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The role of sulfur removal and stabilization processes on minimizing the environmental poisonous pollutants emitted from kerosene combustion

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Kerosene fuel is economically important fraction produced from crude oil refinery. It is considered as basic source for heating, cooking and lightening in the low income countries. Some kerosene-using devices emit substantial amounts of fine particulates, carbon monoxide (CO), nitric oxides (NOx) and sulfur dioxides (SO_2) are considered as high environmentally poisonous especially at indoor areas. Studies of kerosene used for cooking or lighting provide some evidence that emissions may impair lung function and increase infectious illness (including tuberculosis), asthma and cancer risks. These submissions are increased by the degratated, oxidized kerosene. Our interest is: 1) To extract N,N-P-methyl phenyl acetone (MPA) from crude oil to used as antioxidant for kerosene. 2) To minimize the sulfur contents in kerosene in a goal to decrease the submitted poisonous materials during combustion process. Two samples of kerosene were obtained from two sources with 0.20% sulfur contents (sample A) and with 0.25% sulfur contents (sample B) were evaluated in these stability tests in comparison with other well-known stabilizers. The samples were treated as follows:

1. They subjected to long period of storage at room temperature without any additives

2. They exposed to thermal aging at elevated temperature (393K) without additives for 3 hs

3. They passed through ion exchange column containing treated kaolin (Bentonite) to minimize the sulfur compounds.

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