Natural gas inhabited by unusual specialists

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A German-American research team of biologists and geochemists has discovered hitherto unknown anaerobic bacteria in marine sediments which need only propane or butane for growth, as reported by the scientific journal *Nature* in its current online issue.

The hydrocarbons ethane, propane and butane – as well as the main component, methane – are the major constituents of natural gas. Biological processes may lead to the degradation of these hydrocarbons in underground petroleum reservoirs and other geological habitats.

Heinz Wilkes, a leading biogeochemist at GeoForschungsZentrum Potsdam (GFZ), points out: "The bacteria isolated here for the first time from marine sediments use sulphate instead of oxygen for respiration and utilize propane and butane as their sole source of carbon and energy. These organisms are tough specialists that have become adapted to strictly utilising only these and no other substrates."

The investigations showed that the bacteria employ an unprecedented biochemical mechanism for transforming what are essentially unreactive hydrocarbons into reactive metabolites which may then be further oxidised to carbon dioxide. The findings concerning this reaction mechanism are an important step in designing new synthetic methods for selectively producing chemicals from hydrocarbons.

Source: GFZ GeoForschungsZentrum Potsdam