

Subtask 6.2 - Improve the Quality Assurance and Quality Control at CERP

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Executive Summary

This report documents the activities and procedures that would be required to implement an EMS that conforms to the currently adopted ISO 14000 specifications. The report provides a description of the ISO 14000 standard and listed potential benefits to certification.

Specific and detailed, documented steps would be required to implement a certifiable ISO 14000 EMS at Technikon. As the currently adopted standard is under major revision, Technikon may opt to wait until the new standard is published before taking the prescribed steps.

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Background and Introduction

What is ISO 14000 and what are the benefits of implementing an Environmental Management System (EMS) based on ISO 14000 principles?

ISO 14000 is an internationally recognized standard for environmental management systems. The standard requires implementation of an EMS that conforms to standards, which are prescribed in the ISO 14001 specification. The specification sets forth requirements for establishing an environmental policy, determining the environmental aspects and impacts of products, activities and services, planning environmental objectives and measurable targets, implementation and operation of programs to meet objectives and targets, checking and corrective action, and management review.

A successful and certifiable ISO 14001 EMS documents implementation of procedures to maintain achievement of stated environmental objectives. The EMS also requires periodic auditing of the EMS and its activities in order to identify non-conformance to system requirements and implement corrective action that is timely and appropriate.

Implementation of a documented ISO 14001 EMS (and, eventually, certification to that standard) can have many benefits to a company. Many customers are demanding that their suppliers meet ISO 14001 guidelines; some are demanding certification to the standard. The foremost benefit for many companies is the implementation of a comprehensive system to maintain compliance with environmental requirements. Other benefits include but are not limited to:

- Identification of opportunities for pollution prevention, including waste reduction and air and water emission reduction;
- Identification of and compliance with application federal, state and local environmental regulatory and reporting requirements;
- Reduction of environmental risks and their associated liability;
- Demonstration of commitment to the environment and to a quality standard; and
- Improved community public relations.

Technikon, under contract to the U.S. Army for operating CERP, has evaluated the benefits of implementing an Environmental Management System based on ISO14000 to improve the consistency of quality operations as they related to environmental issues. This report documents the evaluation.

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Results and Discussion

ISO 14000 Environmental Management System

The Environmental Management Manual

Technikon has implemented and documented a comprehensive EMS to manage its operations. This EMS is contained in the Technikon EMS manual that serves as the foundation of the system. This manual states the environmental policy of the company, top management commitment to environmental compliance and establishes the organizational structure of the EMS. The manual identifies all applicable federal, state and local environmental regulatory requirements and specifies what procedures are in place to assure compliance with the requirements, including periodic compliance audits and staff training.

The Technikon EMS manual would require minor revision and expanded documentation efforts in order to conform to the ISO14000 specification. Key staff would be involved in writing the revision and expanding the documentation. Additional staff training would be required to ensure that all employees are aware of the system and the importance of conformance to the system, and to clarify personnel roles in the successful implementation and maintenance of the system.

Environmental Policy

Technikon has published an Environmental Policy, signed by the President of Technikon. This policy is continually reinforced through periodic training required to comply with applicable environmental requirements.

This policy is as follows:

The health and safety of our workers and the protection of the environment are key elements in the overall success of Technikon. Technikon management considers these elements to be equal in importance to the overall mission of providing high quality, consistent and representative casting emission data. It is the policy of Technikon to provide a safe, healthful and environmentally conscious workplace that operates in compliance with federal, state, and local laws and regulations. Management, supervisors and employees will be active participants in the program and will commit to upholding this policy.

This program has been developed consistent with the proven and successful Environmental Health and Safety (EH&S) program employed by General Motors at their foundries and industry guidelines as provided by the American Foundry Society (AFS).

Determination of Environmental Aspects and Impacts of Products, Activities and Services

The ISO14001 specification requires that the EMS identify the environmental aspects and impacts associated with its products, activities and services.

An environmental aspect is defined, in the ISO14001 specification, as “an element of an organization’s activities, products or services that can interact with the environment.” The specification defines an environmental impact as “any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s activities, products or services.”

As Technikon revises its EMS for potential conformance with the ISO14000 standard, environmental aspects and impacts will be determined.

Two examples of aspects and impacts of Technikon’s activities, products or services:

1. Activity: Operation of melting furnaces
 - Aspect: Emissions of hazardous air pollutants
 - Impact: Release of regulated pollutants to the ambient air; air pollution

2. Activity: Handling of hazardous materials
 - Aspect: Potential for accidental spillage
 - Impact: Contamination of soils and water

Because of the nature of Technikon’s operations (operation of the Casting Emission Reduction Program and serving its mission), several beneficial impacts would be identified for certain operations and aspects.

Environmental Objectives and Measurable Targets

The next step in the process is to set environmental objectives and measurable targets based on the identified aspects and impacts. These would be established to be consistent with the environmental policy and the existing EMS.

Based on the above first example, an objective would be to minimize the amount of hazardous air pollutants emitted into the ambient air. Measurable targets would be stack sampling for reduced emissions compared to a baseline, 100% capture of emissions from the melting and pouring operations, and no visible emissions from the air pollution control equipment emission stack.

Checking and Correction Action – Audits

Technikon has already established a comprehensive system of internal audits to verify compliance with applicable requirements. These audits are performed on a periodic basis that is set forth by the applicable regulation.

To establish this auditing system under ISO14000, the audits would be more formally documented and communicated to key management staff for improved communication. In addition, the audits would be revised to include conformance to the itemized ISO14000 requirements.

Documentation

Expanded and revised documentation of the EMS, Policy, Management review, aspects and impacts, objectives and targets, audits and staff training will be required to conform to the ISO14000 specification.

This activity would establish the content of each type of document, its format, and procedures for revisions and approvals. This would also establish the way documents are communicated to users, control of the documents, and procedures for distributing new revisions and discarding obsolete documents. Finally it would establish requirements for retention time of documents.

Management Review

The entire EMS would be subject to periodic management review and revision, commensurate with any revised objectives or new services that would be engaged in by the company.