

ABSTRACT**Opportunities for Waste Minimisation at the Kerosine/ Jet A-1 Treating
Section of an Integrated Petroleum Refinery****Stephen Gajadhar**

The objective of this project is to identify opportunities for waste minimisation at the Kerosine/ Jet A-1 Treating section of an integrated petroleum refinery, in order to reduce the risk of negative impacts of the operation on the environment. This project is conducted and submitted in fulfilment of programme requirements for the completion of the Master of Science Degree in Environmental Engineering.

The principle analytical tool used in the project is a waste audit of the facility, coupled with analysis of samples drawn during a plant test run, in order to determine the extent of waste generation. The theme of the project is one of application of sound engineering theory and principles to the solution of environmental problems.

Several opportunities have been identified that, when implemented, will lead to a reduction in the quantity and an improvement in the quality of wastewater generated at the facility. In many cases, the implementation will lead to the improved product quality of the specification sensitive jet fuel. The opportunities include the automation of the control of the treating and washing fluid injection rate, the automation of the settler level control, the installation of a kerosine feed cooler, the use an alternative, low cost technology to achieve superior mass transfer in the treating and washing operations in the plant and the use of a superior quality wash water sourced from the waste stream of another refinery operation. The proposals are evaluated to be technically and economically feasible, some with very attractive rates of return.

Keywords: Stephen Gajadhar; Waste Minimisation; Waste Audit; Environmental Engineering; Process Control; Mass Transfer; Kerosine Treating.