National workshop on nursery runoff and water quality

NY237

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1. INTRODUCTION

The Australian nursery industry enjoys a well deserved reputation as an environmentally responsible and concerned business. The industry plays an important role in developing and supporting community awareness and involvement in improvement of the environment.

In cooperation with HRDC, the industry is supporting a number of research projects aimed at minimising the environmental impact of its operations.

In the 1992/93 round of nursery related applications submitted to the Corporation, an increasing number addressed issues of runoff and environmentally sustainable production. The NIAA R&D Committee recommended to the Corporation that rather than respond to ad-hoc applications, a national strategy be developed and funds be directed to research that will have the greatest effect in reducing environmental impacts. To this end, the Committee requested HRDC to convene a national coordination meeting.

The two day workshop was attended by representatives of industry from each State, researchers with experience in the area, the Industry Development Officer and HRDC. The Environment Protection Agency and the NSW Water Board gave presentations on legislative issues and the cotton industry provided an overview of its experience with a similar process.

This report on the outcomes of the workshop should be seen as the first step in a continuing process of discussion, consultation and review.

2. ISSUES

Most nurseries and potting mix producers are aware of the environmental impact of their operations and individually take significant steps to control and minimise these effects. However a national strategy requires that coordinated action be undertaken in a number of areas. These were identified as:

- 2.1 Legislative environment
- 2.2 Financial incentives and funding
- 2.3 Research needs and priorities
- 2.4 Industry education
- 2.5 Public education

2.1 The legislative environment

There is a diverse and confusing amount of legislation relating to wastewater, runoff and associated issues both at State and Federal level. As a result of this confusion many nurseries do not know what their obligations under this legislation are. Consequently, a significant number of nurseries are technically in breach of existing State environmental legislation. Confusion exists as to the nature and location of monitoring under this legislation. This is compounded by the fact that the industry does not know size and extent of problem or, indeed, if a problem actually exits. There is no reliable information on industry size, nature or operation. The industry does not have the necessary information or opportunity to discuss what is possible with legislators. This is particularly disappointing as there are a number within the industry with more expertise than those charged with framing the legislation. Consequently legislation is being enacted that sets unrealistic standards.

2.2. Financial incentives and funding

Improving environmental performance and compiling with the various legislative requirements almost always involves significant capital expenditure. The purchase and installation of plant and equipment and the redevelopment of nursery layout and facilities are frequently required. Most nurseries are not in a position to afford such up front capital outlays. Currently there are no financial incentives offered by governments to encourage and enable operators who are willing to undertake such improvements.

At the same time, the industry must also look to its own arrangements to fund the required research and development. Currently some $600,000 a year is available

through the levy and matching monies, funding approximately fifteen projects on a wide range of issues and few funds are available for a national approach to wastewater management.

2.3 Research needs and priorities

There is a critical lack of information to allow an objective assessment of the size and extent of any problems. Currently research is being funded, through HRDC and the industry levy, to provide information on nutrition and efficiency of fertiliser use and water use efficiency and irrigation practice. However; there is an urgent need to collect data on a national basis on:

- Fertiliser use and efficiency
- Water use and efficiency
- Residues in wastewaters and plants, including organic matter, pesticides, herbicides and sterilants
- Pathology of wastewater; human, animal and plant

There also needs to be further research on irrigation and water recycling methods. There is a widespread lack of technical knowledge on the part of nursery owners and operators. This is compounded by the fact that much of the existing technical information is not readily available or in an unusable form. Simple measures such as the standardisation of analysis and reporting methods for media analysis results and the production of plain English manuals for design and operation of recycling units would go a long way to improving the performance of existing practices.

2.4 Industry education

Unfortunately there is a general lack of motivation to address the whole area of waste and runoff. The industry as a whole is not sufficiently aware of the potential of the issue to do serious damage to their future profitability and viability. There is no perceived commercial advantage in doing the right thing; indeed it may put one at a disadvantage. This has not been helped by a profound lack of industry leadership (the outstanding efforts of some individuals notwithstanding).

Again the lack of statistical and economic information on the industry has not helped the education of growers on the real costs of inaction or the dangers posed by inappropriate legislation. Many growers are not aware of the wide range of cost effective solutions currently available.

2.5 Public education

The current high standing of the industry on environmental issues and responsibility is fragile and may easily be damaged by prosecution of irresponsible individuals and ill informed publicity. This has been highlighted by recent publicity regarding legionella and potting mixes and the limited recycling of pots. Unfortunately, despite a generally excellent record, the industry does not see the need to promote the positive actions taken as a whole or individual members.

