

A STEM in the Park Take Home Activity

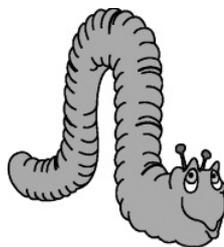
STEM in the PARK

Science, Technology, Engineering, and Mathematics

Insta-Worms®

What You Need

- Insta-Worms® from *Steve Spangler Science*:
<http://www.stevespanglerscience.com>



Investigate...

- 1) Pick your favorite color of "Worm Goo".
- 2) Squeeze a small stream of "Worm Goo" into the "Activator Solution".
- 3) Look! What did you create?
- 4) Slowly reach your fingers into the "Activator Solution" to remove your new worm friend.
- 5) Run your worm through your fingers. Hold it up to the light. Make some observations.
- 6) How does your worm feel and look? Describe and explore! (Do you notice that the center is filled with liquid?)
- 7) Have fun investigating the properties of your worm.

Safety Smarts... This unique polymer formulation (no Borax or PVA used here) is safe to touch and weave between your fingers. As always in science: Please do not EAT or put anything in your mouth.

Learn...

The gooey "Worm Goo" changes into a rubbery solid when the two solutions mix. You are exploring the science of polymers. Insta-Worms® are formed through a reaction of a polymer taken from seaweed and combined with a small amount of salt to create "worms".

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The polymer for Insta-Worms® is called sodium alginate. 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.

The sodium alginate (called “Worm Goo” in the Insta-Worms® science materials) 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 (also called cross-linking). More specifically, a polymer strand is formed when the sodium alginate solution is added to a calcium chloride solution. This occurs because the Ca^{++} ions replace the Na^{+} ions and serve as a cross-linking agent to link two alginate chains together. The resulting cross-linked polymer is insoluble in calcium chloride solution and this results in the formation of the polymer strand.

Take a look at food labels the next time you're at the grocery store to find other foods that contain sodium alginate. Alginate compounds are also used for dental impression materials.

Try At Home:

Where can you buy the materials to make your own worms at home? Visit Steve Spangler Science: [www. SteveSpanglerScience.com](http://www.SteveSpanglerScience.com)

Here you will find engaging polymer activities and materials such as Insta-Snow®, Slime, and much more. You will even find a variation of Insta-Worms® called Atomic Insta-Worms®. Atomic Insta-Worms® glow in the dark and are great for Halloween time.

Here is something else fun to try at home:

Silly Putty-Like Polymer Recipe

- 2 parts Elmer's white glue
- 1 part liquid starch

Gradually mix the starch into the glue. More starch may be added if the mixture seems too sticky. Food coloring may be added, if desired. Cover and refrigerate the putty when not in use. This putty can be pulled, twisted, or cut with scissors. [www. SteveSpanglerScience.com](http://www.SteveSpanglerScience.com)

***This activity is brought to you by BGSU School of Teaching and Learning:
AYA Program***