

# **OUTDOOR POWER EQUIPMENT ASSOCIATION (OPEA)**

**JUNE 2000**

## **OCCUPATIONAL HEALTH AND SAFETY**

### **- RISK ASSESSMENT REPORT - CHAINSAWS**

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## **WARNING**

DO NOT OPERATE OR WORK ON THIS MACHINE  
UNLESS YOU HAVE READ & UNDERSTOOD  
THE INSTRUCTIONS & WARNINGS IN THE  
OPERATION & MAINTENANCE MANUALS.  
FAILURE TO FOLLOW INSTRUCTIONS &  
WARNINGS COULD RESULT IN DAMAGE  
TO THE MACHINE, INJURY OR DEATH

## PLANT SAFETY REVIEW – RISK ASSESSMENT PROGRAMME

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**REPORT FOR:** OUTDOOR POWER EQUIPMENT ASSOCIATION

**DATE ASSESSED:** 12/6/2000

**PLANT ASSESSED:** CHAINSAWS

**PREPARED BY:** ROGER LIM, MIEAust, CPEng, MSIA

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MAX MOUZON, STIHL PTY LTD

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Update/Reviewed by: .....

(Name)

.....

(Date)

.....

(Edition No.)

**Plant:** Chainsaws .....

**Model:** .....

**Serial No:** .....

**Attachments  
To Plant:** .....

**Customer Name:** .....

**Customer Address:** .....

**Customer Contact Person:** .....

**Information and  
Instructions Provided:** Instruction Manual No. ....

Plant Safety Risk Assessment Report No. ....

**Customer  
Acknowledgement:** .....  
(Signed and Dated)

.....  
(Name & Position)

**OPEA Representative:** .....  
(Signed & Dated)

.....  
(Name & Position)

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1. Similar “Plant Safety” Regulations applying to or about to apply to all States and Territories.
2. Risk Assessment Priority Matrix
3. Risk Assessment Worksheets

## **1.0 PREAMBLE**

The National Standard for Plant 1994 has been adopted as the national model where all State regulations relating to plant safety are developed. Queensland, South Australia, Victoria and Comcare (Commonwealth Employees) have these regulations in place. It is anticipated that by the end of 2000, all States and Territories in Australia will have similar regulations in place.

These regulations specify some specific duties for designers, manufacturers, importers, suppliers, employers and self-employed persons in relation to risk management processes involving hazard identification, risk assessment and the application of appropriate risk controls for plant.

These regulations require the designers and manufacturers to identify the hazards, assess the risks and control the risks, as far as is practicable and provide the relevant information about the plant to the importer/supplier and employer.

The employer must also carry out the hazard identification, risk assessment and risk control for the use of the plant in the work environment. These assessments must be carried out for all existing plant as soon as is practicable and for all new or modified plant before use.

## **2.0 SCOPE**

As designer, manufacturer and supplier of plant in Australia, OPEA is providing this information, regarding hazard identification, risk assessment and make appropriate recommendations where required on risk controls. Since the plant can be installed and used in different environments, it is necessary that this risk assessment be reviewed by the employer/user at the site to ensure that the risk control is appropriate so as to minimise the risk of injury.

The information provided in this document is sourced from the manuals provided by OPEA (the designer/manufacturer/importer/supplier), and from the experience of technical personnel from OPEA and industry consultants.

Whilst the information is not exhaustive in every possible risk, OPEA believes that they provide practical guidance to safe operation of plant, provided that the plant is used in accordance with the designers/manufacturer's recommendation for which the plant is designed and manufactured.

OPEA members should review these assessments and ensure that the relevant risk controls recommended are in place for the different models and add or modify the risks where appropriate.

### 3.0 METHODOLOGY

The different models of the chainsaws have been reviewed and assessed in accordance with the requirements of the National Standard for Plant and the relevant State plant regulations.

A generic assessment has been developed for the chainsaws that have similar functions and productive capacity and the procedures carried out for these machines do not result in any person being subject to a different risk than if the procedures were carried out for each individual machines.

