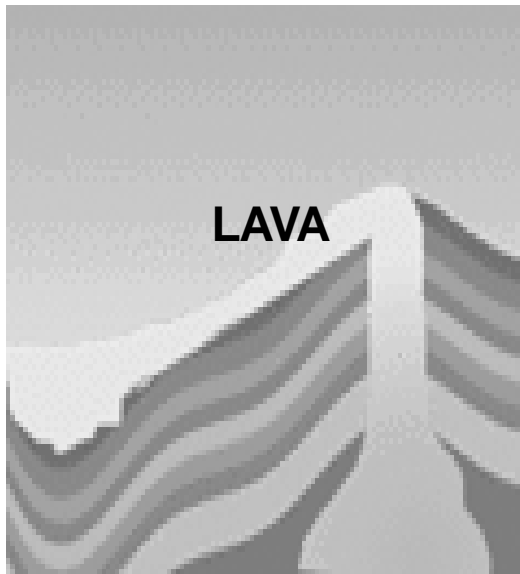
3. _____

4. _____

5. _____

What are the adhesives you found used for?





We've all seen pictures of volcanos erupting - hot lava flowing, smoke billowing and ash filling the air. Well, did you know that lava can be made of different types of magma (melted rock)? It's true! Runny lava is made of melted basalt, and it can flow very far. This type of lava forms a low, wide volcano. Lava that is sticky is made of dacite and rhyolite. Because the lava is so sticky, it moves slowly and forms taller, steeper volcanos! Look at pictures of volcanoes and see if you can tell how sticky the lava flow was based on the shape! For great information on volcanos, visit Volcano World at <http://volcano.und.nodak.edu/>.



Not sure of where to recycle slimey gooey things? Or anything for that matter? It's easy, just call Earth's 911...

1-800-CLEANUP!



Slime Detectives:

Think about...

(write your answers below)



... reasons **why** critters and plants produce slime.

...if any of the critters and plants in this issue have **similar** reasons for their sliminess?

Meet the Hagfish...

- Angie

This creepy looking fish might just be the most disgusting creature you'll ever meet! Why? Well, first of all it looks really gross, don't you think? Also, it has a horrible way of eating, but we're not EVEN going to discuss that! The sure winner in our grossfest is the gooey slime the hagfish releases when it is touched. Almost like runny plastic, it oozes from glands on the fish's sides to help it slip by predators. It can produce a gallon of this slimy stuff at one time!

Incredible!



photo: <http://oceanlink.island.net>





To Vernal Pool Days!

- Blake

Disclaimer:

Due to the temporary nature of this event, Vernal Pools are offered for a limited time only. Please check back next spring.

Meet some sticky residents

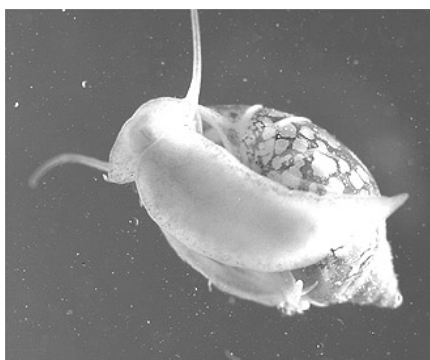
of California's Mather Field Vernal pools. Photos and critter information provided by: Splash - www.sacsplash.org

Ah, spring! The time when flowers bloom, birds sing and the sun shines. Here at *The Frog*, we think one of the most exciting things about spring is that it is **Vernal pool time!**

Vernal pools are temporary bodies of water that fill up in the spring and dry up during the summer. Melting snow, early rains, flooding and rising groundwater can all help fill up these fascinating pools of water. Unfortunately, not just anyone can find a vernal pool in their backyard; they must live in an area that has both a wet, and a dry season.

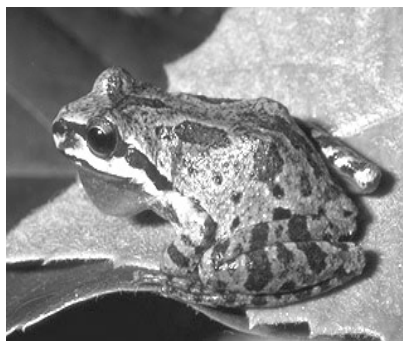
Parts of California, Massachusetts and New Hampshire are a few of the states where you can find vernal pools.

Vernal pools have a very special community of critters - frogs, salamanders, snails, clams, turtles and more! To learn more, check your public library or look for web resources.



