



**Workplace
Learning
Initiatives** Pty Ltd
A.C.N. 065 607 561

Vehicle Industry Certificate

**Environmental Management &
Waste Minimisation
Processes**

in

Automotive Manufacturing

**Syllabus Outline
& Trainer's Notes**

**Environmental Management & Waste Minimisation Processes
in Automotive Manufacturing**

**Syllabus Outline
& Trainer's Notes**

VIC Core Knowledge Module
Environmental Management & Waste Minimisation
Module Code: VBB524

11 April 1996

© Recycling and Resource Recovery Council, 1996

This work is copyright. It may be reproduced in whole or in part for study or training purposes, subject to the inclusion of an acknowledgment of the source and to its not being used for commercial use or sale. Reproduction for purposes other than those indicated above requires the prior written permission of the Recycling and Resource Recovery Council. Requests and enquiries concerning reproduction and copyright should be addressed to the Executive Director, Recycling and Resource Recovery Council, Suite 6, 355 Exhibition Street, Melbourne, Victoria, 3000.

Prepared by: **Peter Waterhouse**
Workplace Learning Initiatives Pty Ltd
490 High Street, PO Box 96
Northcote Victoria 3070
Tel: (03) 9486-8600 Fax: (03) 9486-8611

In Association with: **Bob Miller**
Jacana Consulting Pty Ltd
35 Pitt Street, PO Box 21
Mortdale NSW 2223
Tel: (02) 585-9041 Fax: (02) 585-9047

Meg Smith
Innovative Workplace Services
PO Box 726
Seven Hills NSW 2147
Tel: (02) 621-8119 Fax: (02) 621-8343

Desktop Publishing: **Helen Kalcovski**

**Development of the *Trainer's Notes and Learning Materials*
was undertaken by:**

Workplace Learning Initiatives Pty Ltd
490 High Street, PO Box 96
Northcote Victoria 3070
Tel: (03) 9486-8600 Fax: (03) 9486-8611

Under the auspices of: **Victorian Automotive Industry Training Board**
PO Box 7428, St Kilda Road
2nd Floor, VACC House, 464 St Kilda Road
Melbourne Victoria 3004
Tel: (03) 9866-1294 Fax: (03) 9866-1295

With funding from the: **Recycling and Resource Recovery Council**
Suite 6, 355 Exhibition Street

Table of Contents

Background 1

Purpose of the Module 2

Relationship to Existing VIC Modules
3

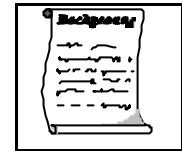
Background Materials & Resources
4

Approaching Environmental Auditing
Service Directory
Environmental Audit Questionnaire
Environmentally Sustainable Workplaces: Lessons from the
Automotive Sector
Environmental Management & Waste Minimisation Processes:
Trainees' Notes & Learning Materials

Syllabus Outline & Learning Outcomes
6

Module Name: *Environmental Management & Waste
Minimisation Processes in Automotive
Manufacturing*
Nominal Duration
Module Code
Discipline Code
Module Purpose
Prerequisites
Relationship to Competency Standards
Assessment Method
Conditions of Assessment
Learning Outcome # 1
Learning Outcome # 2
Learning Outcome # 3
Learning Outcome # 4
Learning Outcome # 5

Background



The following notes & learning materials have been prepared to support the implementation of the Vehicle Industry Certificate (VIC), an accredited program for non-trades employees in the vehicle construction industry. It is anticipated this material will be integrated with those modules of the course that deal with Manufacturing Processes.

The module is one of the outcomes of a project designed to assist small and medium sized workplaces in the automotive component sector in the Melbourne metropolitan area to identify environmental issues in the workplace. More specifically, the objective was to research and identify the environmental impact and effect of enterprise practice on landfill use.

The project was funded by the Recycling and Resource Recovery Council (RRRC) and administered by the Victorian Automotive Industry Training Board (VAITB). It developed in response to enterprise bargaining agreements between various enterprises and the vehicle division of the Australian Manufacturing Workers Union (AMWU) in the automotive industry.