Despite considerable improvement in recent years, the industry still does not have

a well developed public relations process.

3. OUTCOMES

The national industry must act positively and in a coordinated way to take the initiative on this increasingly important issue. The industry must be able to demonstrate to the public and to government that it is aware of the problem and has a responsible and effective strategy in place to deal with it. It is vital that the industry be in a position to participate actively in the development of future legislation to ensure the required environmental and commercial results. The following outcomes were identified by the workshop as essential to the development of such a national strategy:

3.1 Industry organisation
3.2 Financial incentives and funding
3.3 Research needs and priorities
3.4 Industry education
3.5 Public education

3.1 Industry organisation

The industry must develop a structure for coordinated action, grower education and public relations involving AHC, HRDC, NIAA and State Associations. This structure is essential if effective leadership is to be exercised. An environmental code of practise should be developed and adopted by the industry to clearly and simply communicate the intention of its environmental strategy to all concerned. Ideally this should form part of the National Accreditation Scheme currently being developed. The workshop participants developed a draft code of practice and this is provided in Section 5.

NIAA, in cooperation with the State Associations, needs to organise the collection of information on:

- size and value of the industry including people employed
- State and federal environmental legislation relevant to the industry
- list of contacts for legislative, technical and recycling information, etc.

Once the appropriate facts are known, a process of coordinated lobbying of the press and politicians, including popular articles and press releases, should be undertaken.

3.2 Financial incentives and funding

Advice on existing tax incentives and financial assistance should be compiled. This could be coordinated with other industries in similar situations. Recommendations for improved provisions should be developed and used in any lobbying.

Business management packages should be developed to allow nurseries to undertake a simple cost/benefit analysis of the various runoff minimisation technologies. This must include detailed development and establishment costings and likely savings such as fertiliser and irrigation costs.

The industry must take steps to ensure that sufficient funding is available for the necessary research and development. A realistic allocation of R&D funds by industry will also be important in convincing authorities of the strength of the

industrys commitment to improvement. All possible sources of additional funding for this work, including government agencies (EPA, Water Boards, etc) and other industries (horticultural and others), should be explored.

3.3 Research needs and priorities

Improvement in environmentally sustainable practices cannot take place without coordinated research and development directed at the specific concerns of nursery operation. It is important that any research that is funded is not repetitive and is clearly focussed on industry requirements. It must be ensured that the national nursery database being developed by the Queensland Department of Primary Industries at Redlands, includes research that may be relevant to nursery runoff management regardless of its source. Existing research must be effectively communicated to industry. Ideally all appropriate relevant research should be incorporated into the National Accreditation Scheme.

The workshop participants drew up the following list of research priorities under which any further R&D should be coordinated:

1. Determining the size and extent of the problem
2. Effective recycling and monitoring technology
3. Effective and safe pesticide use
4. Environmentally sound hygiene practices
5. Efficient water use
6. Efficient fertiliser use
7. Runoff scrubbing

These priorities are covered in greater detail in Section 4 of this report.

3.4 Industry Education

Improved adoption of recycling and enviromentally sound management could lead to an immediate reduction of the industry's environmental impact. As discussed above, a high priority is seen as the provision of practical information packages on water user, fertiliser practice and recycling systems. The Industry Development Officer, Philippa Mathias, is currently compiling a review of irrigation and recycling technologies.

Provision should be made in all current and future research for nursery visits and regional workshops. This is seen as essential to ensure a tight practical focus is maintained and effective adoption of new techniques occurs.

3.5 Public Education

Important for both grower and public education is the development of and Industry Environmental Code of Practice. Keith Bodman, with direction from the workshop, has developed a draft Code which is provided in Section 5. This will be provided to all nursery groups for comment and, hopefully, eventual endorsement.

4. RESEARCH NEEDS AND PRIORITIES

4.1 National audit

The most important research priority was clearly see as some form of national audit of the environmental impact of nursery production. In other words a comprehensive survey to determine the size and nature of any problem.

Any such audit must involve all States, possibly under the coordination of a single lead agency. Each State will be responsible for the collection of samples following an agreed and consistent procedure. The number and type of nurseries involved will need to be carefully determined but should include retail, bedding plants, shrubs, indoor and open-ground nurseries. Funds are limited and it may be necessary to ask for volunteer nurseries prepared to pay for the analysis of samples. This has implications for the accuracy and representative nature of the audit.

