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News: Helium in rocket

- Two NASA astronauts aboard Boeing's Starliner will remain on the International Space Station (ISS) for an extended period due to a faulty propulsion system, which has been affected by helium leaks.

Helium

- Helium is the **second-lightest element after hydrogen**, characterized as a **colorless, odorless, tasteless, and inert gas with an atomic number of 2**.
- Helium is a **stable, non-reactive noble gas**. While non-toxic, **it cannot be breathed on its own as it displaces the oxygen needed for respiration**.
- It has a **very low boiling point (-268.9° C)**, allowing it to remain a gas even in **super-cold environments, making it useful for cryogenics**.
- This **helps reduce rocket weight and energy needs, which lowers fuel consumption and engine costs**.

Rocketary Applications

- Maintains **consistent fuel flow** by pressurising tanks.

- Assists in cooling systems for storing rocket fuel and oxidizer at very low temperatures.
- Fills empty space in tanks as fuel is used, keeping pressure stable.
- Helium is also used in industrial welding, leak detection systems, etc.
- Some launches such as ESA's Ariane 6 have experimented with other inert gasses like argon and nitrogen, which can be cheaper alternatives. However, helium remains the most widely used gas in the space industry.
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