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SIRIPORN PONGSANTISUK : OIL SPILL CLEANUP BY USING NATURAL MATERIALS AS SORBENTS. THESIS ADVISOR : KRISANA TEANKAPRASITH, M.S. (Env. Health), KOMOL SIVABORVORN, Dr.P.H.(Env. Health Science), SUVIT SHUMNUMSIRIVATH, M.S.(Env. & Water Resources Eng.), 105 p. ISBN 974-661-289-1

The purpose of this research is to determine the efficiency of natural materials in adsorbing oil spills. Four types of natural materials were studied; cotton, chicken feathers, coconut husks and rice straw. Two types of petroleum products, light fuel oil and diesel oil were used. Water samples with oil spill were prepared at five concentration levels, 5, 10, 20, 40 and 80 g/l. A water sample with no oil was also prepared. The study was a laboratory experimental research and was a batch study. Oil in sorbents were measured by gravimetric method.

The results show that the different types of sorbents have different efficiencies of oil spill removal. All of the sorbents have higher efficiency for removing light fuel oil than diesel oil. Also, as the concentration of oil spill increases, the efficiency of oil spill removal decreases.

Of the sorbents tested, cotton has the highest efficiency of oil spill removal followed by chicken feathers, coconut husks and rice straw, respectively. When the concentration of light fuel oil spill was 20 g/l., cotton removed 99.42% of oil and when the concentration of diesel oil spill was 10 g/l., cotton removed 97.72% of oil. In addition, cotton is the most suitable to use as an oil spill sorbent because it has adsorptive capacity of more than 10 g oil/1 g cotton. Chicken feathers can also be used as an oil spill sorbent but coconut husks and rice straw were not suitable because they have adsorptive capacity of about 3-5 g oil/1 g sorbent and have removal efficiency of less than 50%.