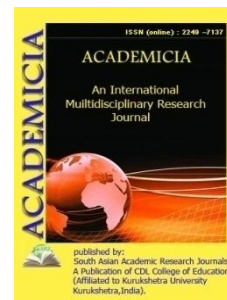


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## ENVIRONMENTAL POLLUTION BY CHEMICAL SUBSTANCES USED IN THE SHALE GAS EXTRACTION: A REVIEW

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### ABSTRACT

*Various fluids for hydraulic fracturing are used to obtain shale gas. Several hundred distinct chemical compounds may be found in them. Many of them may be harmful to the environment and human health. Despite the fact that chemical additives make up just 2% of the fluid volume, the huge quantity of fluid utilized and the fact that the majority of these chemicals are extremely toxic make them a potentially significant environmental hazard. To minimize their negative environmental impact, product safety data sheets must be used to identify all chemicals and specify their toxicity levels. Their usage should likewise be minimized to the greatest extent feasible, or they should be replaced with less hazardous alternatives. The following research looks at the most common chemical additions used in shale gas extraction fracturing fluids. It focuses on their characteristics and toxicity, as well as the difficulties in determining the presence of microelements and microelements in samples with such complex matrices. There are other hazards associated with their application and movement to soils, surface water, ground water, and creatures.*

**KEYWORDS:** *Fracturing fluid; Shale gas; Chemical substances; Environmental threats*

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