Information to be collected should include:

- description of nursery including ground surfaces and pot densities
- fertiliser type and usage
- irrigation methods
- type of recycling if any
- media and site soil type
- area under production / solid cover (glasshouses,polytunnels)
- pesticide use

Measurements/analysis to be undertaken should include:

- volume of water/fertiliser on and estimate of loss
- complete chemical analysis at point of discharge/collection/dam and down stream
- pesticides residues;

This is an expensive area and may be relatively minor compared to levels of nutrient. Ideally an appropriate range of pesticides from the following list would be screened, bearing in mind that many are not water soluble - organo-chlorines (eg. endrin, chlordane), organo-phosphates (eg. toxaphene), carbamates, substituted phenols, 2,4-D, 2,4,5-T, phenyl ureas, triazanine, amides, quaternary salts

- pathology, particularly where recycling is involved
- sterilant residues

4.2 Irrigation recycling and monitoring

The second priority was seen as improving recycling of irrigation waters and the treatment and monitoring technology required. Significant immediate improvement could be gained by ensuring effective education of growers on the techniques and equipment currently available. There should also be research to establish the efficacy of the various recycling treatments and research on development of safe effective sterilants using existing compounds.

In the medium term the aim should be to develop appropriate recycling technology

packages for a range of situations and nursery types.

4.3 Efficient and enviromentally sound use of water, fertilisers and pesticides

The next four priorities (Effective and safe pesticide use, environmentally sound hygiene practices, efficient water use and efficient fertiliser use) can be grouped under this heading. It was the view of the workshop that no new work be funded in this areas until the outcome of the audit was known and progress had been made in better utilisation of existing information and technology. Any new work must have a strong practical emphasis and be directed towards improving performance at the nursery level.

4.4 Runoff scrubbing

Despite considerable work in this area for urban sewage systems that has produced promising results, this was not seen as a high priority for the nursery industry at present. A watching brief should be kept on developments in this area.

5. CODE OF PRACTICE

DRAFT

CODE OF PRACTICE FOR: WASTEWATER MANAGEMENT POLICIES OF THE AUSTRALIAN NURSERY INDUSTRY

Introduction

Australian nursery business is aware of its good reputation as an environmentally friendly industry.

Not only does it play an integral part in any planned regreening processes in destabilised non-urban situations, it is also a vital element in improving the urban landscape.

Compared with other forms of intensive horticulture and with broadacre agriculture, it is a very small user of agrichemicals, tillage, land area and water.

The ever increasing attention that legislators are paying to the sustainability of natural resources however, means that the nursery industry cannot afford to rest on its laurels.

All industries are being subjected to an accelerated process of greater public scrutiny and regulatory restrictions related to their impact on natural resources.

The Australian nursery industry has recognised the negative effect of these restrictions on its viability unless it can be as dynamic as the statutory changes.

Through the organisation of the Horticultural Research and Development Corporation, a national meeting of nursery industry delegates, researchers and educators was held in Sydney in November 1992.

The issue of most immediate concern, in terms of its environmental impact and its progress through the legislative process, was identified as wastewater management.

The following code of practice was developed at the meeting and it is intended as a guide to observing both statutory and sustainable environmental needs.

All nursery operators should develop a wastewater management strategy for proposed and existing operations. The ultimate aim of the strategy is to prevent wastewater from entering both surface water and groundwater catchments.

The various elements of the code are outlined below. They consider the major wastewater contaminants which are of concern to the nursery industry - namely, suspended materials,

nutrient and other salts, and pesticides.

Pesticide reduction

Practices on the nursery should minimise the intrusion of pesticides into wastewater by an overall reduction in pesticide use through:

- an integrated program of pest and pathogen exclusion, cultural and biological techniques.

- the design and siting of pesticide storage and mixing facilities so that spillage does not enter wastewater.

- improving diagnostic techniques so that early detection and spot treatments occur rather than blanket spraying operations.

- the selection of the least residual pesticides for the task.

- the selection and correct operation of application equipment which is suited to the task.

- the correct operation and the selection of application equipment which is best suited to the task. Poor equipment operation and maintenance are major caused of pesticide overuse.

- correctly training persons involved in pesticide application. There are numerous courses on this topic, offered by the pesticide industry, the nursery industry, colleges and state governments.

Minimal irrigation excesses

The use of excessive quantities of irrigation is a recognised failing of the industry. It is becoming less of a problem however, through the increased availability of a more versatile range of irrigation equipment, controls and consultants/designers. Even the best equipment will be less effective though, where there is not an ongoing evaluation of the wastage occurring, and steps taken to minimise it through more effective scheduling.