The elements of risk assessments are:

- frequency of exposure
- likelihood of hazard causing injury
- severity of injury

from a designer/manufacturer's (including importer/supplier's) point of view, it is often difficult to determine the frequency of exposure to the potential hazards because of their limited control in the final use of the machines and the types of environment they are going to be used in.

The probability or likelihood of hazard causing injury will depend on the adequacy of the risk controls such as the integrity of the safeguards provided. Therefore a machine with identified hazards that are not appropriately guarded will increase the likelihood of injury and therefore the level of risks in the use (including maintenance) of the machine.

A **risk assessment priority matrix** is therefore used in determining the risk rating for each of the identified potential hazards.

### 4.0 RISK ASSESSMENT WORKSHEETS

- The risk assessment worksheets attached in Appendix 3 lists the potential hazards (including the sources of potential hazards) and risk controls that should be observed when operating or maintaining these machines.
- Make sure you fully understand these points before you start work and observe them to work safely. Read and understand the **Instruction Manual and risk assessments**.
- **The user should re-evaluate the site condition because the working environment may influence the risks associated with the use of the plant.**
- Manufacturer's manual specify that only qualified persons should operate, maintain and repair the machine. The term "qualified person" is intended to be consistent with the definition of a 'competent person' as defined in the

National Standard for Plant as meaning a person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform the task.

- Ensure the plant is used in accordance to the manufacturer's recommendations and what it is designed for.

## **5.0 AUSTRALIAN STANDARDS AND INDUSTRY CODE OF PRACTICE/HANDBOOK**

*AS 2726.1 Chainsaws-safety requirements, Part 1: Chainsaws for general use* provide guidance for safety requirements for portable, hand-held, electrically driven and internal combustion engine-driven chainsaws primarily intended for cutting wood. It specifies the design and construction safety requirements for chainsaws.

*AS 2727 Chainsaws-Guide to safe working practices* provides guidelines and recommendations for the safe use of general purpose chainsaws, identifies the hazards associated with the use of chainsaws and the requirements for a safe work site , describe methods for particular operations, e.g. cross cutting, simple tree felling, delimbing and pruning. It also gives the basic principles for the training of chainsaw operators, the maintenance of chainsaws and the sharpening of the saw chains.

An industry handbook called the *Chainsaw Operator's Manual-Manual for the safe use of chainsaws* have been produced to increase the level of awareness in general safety, and to assist the chainsaw operator in adopting safe and efficient working techniques.

The manufacturer's instruction/maintenance manual provides comprehensive safety precautions recommended cutting techniques. Ensure that chainsaws are supplied with these manuals.

## **6.0 REFERENCES**

### **6.1 Plant Safety Legislation**

- The National Standard for Plant and the following States and Territories proclaimed regulations relating to 'Plant Safety'
- Victoria - Occupational Health & Safety (Plant) Regulations 1995.
- Queensland - Workplace Health and Safety Act and Regulations 1995 and Code of Practice for Plant 1993.
- South Australia - Occupational Health, Safety and Welfare Regulations 1995.
- Western Australia - Occupational Safety and Health Regulations 1996.



- Northern Territories - Work Health (OHS) Regulations in place in February 1996.
- New South Wales - Draft Regulations based on National Standard for Plant expected in 2000.
- Tasmania - Workplace Health and Safety Regulations.
- OH&S (Commonwealth Employment) (National Standards) Regulations 1996.

