

Learning Objectives:

- I can identify the different types of cave formations

Bellringer **Review**:

- What kind of rock allows for caves to form underground easily?

Check for Understanding Questions:

- What's the difference between stalactites and stalagmites?
- Name one other cave formation and describe how it forms?

Water Usage Challenge!!

1. Record your day of least water use.
2. Times by 7
3. Then times by the estimated gallons used
4. Total your week.
5. Compare to your previous week.

$$\begin{array}{r} \text{Normal week Total} \\ - \text{Least use week total} \\ \hline \text{Total Difference,} \end{array}$$

Four major types of limestone formations (speleothems):

1. Dripstone
2. Flowstone
3. Pore Deposits
4. Pool Deposits

Dripstones:

- > Straws are thin walled hollow formations that resemble drinking straws. As water drips slowly from the roof of the cave, it deposits a microscopic ring of calcite crystal. These rings continue to build and can form straws many centimetres long.
- > Stalactites are also formations that grow downwards from the cave roof. Nearly all stalactites start their life as a straw. When the straw becomes blocked with calcite or impurities, a stalactite starts to develop and thicken over the years, from the solution which runs down its outer surface.
- > Stalagmites are solid dripstones that grow upwards from the cave floor, from each drop of water from the roof or from stalactites overhead.
- > Columns or Pillars are formations that develop from stalactites or stalagmites that extend from floor to roof.

Flowstone:

- > Shawls - Water reaching the roof of a cave does not always form drops. Sometimes it trickles down a rockface, depositing a narrow strip of calcite, that eventually results in a thin sheet, growing at an angle from the wall. Shawls often contain interesting folds, which occur because the initial trickle turned from side to side in its downward path along the rockface. The rich coloured banding that is often seen, is caused by other minerals in the solution, such as iron oxide.
- > Flowstones: These attractive formations occur when flowing water leaves a film of calcite. They cover the original rock or mud floor, often to a considerable thickness. Sometimes the lower portions hang free, making a fringe or shawl of stalactites.

Pore Deposits:

- > Helictites are formed by water slowly entering the caves through pores and cracks in the limestone. Helictites are named from the Greek word 'helix', meaning 'a twist'. They are small irregular growths which proceed in any direction contrary to gravity. The most accepted theory for their growth and development is a combination of capillary action and hydrostatic pressure. The saturated solution emanates from a pore so slowly that it doesn't form a drop. Evaporation occurs and a minute layer of crystal is deposited. A capillary tube slowly develops, through which the solution is drawn, extending the helictite. Because no drop forms, gravity has no effect and the helictite can develop in any direction, defying gravity.
- > Subaerial cave corals are another form of pore deposit that develops as the solution seeps from cave walls, depositing layers of calcite crystal. Capillary tubes do not form, and the growth can develop over large areas. They have a rough texture and may resemble cauliflower.

Pool Deposits:

- > Rimstone dams or gours are fragile vertical walls that build up as cave pools overflow, depositing calcite at the edges. At the point of overflow, calcite is precipitated as CO_2 loss occurs.
- > Dogtooth Spar is a pool deposit that forms under extremely still conditions, where there is little or no water movement. This allows the the supersaturated solution to form large crystal faces and perfect form. Dogtooth Spar also forms in vugs (mineral lined rock cavities) which are later exposed as the cave develops.
- > Cave Pearls are spherical and develop in saturated pools. The calcite forms around a nucleus, such as a tiny pebble or grain of sand. Calcite crystal builds up as the pearls are agitated, usually through drops of water from the cave surroundings.
- > Lily Pads or Shelfstone form around the edges of cave pools or existing dripstone formations, such as stalactites, stalagmites and columns. They usually develop under still water conditions and a constant pool level.

Check for Understanding Questions:

- What's the difference between stalactites and stalagmites?
- Name one other cave formation and describe how it forms?

Learning Objectives: Did you accomplish them?

- I can identify the different types of cave formations

Self-Evaluation

- How well did you understand the material today?
(1-Lost, 2- understand, 3-can teach it)
- How well did you and your team members participate in class?
(1-didn't do anything, 2-Bare minimum, 3-fully participated)