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**REMOVAL OF DYE COLOUR FROM AQUEOUS SOLUTION
BY ADSORPTION ON MINERAL SURFACES**

A PROJECT REPORT PRESENTED BY

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ABSTRACT**REMOVAL OF DYE COLOUR FROM AQUEOUS SOLUTION
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A Naturally occurring substance, laterite was investigated for its ability to adsorb dye and hence to remove colour from the aqueous solution. For the adsorption experiments, methylene blue, belonging to the group of heteropolycyclic dyes and congo red, belonging to the group of azo dyes were used as model compounds. Since laterite is essentially composed of ferric oxide and aluminium oxide, the influence of these two oxides in the adsorption process of laterite was also studied.

Aqueous dye solutions of different concentrations were treated with fixed amount of laterite, ferric oxide and aluminium oxide respectively under static condition. Concentrations of dye in the treated solutions were determined using UV-Visible spectro-photometric method. Adsorption isotherms, adsorption capacity and the effect of initial dye concentrations with a fixed amount of adsorbent were analyzed.

Adsorption isotherms were evaluated according to a system of classification of the solution adsorption isotherms described by Giles. Adsorption isotherms for methylene blue and congo red on ferric oxide, and methylene blue on aluminium oxide fitted with the Langmuir adsorption pattern and belonged to the class L. Isotherms for methylene blue and congo red on laterite, and congo red on aluminium oxide belonged to the class H.

Laterite was found to have a much greater adsorption capacity for methylene blue and congo red in comparison with that of the individual aluminium oxide and ferric oxide.

Percent removals of methylene blue and congo red dyes on laterite were 100% in the concentration range from 1 ppm to 200 ppm. Results showed that laterite exhibited reasonably good dye removal for methylene blue and congo red dyes.