

# AN ENVIRONMENTAL MANAGEMENT SYSTEM FOR SUGARCANE IN THE NOODSBERG AREA OF SOUTH AFRICA

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## Abstract

The Noodsberg Cane Growers' Association (NCGA) initiated an environmental management system (EMS) in the Midlands North region of the South African sugar industry, based on ISO 14001. A brief description of ISO 14001 is given, outlining the principles behind the system. The course of action taken in the development of the NCGA management system is described. A breakdown of the components of the EMS components is given, and the tasks required to satisfy them are discussed.

*Keywords:* sugarcane, environmental management, Noodsberg, ISO 14001

## Introduction

In 1998, leadership in the Noodsberg cane growing area acknowledged that environmental issues affecting the industry were becoming increasingly important, and that an appropriate system for environmental protection needed to be developed. A determined effort was made by the Noodsberg Cane Growers' Association (NCGA) to convey the concept of environmental management to grower members, and resulted in the formulation and implementation of an environmental management system (EMS) based on ISO 14001.

Prior to this, 'best practices' for sugarcane were fragmented, and no single document in the sugar industry contained all the guidelines necessary to protect the environment. With the exception of the forestry industry, the agricultural sector of South Africa had not attempted the implementation of an EMS, nor the development of detailed guidelines, making the NCGA EMS for sugarcane the first in this country, if not the world.

## International Standards Organisation (ISO) 14001

ISO 14001 is an international EMS applicable to all types and sizes of organisations, and accommodates diverse geographical, cultural and social conditions. The success of the system depends on commitment from all levels of management, in particular the upper level. The overall aim is to protect the environment and prevent pollution, while taking socio-economic needs into consideration.

The basis of the approach subscribes to the following principles:

- environmental policy
- planning
- implementation and operation

- evaluation and corrective action
- management review
- continual improvement.

The international standard specifies the requirements for an EMS, that will enable an organisation to formulate an environmental policy in accordance with local legislation. The policy applies to those environmental aspects (impacts) which the organisation can control and over which it can be expected to have influence. While the standard does not state specific environmental performance criteria, the organisation should identify those environmental aspects associated with its activities, such as:

- emissions to air
- releases into water
- disposal of waste
- contamination of land
- use of raw materials and natural resources.

ISO 14001 addresses the needs of a broad range of interested parties and the evolving needs of society for environmental protection.

### **Course of Action in the Development of the NCGA EMS**

The first step in the development of the EMS was to produce a policy statement outlining the mission and objectives of the group, after which a set of standards and guidelines for sugarcane was developed. Only when these were complete could the EMS be presented to the grower members, and a review of the group be initiated.

#### *Policy statement*

The policy statement details the grower group's environmental policy and includes its mission, objectives, key issues, strategies, method and time span, action plan and target audiences, and internal and external awareness programmes and environmental education policy.

#### *Environmental guidelines*

These guidelines had to encompass all aspects of sugarcane production, and had to be acceptable to relevant government bodies and other interested parties. The guidelines set the standards against which growers would be assessed, and had to take into consideration existing legislation. This meant reviewing and listing all current legislation applicable to agriculture, and providing a brief description of each relevant Act. It was necessary to take into account not only the activities involved in cane production, but also labour issues and the natural habitat of the area.

#### *Environmental review*

The compiled guidelines were used in an awareness programme, during which individual visits were made to every grower member to explain the environmental strategy and carry out an initial EMS audit. This phase took three years to complete. The aim was to determine the level of knowledge, with regard to environmental issues, of individual growers and the grower group as a whole, and to introduce growers to the concept of environmental management. The awareness programme enabled the guidelines to be tested in the field, so that upgrades and adjustments could be made before publishing. At the same time it allowed the development of a suitable EMS audit procedure.

### *Action plan*

On completion of the review, the results of the environmental audits were assessed to identify strengths and weaknesses within the Noodsberg mill supply area. Weaknesses were noted and an action plan was formulated to ensure improvements in these areas. Growers have since been grouped into homogeneous eco-zones, and future audits will be carried out on an eco-zone basis by randomly selecting growers to represent each zone. The intention of random audits is to prepare growers for future certification audits.

### *Further development of the EMS*

An environment consultant was commissioned to assess the progress of the NCGA EMS and advise on work still required to ensure that the EMS would be fully and correctly implemented. This resulted in the compilation of a component register for use as a guideline in the further development of the EMS.

## **Breakdown of NCGA EMS Components and Tasks**

The EMS components listed and discussed below closely follow ISO 14001 principles. However, within the major components are sub-components, all of which have important tasks that should be completed to satisfy the requirements of the EMS.

### *EMS Component 1: Environmental policy*

The environmental policy provides an organisation with an overall sense of direction, and includes commitment to:

- minimise any unavoidable adverse environmental impacts
- develop performance evaluation procedures
- prevent pollution
- reduce waste
- minimise consumption of natural resources
- recycle
- undertake environmental education and training
- share environmental experience
- involve and communicate with interested parties
- practise sustainable development
- encourage suppliers and customers to use an EMS.

**Table 1. Environmental policy guidelines.**

	<b>Tasks required</b>	<b>Comments</b>
Environmental policy	<ul style="list-style-type: none"><li>• Develop policy.</li><li>• Endorsement by management.</li><li>• Signing of policy by chairperson.</li><li>• Communicate policy to members.</li><li>• Ensure policy is made available to the public.</li></ul>	Documented proof is required.