This aquatic snail prepares for the dry summer by burrowing several inches into the mud and sealing itself in mucus to prevent water loss. The snail can stay like this for up to three years!

For the California Tiger Salamanders, the breeding season lasts from December through February. During this time females lay small clusters of eggs on twigs, grass stems, and plants. A jelly-like substance coats the eggs. This protects the eggs against temperature extremes and destruction.



The Pacific Chorus Frog is the only frog in the area that has "suction cups" on its toes. Often called the Pacific Treefrog, it uses these toe pads to help climb plants, trees, and even walls and windows!



Can you find out what other cool critters make their homes in Vernal pools?



Outrageous Ooze

This stuff can't make up its mind--
is it a liquid or a solid?

Reproduced with permission. (c)
Exploratorium, <http://www.exploratorium.edu>

You will need:

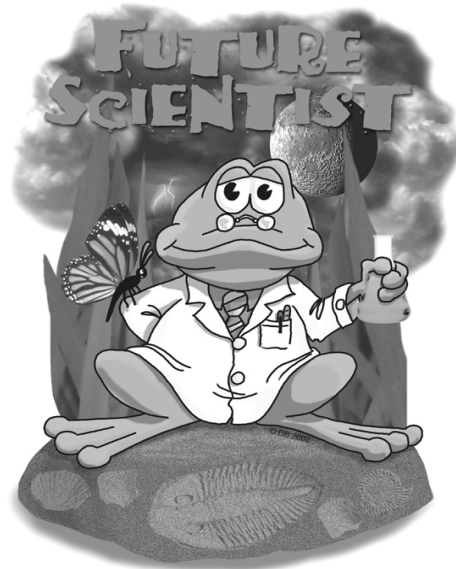
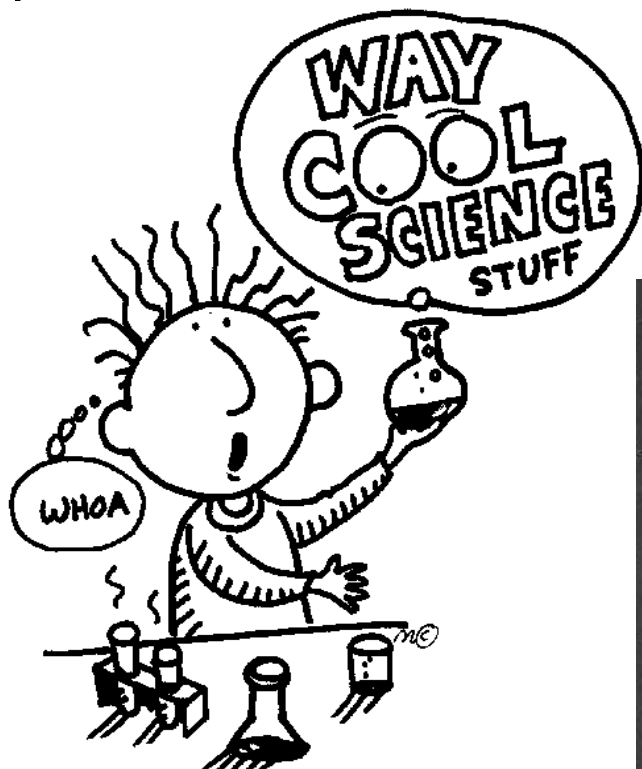
Newspaper, measuring cups, 1 cup of dry
cornstarch, large bowl or pan, food coloring (if
you want), 1/2 cup of water

What you do:

1. Put newspaper
down on your counter
or table top.
2. Put the cornstarch into the bowl. Add a
drop or two of food coloring. (Use whatever
colors you like.) Add water slowly, mixing the
cornstarch and water with your fingers until all
the powder is wet.



Continued on page seven...



So, you want to be scientist, huh? Noble profession - a great choice, but do you really know what you're getting into? Well, Amigo is going to help you explore some different areas of science. Let's start with biology...

Hi! My name is Rachel Smith – and that's me with an astronaut - cool, huh?

Ok - let's talk about my science career. I'm a **molecular biologist**. A WHAT?

Well, a molecular biologist studies the molecules inside cells - molecules like DNA and all the different proteins that cells produce as they go about their daily jobs.

Molecular biologists are also known as genetic engineers – we can alter (change) the DNA or genes of some cells which can actually change the characteristics of those cells. *Hmmm...*



*continued on
page seven...*

SCI-MYSTERY

Here are some really sticky and slimy things for you to investigate. Read the clues and then find the answers using the internet, library books, and your teachers, friends and family! Good luck!

