Oolitic Sand Activity

Educator- Summary of Lesson Plan 2 Objectives:

- **1) Explain how Oolitic Sand is formed**
- **2) Demonstrate experiment with vinegar and Oolitic sand**
- **3) Discuss why Oolitic sand reacts with vinegar**

Introduction

All soil or dirt has a mixture of sand, silt and/or clay. Sand, silt and clay are very different from each other in size, texture and shape. Sand is made up of small irregularly shaped fragments of rock in sizes from 1/16mm to 2mm. It ranges from very fine to very coarse. Sand consists mostly of the mineral quartz.

Antelope Island has a special sand, called Oolitic Sand. Most sand is formed by weathering and erosion from wind and water. Oolitic sand is grown in the Great Salt Lake. The mountains surrounding the Great Salt Lake are made mostly of limestone. Limestone was formed from ancient shelled animals. The limestone has a mineral called calcium-carbonate, which will form a round shell around a small particle in the water, just like a pearl forms in an oyster. These particles can be Brine Shrimp fecal pellets or any mineral. Over time the many layers of calcium- carbonate will create a small round pebble sand particle. This is what we have on Antelope Island's beaches!

Explain that when calcium carbonate, (oolitic sand), comes contact with an acid (vinegar) the sand breaks down into carbon dioxide, hydrogen dioxide (water) and calcium acetate (a calcium salt). This is the chemical reaction we witness as the oolitic sand bubbles when vinegar is poured upon it.

Oolitic Sand Objectives:
1) Explain how Oolitic sand is formed
2) Teacher demonstrates experiment with sand
3) Teacher explains why oolitic sand bubbles during experiment

Leave container with salts etc. and map next to the Island Grille building prior to leaving for 2nd stop- you will return to same area and pick up items prior to departure. Switch to portable handbag with plastic cups, vinegar and binder with pictures of oolitic sand, vegetation, brine shrimp and brine flies that you will take down to the beach with you.
Are you ready to start heading to the water to explore?
• Group should stay together with teacher in front. Inform students that there will be one/two stops prior to arriving at the water and you will lead them to those stops.
Second Stop –past the first line of vegetation after you get to the bottom of the metal walkway.
Information to provide:

A) Talk about the unique or special sand that GSL has around it.

- **If you went to the ocean or a playground that would have regular sand. Do you know what regular sand is made of? Tiny bits of rock. Do you know what shape the grains of regular sand are? They are angular, think squares and rectangles mostly. They have edges and corners.**

- **Okay now let us look at this sand here. Have students take a pinch of sand from the beach and put on their stretched out palm. Ask students to look closely at the sand and tell you what shape it is. Circle/sphere! Ask students if it is a different shape can it be regular sand? No. This is called oolitic sand. Oolitic means egg-shaped. So we know the sand is different so now let us figure out what oolitic sand is made of.**
- **Explain that you will be performing a science experiment to help understand how oolitic sand is so different .**

- **The teacher should scoop up a small amount of sand into a cup. Ask students what would happen if they poured vinegar on regular sand? Nothing, it would get wet.**

- **(Tell the kids to stay where they are and walk around to show them the bubbling that occurs, pour lots of vinegar on it). The vinegar is making the oolitic sand bubble because this sand is not made of small bits of rock. The OUTSIDE of oolitic sand is actually made of a mineral called calcium carbonate.**
- **FOR MORE ADVANCED GRADES- The teacher can explain how vinegar is a weak acid and that when calcium carbonate comes in contact with an acid it breaks down into carbon dioxide, hydrogen dioxide (water) and calcium acetate (a calcium salt) This is what is happening when the sand is bubbling!**
- **Now we still need to know what the INSIDE of oolitic sand is made of. It is something that the calcium carbonate coats or covers as it is floating in the lake. It is organic and is from one of the living things in the lake.**
- **Ask the students if they have any ideas? The center of oolitic sand is a brine shrimp fecal pellet or another way to say it is brine shrimp poop (show the picture of the oolitic sand) Remember it is just the inside of the grain of oolitic sand that is**

poop. The way it gets its round shape is from the waves rolling the pellets as the calcium carbonate is covering it.

END OF STOP 2