Development of Hydrogen Technologies in BARC

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Abstract:

India has set its sight on becoming energy independent by 2047 and achieving Net Zero by 2070. Limiting global warming temperatures to 1.5°C requires cutting carbon dioxide (CO_2) emissions by around 37 gigatonnes (Gt) from 2022 levels.

Hydrogen stands as a viable solution for reducing greenhouse gas emissions (GHG), if it is produced from non-fossil sources. Today, most of the country's hydrogen supply is grey hydrogen, which is produced using fossil fuels in a process that creates CO_2 gas emissions.

Green hydrogen can directly replace fossil fuel derived feedstock in petroleum refining, fertilizer production, steel manufacturing and in mobility sector.

BARC is working towards various hydrogen technologies namely Iodine-Sulphur process, and its modified versions, Copper-Chlorine process, Low and high temperature electrolysis, photo catalytic H_2 production, and H_2 storage materials. These technologies have the potential to contribute in achieving Net Zero targets of the country.

My talk will focus on these hydrogen technologies that are pursued in BARC and their status.