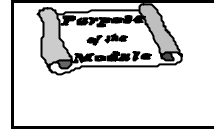
Broadly speaking, the project involved:

- * research and the establishment of a data base of literature and resources relevant for automotive component manufacturers;
- * developing an appropriately customised environmental audit process for the industry;
- * establishing tripartite consultative groups at each enterprise;
- * trialing the audit process in three workplaces (within metropolitan Melbourne);
- * developing an environmental improvement plan for each workplace;
- * developing a training program to support wider implementation of the audit process;
- * the documentation and dissemination of a report, case studies and support materials arising from the project.

This module is an outcome of the last two of these key objectives. It represents a commitment by the various stakeholders to ensuring that the benefits of this project's development processes should be available to the state training system and to other enterprises in the manufacturing sector.

The module has been prepared by Peter Waterhouse from Workplace Learning Initiatives Pty Ltd. It is based upon the findings of the project mentioned above and was developed in association with Jacana Consulting Pty Ltd and Innovative Workplace Services, the two companies directly involved in the development and implementation of the environmental audit process.

Purpose of the Module



This module is intended to enable VIC trainees to:

- * analyse the environmental impacts of manufacturing processes and the importance of waste minimisation within their workplaces;
- * apply key environmental and waste management principles to automotive manufacturing processes in which they are engaged;
- * participate, as active contributors, in environmental management, monitoring and audit processes in their own workplaces;
- * argue the benefits for the company and its employees, of effective environmental management and waste minimisation.

Relationship to Existing VIC Modules

Whilst presented (for accreditation purposes) as a *stand alone* module it is recommended that this training material be contextualised (to the particular enterprise concerned) and taught in an integrated fashion within the VIC. In particular it is expected that this unit will be linked to and/or incorporated within those Core Knowledge modules of the VIC dealing with Manufacturing Processes. Collectively these existing modules represent a notional time commitment of 50 hours within the structure of the VIC. As a *stand alone* topic the *Environmental Management and Waste Minimisation* module has a notional time allocation of 12 hours. However in most circumstances it is expected that this module could be incorporated into the VIC program without the allocation of additional time.

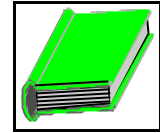
The relevant existing VIC modules include:

- * C4.1 Material Handling Processes: Just In Time
- * C4.2 Material Handling Process: Incoming/Outgoing Material & Stock Minimisation
- * C4.3 Problem Solving Techniques
- * C4.4 Total Quality Control: Factors Influencing Quality
- * C4.5 Total Quality Control: Key Elements & Processes
- * C4.6 Total Quality Control: Measuring Quality
- * C4.7 Principles of the Elimination of Waste
- * C4.8 Elimination of Waste - Continuous Improvement
- * C4.9 Work Methods Improvement & Measurement

This module therefore becomes:

- * C4.10 Environmental Management & Waste Minimisation Processes

Background Materials/Resources



Trainers should be aware that the project which led to the development of this module also produced a range of important materials which will provide background information and supplement this training module. Trainers wishing to implement this module are strongly encouraged to utilise these materials which include the following:

* ***Approaching Environmental Auditing***

This publication explains, in simple terms, State and Federal policies and laws relating to the environment. It outlines the reasons for such developments with reference to waste management, resource and energy use and the greenhouse effect. It provides background information on the issues of ozone depletion and air quality. Finally the publication addresses the need for environmental auditing and outlines a recommended approach to the audit process (this approach is also addressed in this module). A sample industrial agreement on the environment is included in the document as well as a bibliography.

* ***Service Directory***

This directory is divided into four sections. *Section one* lists the relevant legislation and policies at both federal and state level that combine to form the regulatory framework for environmental protection. *Section two* provides details of key organisations in this field, included to encourage partnerships between industry and environment organisations. A listing of relevant resources is included in *section three*; these are presented in four categories:

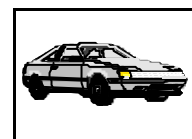
- i policy/legislation
- ii environmental management - practical guidelines
- iii environmental management - resources and facilities
- iv funding

The *final section* of the directory lists EPA permit holders for the transport of industrial waste and licence holders for the treatment and disposal of waste.