It must be borne in mind that some leaching is desirable, particularly where salinity effects are likely to occur. Controlled leaching using routine conductivity measurements will reduce excesses.

Irrigating in excess of the plants' needs if not only wasteful of water, it also increases the volume of wastewater that escapes or has to be caught and recycled. It is extremely wasteful of fertiliser, irrespective of the type used or the method of application.

Practices on the nursery will therefore aim at reducing wastewater volumes, through:

- the selection of the most effective, least wasteful irrigation equipment;

- the least wasteful irrigation scheduling determined by an ongoing monitoring program.

Nursery design

The eventual aim of nursery operators is to achieve zero runoff of contaminated water during normal operations.

It is important to also minimise the volume of stormwater that can be contaminated, in order to minimise the quantities that have to be retained on the property. The nursery drainage design must therefore consider:

- the diversion of stormwater away from production sites and potting mix storage and handling sites.

- methods and facilities for collecting wastewater and treating it for reuse.

- vegetated areas over which to disperse wastewater unsuited to or in excess of irrigation needs for crops on the nursery.

- buffer zones (areas of stable, vegetated land sited between the points of wastewater emission and collection) assist considerably in reducing quantities of suspended materials and dissolved substances in wastewater, and should be employed where applicable.

- facilities for drying and handling sludge from wastewater storage may be required by some authorities, on some nurseries.

- chemical concentrates (nutrients and pesticides) should be kept in bunded areas, which effectively contain any spills and prevent them form entering wastewater, particularly that destined for recycling.

Recycling water

In many situations, regulations on wastewater management will necessitate the recycling of wastewater.

This presents a number of new problems to many nursery operators.

The build up of phytotoxic and suspended material in recycled water can cause problems. There is also an increased risk from serious plant pathogens. This means that:

- nursery operators must avail themselves of the existing information and water quality monitoring equipment necessary to sanitise water and regulate its quality.

- the facilities used to treat the water must comply with regulations on its siting, instillation and use.

- persons operating the monitoring equipment and treatment facilities must be properly trained to do so.

Fertiliser use

Fertilisers, particularly those containing nitrates and phosphates are considered as major contaminants of wastewater.

The nursery operator should therefore choose nutritional programs which are:

- not excessive to the needs of the range of crops present.

- the least likely to exacerbate the build up of salts in recycled water.

- based on a pattern of small quantities available frequently rather than large infrequent doses. Leaching and salinity effects are significantly higher in the latter situation.

Quality assurance

Documentation and the operation of a wastewater management strategy should be part of the nursery's overall quality assurance program.

Nursery accreditation

Compliance with government regulations pertaining to the environment will play an increasingly important role in nursery accreditation processes. Some of the steps involved in wastewater management are already included in most accreditation guidelines. Operators should therefore consider the advantages in belonging to an identifiable group of high quality plant producers and traders which will also become a visible group of environmentally conscious nursery operators.

Compliance with government regulations

The draft code of practice is a general guide only.

There are of course many other government acts and regulations which affect the nursery industry.

Before capital is expended on upgrading facilities and money is spent on training personnel, it is essential that the operator seeks more specific information from state nursery industry associations, state departments of agriculture, local government and other relevant legislative authorities.

This is important, as the activities outlined in the guidelines are governed differently in each of the states.

6. RECOMMENDATIONS

The workshop and this resultant report are the first step in what must necessarily be an ongoing process. This report and the following recommendations are intended as a starting point, to initiate discussion and consideration at the State Association level. It is hoped that the State Associations and NIAA will take the earliest opportunity to jointly consider these recommendations and take action where appropriate.

The recommendations are provided under five broad categories. They cover only those outcomes considered of the highest priority and fundamental to further progress. It would be up to the steering committee to make further recommendations once established and in the context of the 5 year plan.

6.1 Industry organisation

- Establish a national Steering Committee, under NIAA, to coordinate industry initiatives and action on Environmental legislation and its impact.

- Each State to compile an inventory of State environmental legislation likely to affect industry members and to provide same to NIAA.

6.2 Finance

- Ensure sufficient R&D funding for the environmental audit and associated priority research.

- Each State to investigate the possibility of additional sources of funding for the audit in that State, including State funds and individual cooperating nurseries

6.3 Research needs and priorities

- Undertake a nationally coordinated audit of the environmental impact of nursery production in each State to be compiled into a national audit and which will form the basis of a 5 year environmental action plan

6.4 Industry education

- That NIAA and the State Associations use the inventory of Sate legislation, and the

Draft Code of Practice to increase industry understanding of the importance and urgency of the issue and the commercial benefits of improved environmental practice.