-- Simon

Sticky Identification

Investigation 1.

Well, let's face it. I'm probably not the most popular bug in town. In fact, I'm one of the yuckiest. Why you ask? It may be because my favorite meal is to dig into some really, fresh, um, dung (poop). It doesn't do much for my breath but it sure is nutritious!



Investigation 2: Look what beautiful flowers I have! While I am pretty, I am also deadly to insects which try to feed off of my nectar. Actually, it's not nectar - the substance is known as "mucilage", the strongest glue in nature! Once an insect lands on me, it's all over. It becomes trapped in my sticky glue, and then becomes my next meal!

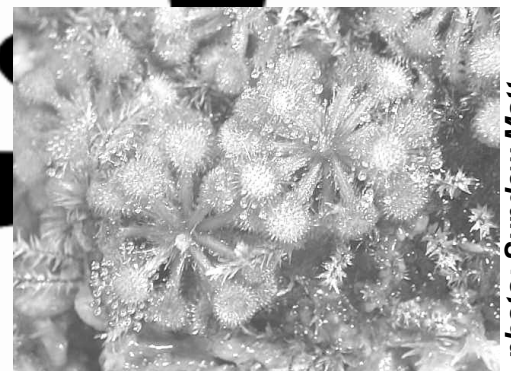


photo: Sundew Matt

Investigation 3. I only live in one place on earth - the island of Madagascar. My special defense against predators is that I can exude (give off) sticky, white mucus which gets caught in the mouth and throats of critters trying to eat me. Hopefully, they will spit me out! Blah!

P.S. I'm red in color! Picture from Sedgwick County Zoo.



Future Scientist, continued

In particular, I study plants and their genes – yes – plants have genes too! I have worked in several molecular biology laboratories and have done experiments to learn how plants produce flowers and seeds – all these processes are controlled by the plant's genes. Other genetic engineers I know are trying to produce plants that are more resistant to diseases, or that produce bigger and tastier fruit.

The skills I need to work in a molecular biology laboratory I learned while studying biology in college in England - which is where I am originally from! Following college, I did some really exciting, specialized training. Being a molecular biologist, I have been able to travel to many countries in the world – like Ireland and Greece, to learn new techniques and share my work with other scientists. In one lab that I worked in there were people from 7 different countries - all working together!

Now, I am a teacher at a Community College in Arizona, and also work at the Arizona Science Center where I get to share my knowledge about plants, DNA and biology!

Have you ever seen DNA? It's really ooey and goeey, and looks a lot like snot!

Can you think of another career where you might get to investigate sticky things?



5. Pick up a handful and squeeze it. Stop squeezing and it will drip through your fingers. Rest your fingers on the surface of the Ooze. Let them sink down to the bottom of the bowl. Then try to pull them out fast. **What happens?** Take a blob and roll it between your hands to make a ball. Then stop rolling. The Ooze will trickle away between your fingers. Put a small plastic toy on the surface. **Does it stay there or does it sink?**

OOZE, continued...

4. Keep adding water until the Ooze feels like a liquid when you're mixing it slowly. Then try tapping on the surface with your finger or a spoon. When Ooze is just right, it won't splash—it will feel solid. If you Ooze is too powdery, add a little more water. If it's too wet, add more cornstarch.

**Why does my Ooze act like that?**

Your Ooze is made up of tiny, solid particles of cornstarch suspended in water. Chemists call this type of mixture a **colloid**.

As you found out when you experimented with your Ooze, this colloid behaves strangely. When you bang on it with a spoon or quickly squeeze a handful of Ooze, it freezes in place, acting like a solid. The harder you push, the thicker the Ooze becomes. But when you open your hand and let your Ooze ooze, it drips like a liquid. Try to stir the Ooze quickly with a finger, and it will resist your movement. Stir it slowly, and it will flow around your finger easily.

WHEN GOO GOES BAD

*Photos, article and activity by the Office of Response and Restoration,
National Ocean Service, National Oceanic and Atmospheric Administration*



oil spills in the ocean

Oil spills into rivers, bays, and the ocean are caused by accidents involving tankers, barges, pipelines, refineries, and storage facilities, usually while the oil is being transported to us, its users.

Spills can be caused by

- people making mistakes or being careless.
- equipment breaking down.
- natural disasters such as hurricanes.
- deliberate acts by terrorists, countries at war, vandals, or illegal dumpers.



Can you see the oil "sheen" on the water?

When did the last major oceanic oil spill occur? What kind of damage was done to the environment?



