From: ScienceMail@CSIRO.AU Subject: Science by Email 7 October, 2005 Date: 7 October 2005 1:17:18 PM To: SCIENCEBYEMAILHTML@ITS.CSIRO.AU Reply-To: sciencemail@CSIRO.AU



- Nature Magazine: Quicksand can't suck you under
- <u>Rheology: Liquefaction of quicksand under stress</u>
  Look at Page 21 of the latest <u>Helix magazine</u> for information about Rheology
- Professor David Boger has been awarded the Prime Minister's Prize for Science, celebrating his lifetime achievements in the area of non-Newtonian fluid mechanics. Non-Newtonian fluids display unusual properties because they behave both as liquids and solids: oils, sauce, ink, paint, toothpaste and mineral slurries are among many common products that have these properties.

# **CSIRO's Double Helix Science Club**

- What is it?
  - Check out the magazines The Helix and Scientriffic
- Information for teachers.



Activity: Rocky Road - Conglomerate Rock Celebrating Earth Science Week

# What you need

- 500g good milk chocolate
- A small bag of marshmallows, cut into halves

- 1/2 cup shredded coconut ٠
- 1/2 cup pistachio kernels, chopped
- A small bag of macadamia nuts
- A small bag of raspberry frogs, chopped
- A small bar of Turkish Delight, roughly chopped
- A packet chocolate biscuits, Tiny Teddies were used for this activity
- Greaseproof paper •
- A rectangular baking tray.
- A bowl to melt the chocolate
- A fridae
- A stirring spoon or spatula

#### What to do

- 1. In a bowl, break up chocolate into pieces, melt in microwave oven on high for approximately 40 seconds, stir, if still not fully melted microwave for another 20 seconds. You may need to heat for a little longer, making sure you keep stirring, chocolate can burn if unattended. You can also heat the chocolate on a stove top. Place the bowl on a saucepan of boiling water and stir until melted.
- 2. Combine the rest of the ingredients with the melted chocolate. Mix well. As you add each ingredient you may like to talk about what they represent (see below).
- 3. Pour mixture into a lined slice tin, press down gently.
- 4. Refrigerate until firm. Cut into squares.
- 5. As you eat the conglomerate rocky road try to identify the different The macadamia nuts and pieces of sediment.

## What's happening?

Conglomerate is a rock that looks a bit like rocky road fudge. It is made up of sandstone or mudstone with chunks of other rocks and minerals mixed in. Conglomerate forms when a pebbly beach or riverbed fills with mud and sand and is buried under other materials. Eventually, the weight of the material presses the sand, mud and rock mix into a new rock conglomerate.

Sedimentary rocks have fossils in them because plants and animals are covered up by new layers of sediment and are turned into stone. Most of the fossils we find are of plants and animals that have lived in the ocean and have settled to the bottom. Other plants and animals may have lived near swamps, marshes or at the edge of lakes and were covered with sediment when the size of the lake got bigger.

- **Chocolate** is the matrix that holds the sedimentary pieces together, usually sandstone or mudstone.
- Raspberry frogs and Turkish delight marine animals that have been fossilised in the rock.





Use a variety of lollies and biscuits to help form your conglomerate rock.



pistachio's represent pebbles, minerals and other pieces of rock that have formed the new rock conglomerate.



Add all the ingredients to the melted chocoloate.



- Shredded Coconut plant life that has been trapped in the rock. If there are large amounts of fossilised plant life, coal will form.
- Tiny Teddies land animals that have lived on the edge of swamps and rivers and have become part of the conglomerate rock.
- Macadamia nuts, pistachio's and marshmallows pebbles, minerals and other pieces of rock that have formed the new rock conglomerate.

#### **Applications**

Sedimentary rocks cover 75% of the earth's surface. Most of the rocks found on the Earth's surface are sedimentary.

The more common types of sedimentary rock include shale, sandstone, conglomerate, coal, and limestone.

- Shale is made up of cemented silt and clay, otherwise known as dirt and mud.
  - Sandstone is made of sand and mineral deposits found in the water.
- Conglomerate rock has rounded rocks (pebbles, boulders) cemented together in a matrix.
- Coal is from plant material. These sedimentary rocks are formed under great amounts of heat and pressure.
- Limestone is made of chemicals like calcium carbonate, often precipitated from warm shallow seawater. Limestone is not formed like other sedimentary rocks in that it has no "glue," since it is all chemicals bonded together. These chemicals are calcium and carbonate, which come from things like old shells.

Conglomerate is a rock with a variable hardness. It is found in mostly thick layers and is commonly used in the construction industry .

More activities to help you celebrate Earth Science Week

- <u>Make an impression</u>
- Form a Fossil
- For more recipes: <u>The Yummy Book of Rocks</u>



T

Τ



#### Website: How much air and water does our Earth have?

View the winning science photo's from the <u>Vision of Science</u> competition. All the images are attentiongrabbing and give new insight into the world of science and the workings of nature. A particular favourite is the image that shows the <u>finite nature of the world's water and air resources</u>.



## Events: Earth Science Week 9 - 15 October 2005

Earth Science Week is here! There are loads of fantastic events happening all around the country. Visit the Geoscience Australia website for more information about what is happening in your area.



## Did you know?

Cycling is a great way to get a-round. Unlike cars and planes, it does not release air pollution to the atmosphere.



#### **Quiz Questions**

1. Do bananas grow pointing up or down?

2. What percentage of flowering plants found in Australia are found nowhere else in the world? a) 50% b) 65% or c) 90%?

3. Which is smaller - a nanometre or a picometre?



Once the rocky road has

set cut into squares and

eat as part of a celebration of Earth Science Week.



Visit the Scope website to watch clips from the show, download an activity sheet and learn more about the science in the show.

#### Manage your subscription

**CSIRO Shop** 

Scientific,

- Science by Email home
- Change your subscription
- Unsubscribe
- Contact SbE

This is the HTML version of Science by Email. If you would prefer to receive the plain text version, with no images or formatting, please click here.

If you've been forwarded this message and would like to receive more, please sign up to our list. Every person on our mailing list helps us keep Science by Email going.

**Quiz Answers** 1. Up.

4. What is the name of the world's

heaviest beetle, which weighs up to 100g?

T

2. c).

- 3. A picometre.
- 4. Goliath beetle.

5. Electricity. Competitors in the recent Panasonic World Solar Challenge demonstrated some of the fundamental technical innovations driving us towards the hydrogen economy, according to event partner, CSIRO. Energy efficient electric motors used in the event are integral in the development of a more sustainable transport sector. Improvements in engine efficiencies not only lower fuel costs but also reduce vehicle pollution.

# our partners

T

The <u>Australian Greenhouse Office</u> and <u>mecu</u> are proud partners of Science by Email.



Australian Government Department of the Environment and Heritage Australian Greenhouse Office



Science by Email is produced by CSIRO Education