

Evaporating basin

Distribution of evaporate minerals 1

D

To explain the distribution of salts in an evaporating basin, a wok is filled with sea water and allowed to evaporate. This results in concentric rings of salts. (A shallow glass or plastic bowl, if one can be found, would be better as the process makes the wok very rusty much to the annoyance of my wife).

Distribution of evaporate minerals 2

Pe I 10 min

Students draw a section through a shallow basin with a curved bottom on a landscape piece of A4 paper. The basin should have a depth of 5cm. They then draw lines to show the level of the water when full, only 20% left, 10% left, 4% left. They draw thin coloured lines along the bottom to show where, calcite, gypsum, halite and K salts will precipitate.

Volume of salts formed 1

D

A 1 litre beaker of sea water (real or made from a packet from pet shops) is evaporated (do not boil) to see the volume of salt produced.

Volume of salts formed 2

D

To show the thickness of salt formed from evaporating 1m of seawater hold vertically a meter ruler with bright tape stuck over the bottom 15mm.

Depth of water

Pa I 5 min

Students calculate the depth of sea water which must evaporate to produce the thickness of salt found in a major salt deposit given that 60m of sea water produce 1m of salt. For example 50m of salt would require the evaporation of 3000m of sea water. So there has to be an alternative process to simple evaporation and that is reflux.

Relative abundance of the different salts

Pa I F 30 min

Students draw composite bar charts to show the mineral composition of evaporated sea water and of the average mineral composition of evaporate deposits and try to explain the difference.