Oil floats on salt water (the ocean) and usually floats on fresh water (rivers and lakes).

Very heavy oil can sometimes sink in fresh water, but this happens very rarely. Oil usually spreads out rapidly across the water surface to form a thin layer that we call an **oil slick**. As the spreading process continues, the layer becomes thinner and thinner, finally becoming a very thin layer called a **sheen**, which often looks like a rainbow. (You may have seen sheens on roads or parking lots after a rain.)

Depending on the circumstances, oil spills can be very harmful to marine birds and mammals, and also can harm fish and shellfish. You may have seen dramatic pictures of oiled birds and sea otters that have been affected by oil spills. Oil destroys the insulating ability of fur-bearing mammals, such as sea otters, and the water-repelling abilities of a bird's feathers, thus exposing these creatures to the harsh elements. Many birds and animals also ingest (swallow) oil when they try to clean themselves, which can poison them. Depending on just where and when a spill happens, from just a few up to hundreds or thousands of birds and mammals can be killed or injured.

YOU CAN HELP!

Because oil and oil products in the environment can cause harm, we need to prevent problems when we can. For example, by avoiding dumping oil or oily waste into the sewer or garbage, we avoid polluting the environment we live in. Sometimes, we can find ways to avoid using oil in the first place: for example, we can bicycle, walk, or take the bus rather than taking a car to some places we need to go. When we use less oil, less needs to be transported, and there's a lower risk of future oil spills. We should understand that it is because we rely on oil that we run the risk of oil spills. That means that all of us share both the responsibility for creating the problem of oil spills and the responsibility for finding ways to solve the problem.



Simon's Magic Lunchbox Experiment

Oil & Water

Find out for yourself how oil acts when put in water...

You will need

A large, clear glass bowl and some vegetable oil. If you'd like, you can mix a little cocoa powder into the vegetable oil to make it show up better and look more like crude oil

get started!

1. Fill the bowl with water to an inch or two below the rim. Place it on a table, and have everyone crowd around it.
2. Pour a little oil on the water.
3. Now, watch what happens.

What is happening?

The oil, even a little drop, will spread out over the water surface and break up into many little blobs. This will happen very quickly.

All oils are not the same. Different oils, whether diesel for a truck or heating oil for a house or oil for an engine, all spread out at different rates.

Also, note that the oil floats. This seems a simple observation but it is very important. Since you have a glass bowl, you can see two layers, or phases: oil and water, which do not mix. You have probably seen this before in some bottles of salad dressing. In the bottle of dressing, just like in the bowl, the oil stays on the top and the water stays on the bottom.

When oil is spilled onto the ocean, because it stays on the top of the water in this same way, it can be pushed by the wind in whatever direction the wind is going. Wind, along with currents and tides, are the three main factors that affect the transportation of oil during an oil spill. We look at all three of these to predict where the oil might go and what it might hit.



**More Sticky,
Goopy
Investigation
Topics:**

Tar Pits
Amber
Worms
Spider Webs



Resource:

Vernal Pools:

1. <http://www.becnet.org/vernalpool.html>
2. <http://www.epa.gov/owow/wetlands/types/vernal.html>
3. <http://www.cnps.org/gallery/fristrom2/vernalpools.htm>

Slimes, molds and more!

1. <http://www.ucmp.berkeley.edu/protista/slimemolds.html>
2. <http://www.smm.org/sln/fff/fungus/fungus.html>
3. http://www.herb.lsa.umich.edu/kidpage/ant_gard.htm

Spit, mucus and other gross things:

1. <http://www.beakman.com/mucus/mucus.html>
2. <http://yucky.kids.discovery.com/flash/index.html>
3. <http://www.minnetonka.k12.mn.us/science/tools/ooey.html>

Hagfish:

1. <http://oceanlink.island.net/oinfo/hagfish/hagfish.html>
2. <http://www.zoology.ubc.ca/labs/biomaterials/slime.html>

Tomato Frog:

1. <http://www.scz.org/animals/f/tomato.html>
2. http://www.whozoo.org/Intro2000/arnewiss/AW_tomatofrog.html
3. http://www.santabarbarazoo.com/animals/amphibians/frog_tomato.html

Explorer's Page

Extract gooey DNA in your classroom! For instructions and more information, go to:

http://www.exploratorium.edu/ti/human_body/dna.html

SCI-MYSTERY

Answers:

Investigation 1 - The Dung Beetle

Investigation 2 - The Sundew

Investigation 3 - The Tomato Frog