

**Editor's Comment:**

**General Comments to the Author (s)**

- An author not includes the some Abbreviation.
- Include the updated reference.
- Before send the paper check the alignment and format of the paper.
- Conclusion is very shallow rewrite the part.

**Author's Reply:**

1. An author not includes the some Abbreviation

**Definition of abbreviation**

PAH: Polycyclic Aromatic Hydrocarbon

RAW BT: Raw Bitumen

IRO SAT 1: Saturated fraction of bitumen irradiated with infrared for one hour

IRO SAT 3: Saturated fraction of bitumen irradiated with infrared for three hours

IRO SAT 7: Saturated fraction of bitumen irradiated with infrared for Seven hours

°C : Degree Centigrade

cm<sup>3</sup> : cubic centimeter

UV : Ultraviolet

60/70 Pen : 60/70 Penetration bitumen

C=C : Carbon Double bond

nm: Newton Meter

HMA: Hot mix asphalt

g/ mg : gramme per milligram

µL: Mircolitre

psi : Pounds per square inch

g/ kg : gramme per kilogram

°C/ min: degree centigrade per minute

Gy : Gray

2. Include the updated reference.

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3. Before send the paper check the alignment and format of the paper.  
Done

4. Conclusion is very shallow rewrite the part.

## Conclusion

The Gas Chromatogram result for Aromatic fraction of bitumen irradiated with infrared radiation respectively shows that the total number of polycyclic hydrocarbons decreases as the time of irradiation is increases. Olabemiwo *et al*(2010) reported the same thing that exposure of Agbabu natural bitumen to sunlight caused a decrease in its total aliphatic hydrocarbons. Distribution of individual aliphatic hydrocarbon was also found to vary with extent of irradiation of the bitumen with sunlight. The polycyclic hydrocarbon profile of the bitumen was also found to depend on the period of exposure of sunlight volatilization, cracking. The changes in the composition of the bitumen will, no doubt, reduce its strength. A reduction in strength will definitely increase the rate of ageing of the bitumen (6).Once the composition of bitumen is change, the quality reduces and a reduction in quality of bitumen will increase the rate of ageing of bitumen. However, irradiation of bitumen can be used as

a means of remediating a land polluted with bitumen. Therefore, the effects of I.R Radiation may be different for different types of bitumen, and further studies are necessary to draw any general Conclusion.