



Baltimore County Public Schools
Outdoor Science Education

Maple Syrup/Natural Resources Camp Puh'tok

Evaporator Station Station Leader Information

Camp Puh'tok Directions

****** There is very limited parking at Camp Puh'tok. Please carpool from your school or meet at the easy to reach Park and Ride near Camp Puh'tok - directions are below for Park and Ride.*

Camp Puh'tok is reached via the Baltimore Beltway (I-695). Take exit 24 North on the Baltimore-Harrisburg Interstate (I-83) to Mt. Carmel Road - Hereford exit 27. Turn right onto Mt. Carmel Road. Make a right on York Road (traffic light) and proceed one block. Turn left onto Monkton Road (traffic light), MD Route 138. Drive 0.7 (seven-tenths) of a mile and bear left onto Big Falls Road. The main camp entrance is located 1.2 (one and two-tenths) miles on the right and marked by a large wooden sign.

Park and Ride - After exiting I-83, turn left on Mt. Carmel RD and take first right into the lot. After parking car, take a left out of the lot onto Mt. Carmel Road and continue with the above directions.

Phone Numbers

Baltimore County Teacher Naturalist

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EVAPORATOR STATION

TIME: 15 minutes

NOTES TO STATION LEADER:

- It is **very important** to keep the evaporating tray filled with sap/water.
- Maintain the fire below the evaporator by adding wood as necessary and adjusting the air intake on the door.
- Make sure students stay a safe distance from the evaporator - it is very hot - but be sure to open the fire door so students can see the fire.
- Students should not go past the cones near the pond.
- After completing the Evaporator station, please be sure the group moves in the correct direction for the Homestead station.

Background

If you visited a maple syrup production farm in Vermont during late February through March you would see an evaporator similar to this one being used to make maple syrup. It would probably be much larger and also located in a building called a "sugar house". This evaporator is a modern stainless steel backyard evaporator fueled with wood that burns at its base.

The sap is first put in the upper back pan so the sap warms up before entering the hot lower pan. The sap from the upper pan is released to the lower pan by way of a spigot. As the water evaporates from the sap (observe the steam) in the lower pan it becomes thicker and moves to the middle. Finally the thicker sap moves to the far right pan where it eventually reaches the syrup stage. The syrup is drained off at the spigot.

Talking Points

- Explain how evaporators like this one (or larger) are still used today.
- Explain how it takes at least 50 gal. of sap to make 1 gal. of maple syrup.
- Show the parts of the evaporator and explain how they work. Pour a little "sap" from the bucket into the top back pan of the evaporator.

*What is coming out of the fire? **Smoke***

*What do you see coming out of the pan? **Steam***

*What is steam made of? **Very tiny drops of water***

*Where did the water (steam) come from? **Maple sap***

*When the water as steam leaves the sap what is left behind? **Maple syrup***

- Show students how the syrup is drained out the top spigot to release the new sap and the bottom spigot to release the syrup.
- Open front of evaporator to show students the fire.
- Have one student hand you a piece of wood. You (not student) put wood into the fire then close the door.
- Seat students at picnic table.
- Give each student a small amount of sap in a Dixie cup to taste.

What does the maple sap taste like? *Mostly water with a tiny bit of sweetness*

Do you want to put this on your pancakes? Most students say no
- Give each student a small amount of syrup to taste. For health reasons, do not allow the syrup bottle to touch the students' hands or fingers. Have the students turn their Dixie cup upside down. Place a drop of syrup on the flat bottom of the cup.

How does the maple syrup taste different than the maple sap? Very sweet

Why does it taste different? It does not have as much water in it as sap.

Do you want to put this on your pancakes? Most students say yes
- Give each student a small amount of plant sugar to taste. For health reasons, do not allow the spoon to touch the students' hands or fingers. Keeping the Dixie cup upside down, spoon a little bit of sugar onto the flat surface. When done, make sure cups are placed in the trashcan.

Does this taste like sap or syrup? Syrup

How did we make sugar from syrup? Evaporated most of the water

Do you want to put this on your pancakes? Probably not

Rotation

Direct parent chaperones to follow the ribbons to the Homestead Station. Be sure they are going in the correct direction.

**Clean-up Note

After the last group of students has left, be sure to leave the door of the evaporator open. This will help the fire burn out more quickly so we can close the evaporator before we leave for the day.