

Nalini Rangkaeo 2011: Product Design and Development Using Sediment from Water Treatment System in Power Plant. Master of Science (Environmental Technology and Management), Major Field: Environmental Technology and Management, Department of Environmental Science. Thesis Advisor: Assistant Professor

Jukkrit Mahujchariyawong, Ph.D. 95 pages.

This research aimed to manage a large quantity of sediment generated from water treatment system in electricity generation process. Feasibility study focused on utilization of sediment in the term of raw material for environmentally friendly products. Conventional soil cement block was used as a model for creation of new eco-product made of sediment and cement 3:1 (w/w). The result of bending strength test was 2.66 MPa which passed standard, TIS. This process data was applied to design eco-flowerpot formed by using hydraulic pressure. This production process reduced greenhouse gas 5,900 kgCO<sub>2</sub>/Ton product and LPG fuel 0.937 TJ/Ton product more than ceramic flowerpot. Moreover special property was designed on the concept of double layer which slowly released fertilizer from inner layer. The basic relative data of production pressure 20, 30 and 40 kg/cm<sup>2</sup> and total nitrogen and total phosphorous was tested for three weeks in the case of water reserving flowerpot. The results showed the average of TN 5281, 4097 and 3646 mg/ L and TP 345, 276 and 254 mg/L respectively. In the case of normal flowerpot, releasing test was induced for 5 times. The results showed the average of nutrient, nitrate and phosphate were 43.56, 14.32 and 1.32 mg/L and 6.12, 0.43, 0.17mg/L respectively. The result indicated a reverse variation which chemical fertilizer releasing was decrease when production pressure was increase. Selection of optimum pressure for usage will add the benefits to double layer flowerpot that will enhance the developed eco-products more advance environmentally friendly.

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