

GUIDANCE MANUAL CLEANER PRODUCTION FOR TEXTILES SULPHUR BLACK DYEING

SEAM Project

Implemented by:

**Egyptian Environmental Affairs Agency
Technical Cooperation Office for the Environment
and
Entec UK Limited**

GUIDANCE MANUAL PRODUCED BY THE SEAM PROJECT

WITH CONTRIBUTIONS FROM:

Egyptian Environmental Affairs Agency Technical Co-operation Office for the Environment:

Eng. Dahlia Lotayef (Director of TCOE)
Eng. Abeer Shaheen (TCOE)

Entec UK Ltd

Mr Philip Jago (SEAM Project Manager and *Entec* Director)
Dr Linda Timothy (SEAM Industrial Component Co-ordinator and Senior Consultant)
Eng. Ahmed Hassan (SEAM Consultant)
Dr. Prasad Modak (Chairman of the UNEP Cleaner Production Textiles Working Group)
Mr. Mahesh Sharma (Manager, Chemical Technology, Century Textiles, Mumbai, India)

Textile Research Division, National Research Centre

Prof. Dr. Mohammed H. Abo-Shosha (Consultant)
Prof. Dr. Nabil A. Ibrahim (Consultant)
Prof. Dr. Mohammed H. El-Rafie (Consultant)

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The SEAM Project - An Introduction

Support for Environmental Assessment and Management (SEAM), is a multi-disciplinary environmental project being funded by Britains Department for International Development (DFID). This Project is being implemented by the Egyptian Environmental Affairs Agency (EEAA) through the Technical Cooperation Office for the Environment (TCOE) and *Entec*, a UK based engineering and environmental consultancy.

The SEAM Project is made up of 5 components, focusing on environmental management issues. These include Industrial Pollution Prevention/Cleaner Production, Environmental Impact Assessment, Solid Waste Management, Environmental Action Plans and development of an Environmental Database.

The main goal of the Industrial Pollution Prevention/Cleaner Production component is to show that significant financial savings and environmental improvements can be made by relatively low-cost and straightforward interventions. These consist of pollution prevention through good housekeeping, waste minimisation, process modification and technology changes. This approach has two benefits - valuable materials are recovered rather than wasted and factories are moved towards legislative compliance. This work is being undertaken in support of the National Industrial Pollution Prevention Programme (NIPPP) and has focused on three sectors: textiles, food and oil & soap.

Industrial auditing of 32 factories identified in excess of 200 low cost/no cost pollution prevention measures. Commonly occurring issues were then developed as demonstration projects for each sector, whose aims were to show the financial and environmental benefits of the pollution prevention approach.

Thirteen demonstration projects have been implemented in 21 sites as follows:

Textile Sector

- Eco-friendly Processing for Securing International Eco-label.
- Water and Energy Conservation.
- Combined Processing: Desize, Scour and Bleach.
- Bleach Clean-Up using Enzymes.
- Sulphide Reduction in Sulphur Dyeing.

Food Sector

- Installation of Milk Tank Level Controls and Valves.
- Water Conservation in Food Factories.
- Energy Conservation in Food Factories.
- Reducing Waste by Improved Quality Control.
- Recovery and Use of Whey as Animal Feed.

Oil and Soap Sector

- Waste Minimisation in an Edible Oil Factory.
- Oil and Fat Recovery.
- Improving Raw Water Quality to Reduce In-Plant Losses.

Outputs from these projects include industry workshops and seminars, demonstration projects with site visits, Guidance Notes and Manuals (to enable other factories to implement similar projects themselves), case studies incorporating cost-benefit analyses to demonstrate project feasibility, detailed Sector Reports and Circulars describing how to carry out industrial audits.

The SEAM Demonstration Project Improving the Sulphur Black Dyeing Process

The demonstration project was designed to show how sulphur black dyeing can be carried out without using harmful reducing and oxidising agents, whilst maintaining or even improving the quality of the final fabric. It shows how pollution can be prevented through chemical substitution, rather than end of pipe treatment alone. The project was implemented in three factories in Egypt; El-Nasr Spinning & Weaving Co., Mahalla El-Kobra; Dakahleya Spinning & Weaving Co., Mansoura and AmirTex Company, Sadat City.

Using the information gained during project implementation in these factories, this Guidance Manual gives a step-by-step description of how other companies can make similar improvements. It also quantifies the benefits that were achieved at each factory as a result of project implementation.

Factories that participated in the SEAM Demonstration Project

The factories were selected for their different characteristics in terms of fabric type, type of manufacturing equipment used for sulphur black dyeing and the size of the operation. The following factories were involved:

2. ***El-Nasr Spinning and Weaving Co., Mahalla El-Kobra*** (El Nasr Spinning and Weaving)

The factory produces spun cotton yarns (70%) and polyester (30%), which are either bleached or dyed, woven as terry fabrics, then pre-treated, dyed, printed and finished. The company is also a commercial dyer and carries out wet processing as required by their customers. The products include white, dyed, and/or printed fabrics, terry fabrics, bed covers, sheets and upholstery fabrics. Approximately 52.5 million-metre of fabric was produced during 1996/1997.

2. ***Misr Beida Dyers Company*** (Misr Beida Dyers)

Misr Beida Dyers is a public sector company located at Kafr El-Dawar, Alexandria. It was established in 1938 and occupies a 264 feddan site.

The factory pre-treats, dyes, prints and finishes cotton fabrics and cotton/synthetic blends; processes yarns (pre-treatment, mercerising and dyeing); scours and dyes wool tops and produces absorbent cotton. During 1997/8, Misr Beida Dyers pre-treated about 1,182 tons of woven fabric on jiggers, of which about half were pre-treated using the separate processes (kamilase desizing, scouring and half bleaching). The remaining fabric was pre-treated using the combined process consisting of desizing/scouring, using Leonil EB, followed by half bleaching.