

CONVERSION OF DYE SLUDGE TO RDF

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Sri Lanka

March 2012

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Thesis/Dissertation submitted in partial fulfilment of the requirements for the degree

Master of Science



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Department of Chemical & Process Engineering

University of Moratuwa

Sri Lanka

March 2012

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ABSTRACT

In Sri Lanka the Dye sludge production from textile industry is large. The large amount of produced dye sludge needs to be properly managed otherwise it will cause lot of environmental problems. Currently textile industries in Sri Lanka use the landfilling method to dispose dye sludge. Because of the landfilling method lot of environmental problems are surfaced, such as emission of toxic gases, ground water pollution and bad odour in environment.

This study investigates the feasibility of using the waste dye sludge as fuel called Refused Derived Fuel (RDF). The method is used to produce RDF from dye sludge is mix dye sludge with other wastes available in textile industry. Other waste types which are supposed to use mix with dye sludge are fabrics, paper waste and saw dust. The mixing of waste dye sludge with other wastes in different compositions are investigated. Also different quality parameters of waste sludge and mixtures (after mixing with other wastes) are analysed. Calorific values of waste sludge with different moisture content and mixtures with different waste fractions, ash content, sulfur content, chlorine content, heavy metal content are main characterization parameters. Results analysed and it revealed that by mixing dye sludge with other wastes calorific value can be increased from 6 MJ/Kg to 22 MJ/Kg. By considering availability of the waste types during the last year most commonly used mixture composition is selected.

We propose that waste dye sludge mixed with other waste types in textile industry is a suitable and effective alternative energy source in Sri Lanka



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DEDICATION

Dedicated with gratitude to my loving parents for being the greatest pliers of my life....



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LIST OF ABBREVIATIONS

AAS	Atomic Adsorption Spectrometer
ASR	Automotive Shredder Residues
ASTM	American Society for Testing and Materials
APHA	American Public Health Association
CV	Calorific Value
EURITS	European Use for Responsible Incineration and Treatment of Special Waste
MPW	Mixed Paper Waste
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
PDF	Packaging Derived Fuel
PPF	Paper and Plastic Fraction
PEF	Process Engineered Fuel
RDF	Refused Derived Fuel
UNFCC	 United Nations Framework Convention on Climate Change

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