

UNIVERSITI TEKNOLOGI MARA

**DETERMINATION OF QUALITY OIL AND GREASE
EFFLUENT AT NASI KANDAR RESTAURANT**

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DECLARATION

Project entitled "Determination of Quality Oil and Grease Effluent at Nasi Kandar Restaurant" is a presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Assoc. Prof. Hazilia Hussain as Project Supervisor and Mr. Rahim Dal as Co-supervisor. It has been submitted to the Faculty of Health Science in partial fulfillment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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Abstract

DETERMINATION OF QUALITY OIL AND GREASE EFFLUENT AT NASI KANDAR RESTAURANT

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Introduction: Wastewater from restaurant typically contains large amount of organic matter (biochemical oxygen demand, BOD) grease and oil. The term oil and grease as commonly used includes fat, oil waxes and other related constituent found in waste water. These compound (ester) of alcohol or glycerol with fatty acid. The glycerides of fatty acids that are liquid at ordinary temperatures are called oil and those that are solid are called grease or fat (Eaton *et al*, 1995). Restaurant discharges oil into public sewer have been a problem for many years, but have become a greater problem with the large number of full service fast food restaurant being built booth in large cities and rural communities across the country. These restaurants typically discharge large amount of suspended solid and oil and grease that will reduce the capacity of public sewer over time (Raghava 2001). **Objective:** To determine the quality level Oil and Grease effluent from Nasi Kandar Restaurant. To compare the level Oil and Grease during peak hours of business. To identify contribution factor to the violation of Oil and Grease standard. **Methodology:** 60 sample of waste water for kitchen of Nasi Kandar Restaurant and 30 questionnaires were also taken from involved restaurant to obtain information on Oil and Grease effluent in Seberang Perai Tengah District. In-situ test for pH and Temperature level using HACH sension1 meter. Ex-situ test for Oil and Grease with 500 ml of waste water effluent with SCHOTT DURAN glassed bottle by using APHA 5520.B:2005 method. **Result:** Oil and Grease level at low peak hours was 8-2999mg/l and 9-5378mg/l during peak hours. Mean of pH is 6.12 (low peak) and 6.74 (peak hours). Mean Temperature is 29.38 0° (low peak) and 30.52 0° (peak hours). There was a statistically significant difference between Oil and Grease during Low and peak hours ($H(2)=9.427$, $P=0.01$ for OGam) and ($H(2)=16.934$, $P=0.00$ for OGpm) with a mean 551.60 and 1115.6. Correlation $N=30$ $r=0.417$ $P=0.02$. Chi square test show that there are statistically significant association between Oil and Grease with types of grease trap problem certify by SIRIM accreditation. Chi Square $r=1.000^{**}$, $n=30$, $P<0.005$. **Discussion:** Statistically association and correlation between Oil and Grease and type of grease trap (SIRIM) either during low(am) or peak hours. Hence, statistically significant differences level of Oil and Grease at low (am) and peak (pm) hours operation. Contribute an impact to environment, sewage system and open drain and public health, allowed vector and nuisance factor. Statistically of final discharge at 86.7% through open drain and 13.3% through sewerage system. Additionally support that cooking and washing activities contribute such level of Oil and Grease due to the significant correlation. **Conclusion:** Data and guideline to public health, auxiliary Standard Operation Procedure (SOP), Accreditation SIRIM grease trap as an requirement of licensing and enforcement. Reduce of cost of drainage maintenance, public cleansing and public complaint. Sustainable development and management in waste disposal for future generation

Keywords: Oil and Grease, Nasi Kandar Restaurant, Standard Operation Procedure (SOP), pH, Temperature, Oil and Grease (OGam/OGpm), Open Drain and SIRIM