## **6.2 Safety Standards**

- AS4024.1 Safeguarding of Machinery, Part 1: General Principles
- AS1270 Hearing Protection Devices
- AS1337 Eye Protection for Industrial Applications
- AS2210 Occupational Protective Footwear
- AS 2726.1 Chainsaws-Safety requirements,  
Part 1: Chainsaws for general use
- AS 2727 Chainsaws-Guide to safe working practices

## **APPENDIX 1**

**Similar “Plant Safety” Regulations applying to or about  
to apply to all States and Territories**

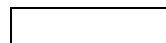
**APPENDIX 2**  
**RISK ASSESSMENT PRIORITY MATRIX**

**APPENDIX 3**  
**RISK ASSESSMENT WORKSHEETS**

### RISK ASSESSMENT PRIORITY MATRIX

	SEVERITY			
PROBABILITY	Catastrophic (4)	Critical (3)	Marginal (2)	Negligible (1)
Frequent (A)	High (4A)	High (3A)	High (2A)	Medium (1A)
Probable (B)	High (4B)	High (3B)	Medium (2B)	Low (1B)
Occasional (C)	High (4C)	High (3C)	Medium (2C)	Low (1C)
Remote (D)	High (4D)	Medium (3D)	Low (2D)	Low (1D)
Improbable (E)	Medium (4E)	Low (3E)	Low (2E)	Low (1E)

#### CODE



Highest Risk:



Medium Risk:



Lowest Risk:

#### PROBABILITY

The probability of a hazard actually occurring within the life of the plant can fall within one of the following categories -

#### Single Event

#### Multiple Events

##### **Frequent (A)**

Likely to occur frequently.

Continuously experienced

##### **Probable (B)**

Likely to occur several times.

Likely to occur frequently.

##### **Occasional (C)**

Likely to occur sometime.

Likely to occur several time.

##### **Remote (D)**

Unlikely but possible.

Unlikely but can reasonably be expected to occur.

##### **Improbable (E)**

So unlikely it can be assumed occurrence may not be experienced.

Very unlikely but possible.

#### SEVERITY

Severity categories provide a qualitative measure of the credible 'worst case' impact of a hazard.

##### **Catastrophe (4)**

Deaths, system loss, or severe environmental damage.

##### **Critical (3)**

Severe injury, several occupational illness, major system or environmental damage.

##### **Marginal (2)**

Minor injury, minor occupational illness, minor system or environmental damage.

##### **Negligible(1)**

Less than minor injury, occupational illness, or less than minor system or environmental damage.

**PLANT SAFETY**  
**JANUARY 2000**

<b><u>STATE</u></b>	<b><u>APPLICABLE LEGISLATION</u></b>	<b><u>STANDARD CODE OF PRACTICE</u></b>	<b><u>STATUTORY AUTHORITY</u></b>
VICTORIA	Occupational Health and Safety (Plant) Regs 1995 based on National standard - operative 1/7/95.	Code of Practice for PLANT No.. 19, July 1995.	Victoria WorkCover Authority, Health and Safety Division. (03) 9628 8111.
QUEENSLAND	Workplace Health and Safety Act 1995 and Regulations 1995 Sections dealing with plant generally similar to previous Regs.	Code of Practice for plant operating from 30/4/93 made under the workplace Health and Safety Act 1989. Not based on National standard but similar, as a risk management approach is adopted.	Division of workplace Health and Safety. Department of Employment, Vocational Education, Training and Industrial Relations. (07) 3247 4711.
SOUTH AUSTRALIA	Occupational Health, Safety and Welfare Regs 1995 contain Part 3 Plant-operation 3/4/95. Based on National Standard.	Part 3 of the Occupational Health Safety and Welfare (OHSW) Regs lists Australian Standards adopted as Codes of Practice.	Occupational Health and Safety Division. Workcover Corporation. (08) 8303 0400
WESTERN AUSTRALIA	Occupational Health and Safety Regulations 1996 in operation in October 1996.	No code of practice at present. Likely to adopt WorkSafe Codes of Practice.	WorkSafe Western Australia (08) 9327 8777
TASMANIA	Draft Workplace Health and Safety Regulations expected in 1999.	New Act states mandatory requirements. Descriptive detail to come from codes of practice.	Division of Safety and Mines. Tasmania Development and Resources (03) 6233 8333.
NORTHERN TERRITORY	Work Health (Occupational Health and Safety) Regs is based on the National Standard. New Regs in place on 14/2/96.	Will utilise WorkSafe codes of practice.	Workplace Health Authority. Darwin. (08) 8999 5010
NEW SOUTH WALES	Draft Regulations 2000 under review - expected completion in 2000. Contains Chapter 5-Plant -based on the National Standard for Plant	Regulations will be supported by codes of practice from WorkCover and others as appropriate.	WorkCover Authority. Sydney,NSW (02) 9370 5000

