

Life in the Crusher

Life in the Crusher links to the materials and their properties strand, providing direct links to solids and liquids and how they can be separated; gases around us and changing states (4d, 5c, 5d)

Key Science Concepts

- **Materials can exist in different states: solid, liquid, or gas and then can be changed from one to the other by heating or cooling.**
- **The 'disappearance of water' in a range of situations is known as evaporation.**

Background Knowledge

Materials exist in different states –solids, liquids, or gasses. In theory, all materials can exist in any of these states. Generally they exist in one state: for example, we think of metals as solids, but they can be heated to high temperatures and changed to liquids. Water commonly exists in each of these states. It has a high freezing point and a low boiling point compared to other materials. Pure water at normal atmospheric pressure boils at 100°C. Ice begins to melt at 0°C.

Heating a material changes it from a solid to liquid or to gas by giving energy to the particles (atoms and molecules) it is made up of. The bonds between the particles are more rigid and fixed than those between the particles of a liquid or gas, so a solid keeps its shape when turned out of a container but a liquid flows downwards and gas escapes in all directions.

An aqualung contains compressed air. Gases can be forced into small spaces under pressure. If the release of the air is not controlled, it rushes out through any hole in the container.

Before Reading

Students fill out the Anticipation component of the Anticipation/ Reaction Guide.

During Reading

Students read the book *Life in the Crusher* then use the crossword puzzle clues to facilitate the reading and complete the puzzle.

After Reading

Students fill out the Reaction component of the Anticipation/ Reaction Guide and share their reactions with the class.

Challenge

Have students grow salt crystals: stir salt into warm water until no more grains will dissolve, cover to keep out the dust and allow them to cool. Pour off and keep the liquid retaining any small crystals. Tie a crystal to a piece of thread and hang it in the liquid. Watch as the crystal grows. You can also do this with Epsom salts.

Discussion Questions

- What causes the bends?
- What are some of the diver's secret words? How are these words different than the sailor's secret words?
- How does echolocation work?
- List and compare vehicles used under the water?