**Title**: MAKING CHARCOAL

**Author**: Estelita Ferdinand
Eulalie R. Rivera Elementary School

**Grade Level**: 4-6

**Concepts**:
1. The Sun
8. Values & Attitudes

**Disciplines**:
1. Social Studies
2. Science
3. Language Arts

**Objective:**

Student shall follow procedures used in making charcoal and learn the terms used for the various steps in the procedure as part of the Island culture.

Student shall understand why the wood does not burn completely.

**Rationale:**

In outdoor cooking charcoal is a pleasant kind of fuel being compact and lacking the smoke which a wood burning fire makes, both on the food and in the faces of the people tending the fire. Making a supply of "coal" was an island activity when there were no stoves in homes and cooking was done out of doors. Individual homes made coal and it was also done on a commercial scale and the coal exported by boat.

Wood burned in the open will be oxidized completely to carbon dioxide and water. However, wood burned in a condition of control (lacking sufficient air) will not be completely oxidized leaving carbon which can then be used as fuel.

Some questions to be addressed:

1. Is commercial charcoal production feasible on the Virgin Islands.? (Are the wood resources adequate?)

2. What are some current substitutes for cooking outdoors with charcoal? (oil, kerosene, LP gas, electric grills).

3. What are some environmental implications in the substitutes for charcoal? (availability and cost of petroleum products and electricity).

**Materials Needed:**

Dry wood (tan-tan, mangrove)

Pick axe, shovel, hoe and' machete

Four pegs and two runners made from wood

Kerosene oil and matches
Green vines
Dry grass or weed (tinder).

E. T.

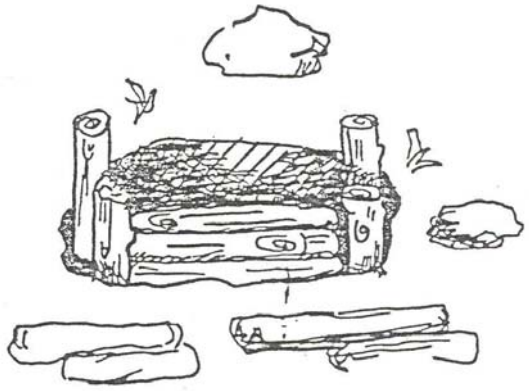
**MAKING CHARCOAL**

**Directions:**

In a schoolyard locate a suitable spot, keeping in mind safety for children.

With a shovel clear away the spot in which you want to set the coal pit. With a pick axe dig a hole in the ground about a yard square and a foot deep. Clean out the. hole with the shovel and pile the dirt in one spot for later replacement. Using a machete sharpen the ends of four thin sticks to points. These are the pegs to be driven into the ground, two at each end of the hole. The pegs define the limits of the pit and hold the wood together. Use two runners to form a platform to keep the wood off the ground. Put the dry grass (tinder) in the bottom (called the coal local) and of the hole.

In an orderly fashion, stack the lengths of wood to be made into coal on the runners. Layer the green vines and material on top of the wood. Pour the kerosene on the dry tinder and light the fire. 14hen it is burning briskly cover over the top of the green plant material with dirt set aside leaving two holes for draft, one at each end. Let it burn for about a day or until the dirt collapses. (What is indicated by the dirt falling in at the center?) Then stamp the dirt with a shovel to smother the burning wood inside. If the dirt is still hot let it remain until it cools, then take the hoe and pull out the coal.



The principle of incomplete combustion can be demonstrated on a small scale in the following ways:

**Materials**:

Test tube with one-hole stopper into which a short length of tubing is inserted. (6-8 cm.), test tube holder, alcohol lamp, saw dust, safety goggles.

**Activity:**

Put a small amount of the saw dust in the test tube and insert the stopper. Hold the test tube over the flame. Look for changes in the wood. Heat the saw dust until smoke streams from the test tube. Note the odor it makes. (Like a charcoal fire.) Hold a lighted match at the end of the glass tubing. A gas-like natural gas is released by chemical reaction that is changing the wood, and like natural gas it is combustible.