



Salt Lake Puddles- Teacher's Notes

The salt concentration in salt lakes can vary greatly depending on their location and surrounding geology, sometimes they can even be saltier than the ocean. Seawater has an average of 35g/L dissolved salt whereas salt lakes can range from 3-270g/L dissolved salt concentration. The Dead Sea in the Middle East has a salt concentration of approximately 340g/L. The salt concentration will also change depending on water levels. Heavy rain or flooding will dilute the salt levels whereas high evaporation rates will increase the salt level, often leaving a crust on the edges and surface of the lake.

In this activity, students will investigate the effect of floods on salt concentration. This may be done in groups or as a whole class activity.

Materials

- Table salt
- Measuring spoon or scales to measure salt
- Tap water
- Funnel
- 3 plastic bottles (at least 600mL) with lid
- Marking pen to label bottle and trays
- Measuring jug or cylinder
- 3 plastic containers or trays (rectangular plastic takeaway containers or their lids are ideal)

Method

1. Make a salt solution of around 20g/L concentration by mixing salt and water in one of the plastic bottles. A higher concentration will give you more salt to collect at the end of the activity but may be harder to dissolve and does not accurately model real salt lakes.
HINT: Only three quarters fill the bottle with water at first, then put the lid on and shake well to help dissolve the salt, then fill the





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bottle to the top and shake again. If you are not using scales, record the number of spoonfuls of salt added. Label this bottle 'Solution 1'.



2. Measure out one half of Solution 1 and pour into a second plastic bottle. Fill the rest of the bottle with fresh water, put the lid on and shake well. Label this bottle 'Solution 2'.
3. Measure out one half of Solution 2 and pour into a third plastic bottle. Fill the rest of the bottle with fresh water, put the lid on and shake well. Label this bottle 'Solution 3'.





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4. Prepare the three containers, or lids, by labelling them Solution 1, Solution 2 and Solution 3.
5. Shake each bottle then pour out approx. 50-100mL of each solution into the appropriate container/lid. Make sure you pour out the same amount of each solution, to ensure a fair test. Ideally you don't want to completely fill the container as it will spill more easily.
6. Place the containers in a warm place, such as on a windowsill or outside, and leave until all of the water has evaporated (that may take several days depending on the weather), leaving the dry salt on the bottom of the container. If it is windy, you may need to weight the containers down.
7. Observe and measure the amount of salt left in each container, either by scraping out and weighing the salt or measuring how many spoons of salt remain.





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Extension activity

Growing plants with salty water

Make larger batches of the three concentrations of salt and use them to water plants, such as tomato seedlings, over a few weeks to observe the effect of salinity on plant growth and health. You might like to photograph the plants every few days or measure plant height to record your observations. With tomato plants, you may even be able to observe an effect on the amount of fruit produced.

