

**THE ADSORPTION CAPACITY OF SILICA GEL AND RICE HULL ASH
ON PHENOL AND ANILINE**

by

BEN FERMIN PINEDA BULATAO

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College of Arts and Sciences
University of the Philippines Visayas
Miagao, Iloilo

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ABSTRACT

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Chemical waste has been a problem here in the University of the Philippines Visayas, Miagao, Iloilo. Various methods of removal have been utilized. Extraction of silica gel from rice hull and rice hull ash was used to remove organic compounds (phenol and aniline). In this study, silica gel and rice hull ash adsorption on phenol and aniline were investigated with varying contact time and initial concentration.

Silica gel reaches its optimum adsorption of both phenol and aniline at 60 minutes contact time. Silica gel was the basis for rice hull ash's contact time because rice hull ash is 90% by weight silica gel.. Silica gel-phenol system decreases its adsorption capacity as the initial concentration is increased from 25 ppm to 100 ppm. Rice hull ash-phenol system, on the other hand, shows that the adsorption capacity increases as the initial concentration is increased. Both on silica gel-aniline system and rice hull ash-aniline system have increasing adsorption as initial concentration is increased.

As the contact time is increased, adsorption increases only until it reaches its optimum adsorption which is 60 minutes contact time where saturation is reached. Increasing initial concentration however has different effect on adsorption on all system explained by the adsorption isotherms. The isotherms show that phenol has the fastest rate to form a monolayer (K and Q^0) with the greatest binding strength (b) on silica gel. It is also observed that phenol and aniline formed a monolayer ($1/n$) on the surface of the silica gel and rice hull ash.