### *EMS Component 2: Planning*

Component 2 consists of four sub-components, to ensure that the organisation formulates a plan to fulfill its environmental policy. An important element of this component is the identification of environmental impacts in the form of an aspects register.

The aspects register should be in tabulated form, with details of the impact associated with each activity, the environmental issue affected, and the management measures implemented to rectify the situation.

**Table 2. Planning guidelines.**

<b>Sub-components</b>	<b>Tasks required</b>	<b>Comments</b>
Environmental aspects	Document potential environmental impacts.	Need to identify potential impacts per activity in the form of an aspects register.
Legal and other requirements	Establish a legal register and develop a procedure for ensuring the register is kept up-to-date.	Need to identify the implications of each piece of legislation. An environment lawyer should review the register.
Objectives and targets	Identify key issues and determine objectives for each issue. Determine performance targets for each environmental aspect.	Need to identify specific objectives per key issue. Key issues can form part of the policy statement.
Environmental management programme	Document the EMP in the form of guidelines. Develop a procedure for tracking progress and updating the EMP.	Standards for conservation and environmental management.

**Table 3. Implementation and operation guidelines.**

<b>Sub-component</b>	<b>Tasks required</b>	<b>Comments</b>
Structure and responsibility	Clarify environmental management responsibilities within the organisation. Incorporate environmental management responsibilities into job descriptions/contract agreements.	Need to develop an environmental charter which grower members sign. Need to decide how to deal with external parties (non-members).
Training, awareness and competence	Identify environmental management training needs for members, including general environmental awareness training. Undertake a skills competency analysis for members involved in environmental management actions. Develop customised training courses where appropriate training courses are not available. Develop a record-keeping system for the training programme.	A strategy should be proposed and documented. This could form part of the policy statement under internal awareness and education.
Communication	Determine communication needs for members and management, clients/customers and the public. Formulate communication strategy to address various communication needs. Establish a communication programme. Develop communication material. Develop a system to monitor and track the communication programme.	A formal programme should be developed.

**Table 3. continued.**

Documentation control	Develop a system to ensure that the latest version of environmental management documentation is retained. Establish a database of environmental management documents including their location.	Documents should be referenced.
Operational control	Identify and develop operational procedures for each environmental aspect listed under 'Planning'.	General requirements are stipulated in the guidelines. However, specific procedures in a tabulated format should be developed in the form of an Operational Procedures Sheet.
Emergency preparedness and response	Identify all potential emergency situations that could arise on site. Develop a response procedure for each emergency. Establish a programme for testing of emergency response procedures. Ensure all members are trained in response procedures. Ensure appropriate information is communicated to clients/customers.	Emergency procedures need to be synthesised and formalised under a single section.

**Table 4. Evaluation and corrective action guidelines.**

Sub-component	Tasks required	Comments
Monitoring and measurement	Identify the monitoring requirements in terms of legal compliance and in terms of the requirements reflected in the environmental policy, objectives and targets. Develop a procedure for each element that requires monitoring. Develop a record keeping system for monitoring data. Develop a reporting system for monitoring results, including the presentation of these results in a suitable format.	This can only be developed when the aspects register, targets and operational procedures are complete. The monitoring procedure requires the development of a Monitoring Sheet, to be completed on a monthly basis, for each element.
Non-conformance, and corrective/preventative action	Establish a procedure for reporting instances of non-conformance. Develop a procedure for the approval of corrective action which enables the situation to be remedied timeously.	Done partially through the EMS audits.
Records	Establish a record keeping system that enables ready access to environmental procedures, data monitoring, results of audits and other relevant information.	If necessary, seek external advice to install the most suitable system.
EMS audit	Determine environmental auditing needs (compliance audits and EMS audits). Develop an environmental auditing procedure. Commission independent environmental audits on a regular basis.	Compliance audits normally require reviews every six months by an independent ISO accredited body. EMS audits are carried out annually by an internal audit team.

*EMS Component 3: Implementation and operation*

To ensure effective implementation of the EMS, the organisation needs to develop the necessary capabilities and support mechanisms, considering that these constantly evolve in response to changing requirements and the process of continual improvement.

Documentation is a very important part of the EMS procedure, and is possibly one of the more time consuming and difficult components to develop, especially with regard to record keeping and updating of documents. This may require the services of dedicated personnel, depending on the size of the organisation.

*EMS Component 4: Evaluation and corrective action*

To ensure that it is performing in accordance with its stated environmental management programme, the organisation should measure, monitor, evaluate and record its progress. Any corrective action required should be implemented.

*EMS Component 5: Management review*

The objective of the management review is to improve overall environmental performance. To ensure this occurs, the organisation should review and continually improve the EMS.

**Table 5. Management review guidelines.**

	<b>Tasks required</b>	<b>Comments</b>
Management review	Develop a procedure for the management committee to review environmental performance. When targets are being achieved consistently, develop a strategy for further improving performance.	Report-backs should be made at committee meetings.

**Summary**

Developing an environmental management system is no easy task, especially when it is being done for the first time in a field where available expertise is limited. However, the NCGA is committed to becoming a world leader in environmental management in sugarcane, and have invested a great deal of time and effort in the development of a sustainable EMS.

There is no doubt that concern for the environment is growing worldwide, and will affect the way in which business is done in the future. The work carried out by the NCGA in developing an EMS for the Midlands North region is of benefit to the sugar industry as a whole, and should be regarded as a positive response to the degradation that threatens our industry and our planet.

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