

POTENTIAL EFFECTS OF METHANE HYDRATES TO THE ENVIRONMENT

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ABSTRACT

During the past 50 years, there has been a growing awareness of environmental issues related with energy technologies and natural resource utilization. A growing global population demands augmenting amounts of energy, goods without big discovery of conventional resources (apart from Zohr offshore field in Mediterranean Sea-Egypt), leading companies and countries turn their interest in unconventional resources such as shale oil, shale gas, and gas hydrates. Although gas hydrates are considered as one of the alternative energy sources of the future, they exhibit possible environmental risks for both marine ecosystem and atmosphere environment. This paper presents the instability of methane hydrate that either takes place naturally or be triggered by anthropogenic activities. Furthermore, it explains the climate changed (methane released to the atmosphere has 21 times more global warming potential than carbon dioxide) and the ocean acidification (more than 50% of dissolved methane retains inside seafloor by microbial anaerobic oxidation of methane) caused by methane hydrate release. Moreover, it presents the seafloor instability when methane hydrated block sediments due to augmentation of temperature or pressure drop. Finally yet importantly environmental risks and hazards during the process of production and drilling hydrate reservoirs occupy a significant position in the presentation of this research.

Keywords: Climate, Energy, Environment, Natural Gas Hydrates