**Plant: Chainsaws**

Assessor/s: R. Lim, M Mouzon

Date: 12/62000

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>TRANSPORTATION</u></b> 1. Cutting by chainsaw	C	3	High	<ul style="list-style-type: none"> <li>Always carry the chainsaw with the engine stopped, or chain brake applied</li> <li>Keep the chain and bar covered by the chain guard</li> <li>When carrying the chainsaw the bar should be behind you</li> <li>When transporting in a vehicle, secure the chainsaw to prevent fuel spillage and damage to the saw</li> </ul>	Low (3E)
<b><u>FILLING FUEL</u></b> 2. Fire and health hazard from fumes	D	3	Medium	<ul style="list-style-type: none"> <li>Ensure correct fuel/oil mixture</li> <li>Stop engine before refuelling</li> <li>Refuel in well ventilated place away from ignition sources</li> </ul>	Low (3E)
<b><u>STARTING THE CHAINSAW</u></b> 3. Cutting by chainsaw and exposure to fumes.	C	3	High	<ul style="list-style-type: none"> <li>Do not start the chainsaw at the place of refuelling</li> <li>Ensure the chain brake is engaged</li> <li>Ensure you are standing on stable ground with firm grip on the chainsaw</li> <li>Ensure the guide bar and chain are clear of you and all other obstructions</li> <li>Ensure correct idle speed - the chain should not rotate</li> <li>Ensure proper ventilation</li> <li>Ensure spark plug boot is snugly fitted onto spark plug terminal</li> <li>Ensure spark arresting screen is fitted</li> </ul>	Low (3E)

Note: (1) Refer to Risk Matrix  
 (2) Residual Risk following implementation of Risk Control measures

Sheet 1 of 5

**Plant: Chainsaws**

Assessor/s: R. Lim, M Mouzon

Date: 12/6/2000

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>SAFE OPERATION - CROSS CUTTING</u></b> 4. Cutting by broken chain	C	3	High	<ul style="list-style-type: none"> <li>Ensure chain catcher is in place before starting</li> </ul>	Medium (3D)
5. Cutting by chainsaw from lack of operator control of the saw or chain speed	C	3	High	<ul style="list-style-type: none"> <li>Do not operate chainsaw with the starting throttle lock engaged</li> </ul>	Medium (3D)
6. Falling from unstable ground	C	3	High	<ul style="list-style-type: none"> <li>Ensure operator stand on stable ground</li> <li>Never work on a ladder, in a tree or on an other insecure support</li> <li>Never use the saw above shoulder height</li> </ul>	Medium (3D)
7. Cutting from chainsaw <u>kickback</u> .	C	3	High	<ul style="list-style-type: none"> <li>Avoid the upper quadrant of the chainsaw coming into contact with any obstacle</li> <li>Maintain a firm grip, good footing and chainsaw close to body</li> <li>Cutting at peak revs increases chance of cutting through an obstruction</li> <li>Use correct boring techniques</li> <li>Avoid limbing with upper section of bar nose</li> <li>Sharpen chain correctly</li> <li>Tension chain correctly</li> <li>Ensure correct depth gauge setting</li> <li>Keep front of depth gauge well rounded</li> <li>Ensure chain brake is functioning correctly</li> <li>Use reduced kick back chain and kick back bars</li> <li>Stand to the side of the cutting path of the chainsaw</li> </ul>	Medium (3D)

