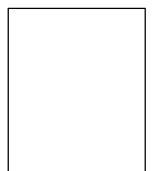


*SEAM Project*

Guidance Manual  
Cleaner Production for Food  
Waste Reduction by Improved Quality  
Control and HACCP Implementation

**Ministry of State for Environmental Affairs**  
**Egyptian Environmental Affairs Agency**  
Technical Cooperation Office for the Environment

*Entec* UK Ltd  
UK Department for International Development





# Guidance Manual Cleaner Production for Food Waste Reduction by Improved Quality Control and HACCP Implementation

## **SEAM Project**

Implemented by:

**Egyptian Environmental Affairs Agency**

Technical Cooperation Office for the Environment

and

**Entec UK Limited**

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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 Britain 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 supporting 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 Guidelines describing how to carry out industrial audits.

## **Executive Summary**

This project evolves with traditional waste reduction techniques and applies a total quality approach by setting guidelines to address safety, quality and waste controls within a food processing establishment. It is designed to encourage the adoption of a Quality Assurance System and HACCP principles and should be applied as appropriate to facilitate development and implementation in food safety, quality and waste reduction programmes across the different segments of food industries.

This demonstration project was successfully implemented in two sectors within the food processing industry: the dairy and preserved foods industries. However, this guidance manual applies to all food industries, processors and their operators, engineering personnel and management. It is a guide for any individual responsible for auditing food safety and quality, including government regulatory and inspection agencies, food and nutrition specialists, and health safety and environmental professionals.

## **Factories Participating in the SEAM Waste Reduction Demonstration Project**

### **Edfina Company for Preserved Food, Alexandria, Egypt**

The factory is one of the oldest and largest producers of preserved foods in Egypt. It was built in 1958 on 56,000 square meter of agricultural land in Ras El-Souda district in Eastern Alexandria. Today it has 600 employees working in 10 departments 6 days a week in 2 to 3 shifts per day.

The production is seasonal and market-driven, to include a wide variety of products. During 1997/98, the factory processed 8,400 tons of raw vegetables and fruits to produce juice and syrup (5,110 ton/year), jam (1,180 ton/year), tomato paste (1,020 ton/year), cooked beans (900 ton/year), frozen vegetables and fruits (1560 ton/year), sugar (85 ton/year), and various other products (230 ton/year).

### **Misir Company for Milk and Food, Mansoura, Egypt**

The factory is one of several owned by the public sector holding company and is one the largest producers of dairy products in Egypt. It was built in 1965 in Mansoura, Dakahleya and currently has a workforce of 420 employees.

During 1997/8, the factory processed 7,200 tons of milk to produce pasteurised milk (1800 ton), sterilised milk (600 ton), white cheese (1200 ton), yoghurt (1080 ton), and ghee (350 ton). Blue cheese (50 ton), mish (200 ton), and sour cream (10 ton) are also produced.