"Gheorghe Asachi" Technical University of Iasi, Romania

ANALYSIS OF PARTICULATE MATTERS IN AIR OF PALM OIL MILLS - A STATISTICAL ASSESSMENT

Nik Norulaini Nik Abd. Rahman[1], Ngu Chard Chard[1], Abbas Fadhl Mubarek Al-Karkhi[2] Mohd. Rafatullah[2]*, Mohd. Omar Abd. Kadir[2]

[1]School of Distance Education, Universiti Sains Malaysia, 11800 Penang, Malaysia
[2]School of Industrial Technology, Universiti Sains Malaysia, 11800 Penang, Malaysia

Abstract

The particulate matter samples were studied in the surrounding of the different mills in Penang and Kedah State, Malaysia. Multivariate statistical techniques such as multivariate analysis of variance (MANOVA), discriminant analysis (DA) and principal components analysis (PCA) were applied in analyzing the air quality data. MANOVA showed a strong significant difference between the five palm oil mills. DA identified two functions responsible for discriminating the mills and it showed that the differences between mills are mainly due to total particulates, PM 1, and PM 10, affording 58% correct assignation. PCA identified only one component responsible in explaining 93.69% of the total variance in the data representing the average of selected parameters.

Keywords: discriminant analysis, palm oil mill, particulate matter, principal components

* Author to whom all correspondence should be addressed: e-mail: mohd_rafatullah@yahoo.co.in; mrafatullah@usm.my; Phone: +604 653 2111; Fax: +604 657 3678