Sheet 2 of 5

**Plant: Chainsaws**



Assessor/s: R. Lim, M. Mouzon

Date: 12/6/2000

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
8. Cutting from chainsaw <u>pull in</u> - when the bumper spike of the saw is not held securely against the free or limb and when the chain is not rotating at full speed before it contact the wood	C	3	High	Caution when cutting small size brush and saplings which may easily catch the chain and pull operator off balance. <ul style="list-style-type: none"> <li>Always start a cut with the chain rotating at full speed and the bumper spike in contact with the wood</li> <li>Use wedges to open the kerf or cut.</li> </ul>	Medium (3D)
9. Cutting from chainsaw <u>pushback</u> - when the chain on the top of the bar is suddenly stopped when it is pinched, caught or encounters a foreign object in the wood	C	3	High	<ul style="list-style-type: none"> <li>Avoid situations that may cause material to pinch the top of the chain</li> <li>Do not cut more than one log at a time</li> <li>Do not twist the saw when with drawing the bars from a plunge cut or underbuck cut because the chain can pinch</li> </ul>	Medium (3D)
10. Striking by falling tree or branch	C	3	High	Before falling a tree, consider carefully all conditions which may affect the direction of fall, including: <ul style="list-style-type: none"> <li>The intended direction of the fall</li> <li>The natural lean of the tree</li> <li>Any unusual heavy limb structure</li> <li>Surrounding trees and obstacles</li> <li>The wind direction and speed</li> </ul> Clear tree base and work area. Follow appropriate cutting techniques by training.	Medium (3D)
11. Noise	B	3	High	Ensure appropriate hearing protection is used. Appropriate muffler should be fitted to the chainsaw.	Medium (3D)

Note: (1) Refer to Risk Matrix

(2) Residual Risk following implementation of Risk Control measures

Sheet 3 of 5

**Plant: Chainsaws**

Assessor/s: R. Lim, M. Mouzon

Date: 12/6/2000

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Consequence	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
12. Personal Protective Equipment for the operator	B	3	High	<p>Ensure appropriate personal protective equipment are used. They should include -</p> <ul style="list-style-type: none"> <li>• Safety helmet</li> <li>• Ear muffs with sufficient attenuation</li> <li>• Visor or safety glasses</li> <li>• Safety shoes</li> <li>• Reasonably close fitting clothes</li> <li>• Cut - resistant trousers or chaps</li> <li>• High visibility vest/shirt</li> <li>• Gloves</li> </ul> <p>Appropriate tools should include axe and wedges, tool pouch and belt.</p>	Medium (3D)
<b><u>STOPPING &amp; STORAGE</u></b> 13. Burns from hot muffler	C	2	Medium	Do not touch a hot muffler. Do not operate the chainsaw if the muffler is damaged, missing or modified.	Low (2D)
<b><u>MAINTENANCE</u></b> 14. Cutting hazard from poorly maintained chainsaw.	B	3	High	Follow manufacturer's recommendation specified in the instruction/maintenance manuals.	Medium (3D)

Note: (1) Refer to Risk Matrix

(2) Residual Risk following implementation of Risk Control measures

Sheet 4 of 5

**Plant: CHAINSAWS**

Assessor/s: R. Lim, M. Mouzon

Date: 12/6/2000

POTENTIAL HAZARDS (including sources of potential hazards)	Probability	Severity	Risk Rating (1)	RISK CONTROL MEASURES TO ELIMINATE / REDUCE RISKS AS FAR AS PRACTICABLE	Residual Risk (2)
<b><u>PROVISION OF INFORMATION &amp; INSTRUCTION</u></b>  15. Lack of relevant operation and maintenance instructions.	B	3	High	Ensure all relevant operation and maintenance instructions are provided.	Medium (3D)
<b><u>TRAINING</u></b>  16. Lack of appropriate training.	B	3	High	Operators must be trained in the safe use of chainsaws and cutting techniques. AS 1726 and AS 2727 provide further guidance on the safety requirements of the chainsaw and safe use.	Medium (3D)

Note: (1) Refer to Risk Matrix

(2) Residual Risk following implementation of Risk Control measures

Sheet 5 of 5