* ***Environmental Audit Questionnaire***

This publication presents the questionnaire used as the basis for the environmental audit process in the joint RRRC - VAITB project. This audit process was designed to help small and medium sized enterprises in the automotive component sector in the Melbourne metropolitan area to identify environmental issues in their workplaces. On the basis of the audit results it was hoped companies would take steps to help minimize waste and reduce industry's contribution to landfill as a means of waste disposal. The audit questionnaire was designed to enable workplaces to independently undertake the audit and to maximise the participation and involvement of management, employees and unions in the assessment of environmental performance and the development of improvement plans and strategies. In addition to the questionnaire itself this publication contains materials which help workplaces to address the auditing process. Information is included on interpreting the audit results and on utilising the results to develop environmental improvement plans.

* ***Environmentally Sustainable Workplaces:
Lessons from the
Automotive Sector***



This publication is a descriptive and comprehensive report on the RRRC - VAITB project. It outlines the experiences of those companies which took part in the project. It documents the procedures and structures that were implemented by the workplaces to facilitate the audit process, the results of the audits and the recommendations arising from them. The

publication also prefaces the individual case studies by outlining the recommendations of the project that are applicable to the entire industry sector.

The above publications were developed by Bob Miller, of Jacana Consulting and Meg Smith of Innovative Workplace Services. Copyright of the materials rests with the Recycling & Resource Recovery Council and the Victorian Automotive Industry Training Board, Melbourne.

* ***Environmental Management & Waste Minimisation Processes:
Trainees' Notes & Learning Materials***

This publication was developed to provide some generic training materials to support the delivery of this module. It is a companion document to this *Syllabus Outline & Trainer's Notes*. The *Trainees' Notes & Learning Materials* include the background to the project through which the module was developed and a series of suggested learning activities. These have been designed to introduce trainees to the key principles of environmental management, environmental audit processes and waste minimisation. Besides the suggested learning activities the materials include handout sheets providing a sample environmental agreement, the principles underpinning the audit process and guidance on conducting an environmental audit. There are also some suggestions for further reading/resources.

The *Trainees' Notes & Learning Materials* for this module were developed by Peter Waterhouse from Workplace Learning Initiatives as part of the RRRC - VAITB project. Enquiries regarding the availability of any of the above publications should be directed to:

Recycling & Resource Recovery Council
Suite 6/355 Exhibition Street
Melbourne Victoria 3000
Tel: (03) 9639-0922 Fax: (03) 9639-3087

Victorian Automotive Industry Training Board
PO Box 7428, St Kilda Road
Melbourne Victoria 3004
Tel: (03) 9866-1294 Fax: (03) 9866-1295

The action learning project suggested for *Learning Activity #10* of this module is based on those described in *Breathing Life into Training: A Model of Integrated Training*, R. Sefton, P. Waterhouse & R. Deakin, NAITB, 1994. This report is available from Automotive Training Australia, Level 2, 651 Doncaster Road, Doncaster; Tel: (03) 9848-8300, Fax: (03) 9848-8934.

Further information on approaches to action learning may be obtained from *A Guide to Action Learning as a staff training and development activity* and *Action Learning in Vocational Education and Training Vols 1-4*. For information regarding these publications contact The Executive Officer, National Staff Development Committee, PO Box 42, Chadstone, Victoria, 3148.

Additional contacts and references on waste minimisation and environmental management are included in the **Further Resources/References** section of the *Trainees' Notes & Learning Materials*.

Syllabus Outline & Learning Outcomes:

Module Name: **Environmental Management & Waste Minimisation Processes in Automotive Manufacturing**

Nominal Duration: 12 hours

Module Code: C4.10

Discipline Code: *to be determined*

Module Purpose: The purpose of this module is to provide trainees with the skills and knowledge necessary to participate, as active contributors, in environmental audit and waste management processes within their own workplaces.

