Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **http://www.ohioenergy.org/wp-content/uploads/2012/10/logo-small.png**

Sound Explorations

**Activity 1 – Phone Disco or the Dancing Pepper**

Procedure:

* Turn off the vibrate alert. Turn ringtone up to high and place a mobile phone in a tall glass.
* Stretch a small piece of cling wrap over the glass and tighten. Secure with rubber band.
* Sprinkle pepper (or salt) on the cling wrap.
* Use a second phone to call the phone in the glass.

1. What did you observe with the pepper? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Conservation of energy means that energy cannot be created or destroyed. Explain how this demonstration supports that statement.

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1. List one energy transformation that occurs in this demonstration.

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**Activity 2 - Tuning Fork Explorations**

Procedure:

* To produce a sound with a tuning fork, hold the handle and strike tines on a rubber stopper or your knee.

1. How are the sounds different? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Why are the sounds different? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Procedure:

* Strike a tuning fork and place in a dish of water.
* Repeat with the other two tuning forks.

1. Describe what happens and why it happens. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Procedure:

* Strike the tuning fork and place the handle on the bone behind your ear.

1. Explain your experience and why this happened. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Procedure:

* Have a partner hold a string attached to a ping pong ball. Strike a tuning fork. Bring the tuning fork near the ping pong ball.

1. What happens to the ping pong ball? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Activity 3 – Duck Call with a Straw**

Procedure:

* Use your fingers to flatten the end of a straw.
* Cut flattened end to a point.
* Flatten again with your teeth.
* Blow into flattened end causing the straw to vibrate and “quack like a duck”.
* Cut off the end of the straw to change the length and blow to compare the sound.

1. Compare the sounds with two different straw lengths? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Using the word “wavelength”, explain why the straws have different sounds? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What part of the sound wave have you changed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Activity 4 – Water Whistle**

Procedure:

* Using your scissors, cut partially through the straw 1/3 of the way down the straw. The cut should be ALMOST all the way through the straw but leave a small piece uncut to keep the two straw sections attached.
* Bend the straw into a right angle at the cut being careful not to break the straw segments clean of each other.
* Fill a cup or glass ¾ full of water. Slide the longer section of straw into the water.
* Keeping the straw at a 90° angle, place your lips on the shorter end of the straw and blow with a light, constant breath. If you are having trouble producing a whistling sound, try pinching the top of the long end of the straw. Once you’ve got your Water Whistle making a constant, steady sound, try raising and lowering the straw within the water.

1. What did you hear? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What happens to the pitch when you change the length of the straw underwater? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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