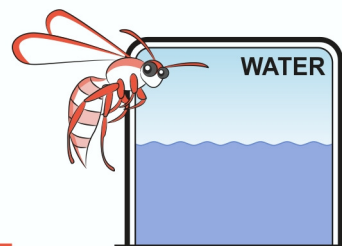


Evaporating & Condensing – Teacher Demonstration



In the Western Australian Goldfields there is little rain and rivers rarely flow. Aboriginal groups obtained precious water supplies from soaks and gnamma holes. (See 'An Aboriginal Perspective – Teacher Notes') Some callous European explorers fed Aboriginal people salt meat so they would be forced by thirst to show their precious water sources. The sudden influx of thousands of gold miners exhausted these supplies. Water from some salt lakes was boiled and the steam was collected and cooled to provide fresh water. The process was so expensive that fresh water was almost as expensive as gold weight for weight. Even water from bores and underground workings is hyper-saline (high levels of salts) being a third as salty as the sea. It kills most vegetation and animals and has to be kept in specially constructed dams with bunds (walls). Until the Kalgoorlie pipeline was completed on January 24th 1903, most water had to be carted from the coast

Evaporation Changing a liquid into a gas

Condensation Changing a gas into a liquid

In both cases this is a physical change as no new substance is created.

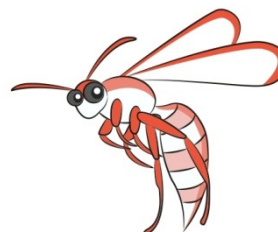
Danger Extra energy is required to turn a liquid (water) into a gas (steam). This means that a steam burn is particularly nasty. Any burns should be immediately placed under cold running water.

Purifying water by evaporation and condensation

This activity is probably best demonstrated by the teacher.

Materials required

- Bunsen burner and match
- Tripod
- Gauze
- Beaker of dirty salty water
- Beaker with ice
- Beaker to collect condensation
- Safety glasses and gloves



Boil dirty salty water and collect condensation by holding the cold beaker over the rising steam. The clean steam will cool, condense and water will drip down to be collected. Care must be taken to prevent steam burns.

Alternatively cool steam from a boiling kettle by condensing a cool glass full of ice or the surface of a cold plate.

Extension

Students could also collect condensed water from a tree. A weighted plastic bag is tied to enclose a leafy tree branch. Water is a by-product of photosynthesis and is lost as steam (water vapour) through pores on the underside of leaves. This transpired steam will condense in collect in the bag. When it cools it will condense and run to collect in the weighted section. Eucalyptus trees should be avoided as they also release strong smelling eucalyptus oil, which taints the condensate. It is safe to drink but definitely is an acquired taste.