6.5 Public education

- Establish a more effective PR process to highlight the industries significant achievements in environmental matters

APPENDIX I

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APPENDIX II

ABRIDGMENT OF ENVIRONMENT PROTECTION ACT (1970) OF THE STATE OF VICTORIA

DISCLAIMER

This is an abridgment of the Environmental Protection Act 1970 which emphasises points of relevance to the Nursery Industry. The Act itself is a long and complex document which is continually changing and can not be simplified.

THE LEGAL ENVIRONMENTAL LIABILITIES OF NURSERIES

(a) OFFENCES:

Land:

It is an offence under the Act to pollute the land so that the physical, chemical or biological condition of the land is so changed as to make the land or its produce:

i) Noxious or poisonous,

ii) Harmful or potentially harmful to the well being of human beings,

iii) Poisonous, harmful or potentially harmful to animals, birds or wildlife,

iv) Poisonous, harmful or potentially harmful to plants vegetation,

v) Obnoxious or unduly offensive to the senses of human beings,

vi) Detrimental to any beneficial use made to the land,

Water:

(1) It is an offence under the Act to pollute any waters so that the condition of the waters is so changed as to make or be reasonably expected to make these waters:

i) Noxious or poisonous

ii) Harmful or potentially harmful to the health, welfare, safety or property of human beings;

iii) Poisonous, harmful or potentially harmful to animals, birds, wildlife, fish or other aquatic life;

iv) Poisonous, harmful or potentially harmful to plants or other vegetation; or

v) Detrimental to any beneficial use made of those waters.

(2) Person will be deemed to have polluted waters in contravention of the Act if that person:

i) causes or permits to be placed in or on any waters or in a place where it may gain access to any waters, any matter whether solid, liquid or gaseous which is either prohibited under the Act or does not comply with any standard prescribed for that matter; or

ii) causes or permits the temperature of receiving waters to be raised or lowered by more than the prescribed limit.

Water is defined extremely widely in the Act to include:

> *"any river, stream, reservoir, tank, billabong, creek, anabranch, canal, spring, swamp, channel, lake, lagoon, natural or artificial watercourse dam, tidal water, coastal water or ground water."*

(3) A person shall not cause or permit waste to be placed in any position whereby it could reasonable be expected to gain access to any waters in circumstances where if access was gained the waste would be likely to result in those waters being polluted.

(4) A person shall not cause or permit waste to be discharged or deposited onto the dry bed of any watercourse in circumstances where if the watercourse had

contained waters the discharge or deposit would be likely to result in those waters being polluted.

Note: The extremely broad scope of the contamination provision is apparent form the reference to "potential harm" and "offensive to the senses" and the protection of "beneficial" uses. The beneficial use is defined in the Act to include the use of the environment or any element or segment of the environment which is conducive to public benefit, welfare, safety, health or aesthetic enjoyment and which requires protection from the effects of waste, discharges, emissions or deposits.

(b) FINES

Fines in Victoria are calculated from a system of "penalty units". Unless the content otherwise requires then a penalty unit is equivalent to $100. Under recent amendment the maximum penalty for pollution is set at 200 units ($20,000) with up to 80 units ($8,000) per day for continuing offences. For anyone convicted of international pollution the fine is doubled, and for aggravated or reckless pollution the fine for an individual is 2,500 units ($250,000) or 7 years imprisonment or both, and for a body corporate 10,000 units ($1 million).

E.P.A CLEAN UP POWERS:

The act empowers the EPA to conduct a clean-up or cause a clean-up to be conducted where:

1) Pollutants have been or are being discharged,

2) A condition of pollution is likely arise,

3) Any industrial waste or potentially hazardous substance appears to be abandoned or dumped.

4) Any industrial waste or potentially hazardous substance is being handled in a manner which is likely to cause an environmental hazard.

The EPA may recover costs fo the clean-up form the occupier of the premises or from anyone who causes the act of pollution to take place. Alternatively, the EPA may direct that the pollution or waste be cleaned up by:

i) The occupier of the site,

ii) The person who causes or permitted the pollution to occur,

iii) Any person who appears to have abandoned or dumped any industrial waste or potentially hazardous substances,

iv) Any person who is handling industrial waste or a potentially hazardous substance in a manner which is likely to cause an industrial hazard.

