

**BACKGROUND INFORMATION:**

Ranging from the very crude to the highly sophisticated, batteries come in a plethora of variety. Batteries in short are electrochemical cells that produce a current of electricity via chemical reactions. More specifically, batteries produce electrical energy from oxidation-reduction reactions. A collection of electrochemical cells wired in series is properly called a battery. A flashlight battery is really a single electrochemical cell, while a car battery is really a battery since it is three electrochemical cells in series.

Spontaneous redox reactions can be used as a source of electrical energy, including primary cells (for example, the Leclanché cell), secondary cells (for example, the lead-acid accumulator) and fuel cells (for example, the hydrogen fuel cell). Fuel cells are a potential lower-emission alternative to the internal combustion engine and are already being used to power various modes of transport. Organisations, including the International Partnership for Hydrogen and Fuel Cells in the Economy, have been created to foster global cooperation on research and development, common codes and standards, and information sharing on infrastructure development.

**YOUR TASK:**

Demonstrate an understanding of the following objectives which will be validated in an upcoming CAP assessment.

- Primary cells using Leclanché (dry) cell as the example
- Secondary cells using lead-acid accumulator as the example
- Fuel cells using the hydrogen fuel cell as the example
- Differences and similarities between the cells (primary, secondary and fuel)
- Applications of the hydrogen fuel cell
- An understanding of the Lithium button cell

**Suggested RESOURCES:**

- Chapter 9.4 Pearson text book
- Lucarelli Chapter 8
- Other relevant resources