Prerequisites: This module should be undertaken as a co-requisite with those units of the VIC dealing with Manufacturing Processes. In particular, learners require an understanding of the principles of continuous improvement and the elimination of waste (C4.7 & C4.8) as well as strategies for problem solving (C4.3). VIC units dealing with Communication Skills and Employee Relations could also form appropriate co-requisite units with this module. Ideally however, this module would be taught as part of Manufacturing Processes in an integrated program in excess of the 12 hours nominal duration noted above.

Relationship to Competency Standards:

As with the other knowledge modules in the VIC, this module reflects competency standards agreed to between the National industry and union parties for the vehicle industry. The module (and its learning outcomes) has been closely correlated with the existing Manufacturing Processes modules to ensure a consistent standard which complements the existing course provision.

Assessment Method: The module may be assessed by a combination of methods including:

- * negotiated assignment work on-the-job; eg. trainees investigating and making recommendations about manufacturing processes and waste minimisation within their workplaces;
- * practical exercises; eg. workplace experiments/try-outs or innovations to reduce/manage waste more effectively;
- * projects; eg. trainees negotiating and conducting environmental audits within their work environment(s);
- * personal interview & oral/aural strategies; eg. trainee presentations on workplace environmental issues; interviews & discussion on problem solving and development strategies.

Conditions of Assessment:

The training program and workplace context must provide:

- * knowledge of effective principles in environmental management, the elimination of waste and environmental audit processes;
- * practical strategies/methods for conducting environmental audits;
- * genuine opportunities for trainees to participate in environmental improvement & waste minimisation processes;
- * access to appropriate resources re environmental management & waste minimisation.

Learning Outcome #1

On completion of this topic trainees will be able to:

Analyse the importance of environmental management & waste minimisation in the manufacturing processes within their workplace.

Assessment criteria:

The trainee demonstrates the ability to:

- 1.1 relate the theory and principles of training to real-world-work situation(s);
- 1.2 evaluate the relative importance of production and environmental values in the workplace;
- 1.3 estimate or anticipate the longer term environmental consequences of manufacturing practices.

Learning Outcome #2

On completion of this topic trainees will be able to:

Identify and apply the key principles for effective environmental audit practices in their own workplace(s).

Assessment Criteria:

The trainee demonstrates the ability to:

- 2.1 distinguish those principles which apply to the particular workplace/context in question;
- 2.2 discuss possible scenarios and problems in the audit process;
- 2.3 design/plan an appropriate audit process for his/her workplace (or section within the workplace)
- 2.4 consult with appropriate personnel.

Learning Outcome #3

On completion of this topic trainees will be able to:

Propose, promote and participate, as active contributors, in environmental audit processes in their own workplace;

Assessment criteria:

The trainee demonstrates the ability to:

- 3.1 employ inclusive and collaborative audit processes for data gathering;
- 3.2 investigate environmental and waste management issues in the workplace;
- 3.3 debate appropriate data collection methods (in relation to the particular workplace context)
- 3.4 promote environmental management practices which will reduce waste within the workplace.

Learning Outcome #4

On completion of this topic trainees will be able to:

Apply principles of continuous improvement to environmental issues and waste minimisation in the manufacturing process(es) in the workplace;

Assessment criteria:

The trainee demonstrates the ability to:

- 4.1 formulate action plans/strategies for environmental improvement;
- 4.2 evaluate plans/strategies;
- 4.3 categorise/prioritise plans/strategies;

- 4.4 implement appropriate change processes/strategies (within the bounds of his/her area of responsibility) to promote improvement over time.

Learning Outcome #5

On completion of this topic trainees will be able to:

Make appropriate use of diverse sources of information re environmental management and waste minimisation.

Assessment criteria:

The trainee demonstrates the ability to:

- 5.1 use available resources eg. personnel, records, print materials etc. as appropriate;
- 5.2 seek assistance and ask questions as required.