The clean-up is defined very widely and may require that the person:

i) Remove, disperse, destroy, dispose of, abate, neutralise or treat any pollutant, waste, substance, environmental hazard or noise.

ii) Restore the environment to a state as close as practicable to the state it was in immediately before the discharge of any pollutant or the emission of noise.

iii) Restore the environment to a state specified on a Notice by a specified time.

iv) Assess the nature and extent of the damage and risk caused by the pollution.

v) Take any measurement, recording or sample or to prepare any report, plan, drawing or other document, or to make any inspection, calculation, test or analysis or to do anything that may be specified in the Notice, and

vi) Retain any consultant, contractor, expert, agency or person at the cost of the occupier (or person required to comply with the Notice) for the purpose of taking any clean-up measures specified in the Notice.

Note: Some legal opinion considers the EPA may issue a clean-up notice notwithstanding that the contamination was caused ten, twenty, thirty or more years ago.

RIGHTS TO RECOVER CLEAN-UP COSTS FROM THIRD PARTIES

The occupier concerned with a clean-up notice can bring action against another person who may have caused the contamination.

OBLIGATION TO COMPLY WITH A CLEAN-UP NOTICE

A person failing to comply with a clean-up notice may be subject to a maximum penalty of 200 units ($20,000).

LIABILITY OF BOARD MEMBERS AND MANAGERS

Where a clean-up notice has been applied to a company or authority, each person who is a

director or concerned in the management of that company will be guilty of the offence and may be proceeded against, convicted and penalised.

POLLUTION ABATEMENT NOTICE

If contamination is revealed on the premises of a nursery the EPA may serve the nursery with a Pollution Abatement Notice. The EPA may serve such a Notice under section 31A or 31B of the Act where it believes that a process or activity carried-on at any premises has caused or is likely to cause pollution or a failure to comply with Regulations, policies or licence conditions, or has created or is likely to create an environmental hazard.

The Notice may require the nursery to cease, modify or control its waste disposal operations, to supply certain information, monitor the contamination of the land, or install certain equipment in order to prevent the recurrence of the pollution.

The EPA also utilise the power to issue Pollution Abatement Notices to monitor the use of contaminated land. This power has been used to impose obligations upon owners and occupiers to notify the EPA of any impending change of use or ownership.

THE HEALTH ACT 1958

Polluters are potentially liable under the Health Act for causing a nuisance and liable to the following:

i) Prosecution for an offence attracting a maximum penalty of $1,000

ii) A local Council has the power of abatement under the Health Act.

LIABILITY FOR SALE OF BY-PRODUCTS CONTAINING POLLUTANTS

Action can be taken against a supplier of a by-product containing a pollutant. This can be any person sufferance damage, eg.

a) The consumer
b) The buyer
c) An injured person

The action will be based on:

a) Contract provisions

b) Negligence

c) Statutory actions ie. breach of the manufacturer's implied warranties under

the Trace Practices Act, the plaintiff must prove that the product was defective. These can be:

i) Manufacturing defect, design defect, marketing defect

ii) The defect existed when the product left the defendant's control

iii) The plaintiff suffered loss or damage which could be death or personal injury, property loss or pure economic loss.

iv) A cause or connection existed between the defect and loss or damage suffered

THE E.P.A IN GENERAL

Extracted from a talk given by Stephen C. Davis, Environmental Lawyer at the National Sludge Workshop - 12, 13 November 1990.

THE ENVIRONMENTAL MOVEMENT

There are few areas of law in Australia in the past twenty years that have undergone such significant change so rapidly as environmental law. The main features are as follows:

1) Significant and rapid change

2) Future uncertainty as to the type of regulatory framework which will confront industry over the medium to long term

3) Complicated by lack of uniformity and the involvement of three tiers of Government

4) Gives rise to criminal and civil penalties

5) Imposes absolute liability for certain criminal offences for which there are no defences

6) Imposes restrictive liability for clean-up costs which can run into millions

The cost to Australian society will run into billions of dollars through:

i) Investments and projects foregone

ii) Increased prices for product and consequent increased prices for goods and services

iii) Significant additional costs which are added to transactions

iv) The costs for a clean-up

v) The costs of compensation claims and associated litigation.

The POLLUTER PAYS is the dominant theme.

SUMMARY

In short, it is important, given the rapidly changing laws and level of scientific knowledge in this area, for nurseries to think laterally and respond to the challenge. Don't assume that you know your environmental exposure! Take positive action to review it. You need to understand environmental law and understand how it can impact upon your waste disposal options, and to undertake appropriate risk minimisation strategies.

DAVID NICHOLS