

Hydrogen fuel has a price too

What you gain on the swings you lose on the roundabouts, says S.Ananthanarayanan.

Helicobacter, a bacterium that causes ulcers and stomach cancers in older people is on the decline, thanks to better sanitation and living conditions. But some scientists say that this could also deprive infants of the protection against several other infections that are kept at bay by Helicobacter.

Fossil fuels and alternatives

The large scale burning of fossil fuels, like petroleum, during the last century has caused much concern about global warming due to the build-up of carbon dioxide. The heavier carbon dioxide molecule is able to capture and store substantial energy from sunlight. Too much of carbon dioxide in the atmosphere leads to a more effective 'blanket' around the earth, and the earth begins to warm up. This leads to climatic changes, melting of polar ice caps and so on.

The world has thus striven for fuels with less harmful exhausts and the use of pure hydrogen, in 'fuel cells' is the most promising alternative. These cells use the energy of burning hydrogen in oxygen to directly produce electricity, without the customary intermediary of turbines and generators. Using these devices to power vehicles, in place of petrol or diesel engines would dramatically reduce the emission of carbon oxides, the so called 'greenhouse gasses' and reduce levels of many other pollutants.

The challenge is now to produce hydrogen without using fossil fuels in the process, and the industry is investing heavily to come up with answers before long.

Enter, the ozone layer

But even this dream fuel has its price tag. It looks like the use of hydrogen fuels could affect the ozone layer. Ozone is an active form of oxygen that is found in the upper reaches of the stratosphere, where it plays the useful role of blocking out harmful ultra-violet radiation. But the ozone level was found to get depleted by emission of Chloro-Flouro-Carbons, the CFCs. These are chemicals present in substances used in refrigerants and in the 'aerosol' sprays. CFCs have this quality of rising high into the atmosphere and neutralising the ozone.

Over the years, the size of the ozone 'hole', above the arctic region has been monitored and a series of measures taken to restrict the use and emission of CFCs. Most developed countries have regulations in place and the last few years have seen a welcome reduction in the size of depleted zone.

Hydrogen fuels could reverse this

If hydrogen were to become an important fuel in some years, then this would result in huge quantities of unburnt hydrogen being released into the atmosphere, while being produced, stored,

transported, filled in tanks, etc. The light hydrogen gas would rise quickly to the upper stratosphere, where it would react with oxygen to form water vapour. This would happen most often in the arctic regions, depleting the oxygen and making the stratosphere 'wetter'.

This is calculated to increase the entry of ultraviolet radiations by as much as 8%. Ultraviolet radiation causes skin cancers and genetic changes, apart from affecting vegetation and biological processes. Continued use of hydrogen fuels could thus result in a problem more immediate than global warming. Experts say that it may take 50 years before the methods of producing and using hydrogen fuel is efficient enough to keep down the levels of hydrogen leaks.
