Environmental Compliance Report

Wood Preservation Industry

Part B

Review of Best Practice and Regulation

ENVIRONMENT PROTECTION AUTHORITY

This *Environmental Compliance Report: Wood Preservation Industry—Part B Review of Best Practice and Regulation* was prepared by the Compliance Audit Section, NSW Environment Protection Authority.

For technical information on the matters discussed in this paper, contact the EPA Compliance Audit Section on (02) 9995 5000.

Published by:
Environment Protection Authority
59–61 Goulburn Street Sydney
PO Box A290
Sydney South 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (NSW only—information & publications requests)
Fax: (02) 9995 5999
TTY: (02) 9211 4723
Email: info@epa.nsw.gov.au
Website: www.epa.nsw.gov.au

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EXECUTIVE SUMMARY

The Wood Preservation Industry sector has been chosen to pilot a new 'comprehensive' approach to environmental compliance activities. The approach will build on and integrate the Environment Protection Authority's (EPA) current formal compliance audits and licence reviews. A key focus, in addition to assessing compliance with existing requirements, will be on improving industry's environmental performance, with reference to best practice. Industry, licensees, State agencies, local government, the community and other stakeholders will be able to provide input into various stages of the process.

This report, *Environmental Compliance Report: Wood Preservation Industry—Part B Review of Best Practice and Regulation* summarises:

- the regulation and best environmental management practices of the Wood Preservation Industry
- global trends and issues facing the industry and regulators.

'Part A Compliance Audit' is a summary of the findings of the audit phase of the pilot, looking at compliance with current EPA regulatory requirements. Parts A and B of this report are being issued concurrently.

The EPA will be reviewing all licences in the Wood Preservation Industry as required by section 78 of the *Protection of the Environment Operations Act Act 1997* (POEO Act). Parts A and B are intended to provide contextual information for industry and the community when making submissions regarding licence reviews.

Based on a literature review of Wood Preservation Industry practices worldwide, the EPA has found that the best environmental management practices outlined in AS/NZS2843.1 *Timber Preservation Safety Code: Plant Design* and AS/NZS2843.2 *Timber Preservation Safety Code: Plant Operation* should prevent or mitigate the risk of harm to the environment, with the addition of some practices identified from other jurisdictions and operations.

The EPA has also noted the following global trends in the Wood Preservation Industry:

- reduced uses of CCA-treated timber in domestic applications, due to arsenic risk assessments, the precautionary principle and perceived shifts in consumer demand
- reduced uses of creosote in treating timber, due to the environmental risks posed by polycyclic aromatic hydrocarbons (PAHs)
- restrictions being placed upon some uses of tri-butyl-tin (TBT)
- greater restrictions being placed upon the disposal of treated timber wastes.

The current regulatory framework for the Wood Preservation Industry includes:

- EPA licensing under Schedule 1 of the POEO Act
- further EPA regulation under the POEO Act, *Pesticides Act 1997*, *Road and Rail Transport (Dangerous Goods) Act 1997*, *Environmentally Hazardous Chemicals Act 1985*, and the *Contaminated Land Management Act 1997*
- local government regulation under the POEO Act 1997
- State Forests NSW regulation under the *Timber Marketing Act 1997*
- Workcover NSW regulation under the *Dangerous Goods Act 1975*.

The EPA considers that ‘Part A Compliance Audit’ and ‘Part B Review of Best Practice and Regulation’ are valuable management tools for the industry to improve environmental performance.

In addition to a systematic and rigorous process of follow-up action programs to ensure that issues identified are being addressed at the audited sites, the EPA will shortly be reviewing all wood preservation licences. The public is encouraged to make submissions to the EPA regarding those reviews.

INTRODUCTION

Comprehensive approach to environmental compliance

The EPA is piloting a new 'comprehensive' approach to environmental compliance with the wood preservation industry. The approach is designed to build on and better integrate the EPA's formal compliance audits and licence reviews. A key focus, in addition to assessing compliance with existing requirements, is on improving industry's environmental performance, with reference to industry best practice. To achieve this, the EPA will carry out significant consultation with the industry, community, licensees, other State agencies, local government and other interested parties during the various stages of the process.

As the first phase of the pilot, the EPA has conducted compliance audits of a sample of the licensed wood preservation facilities across NSW. The EPA has also conducted a literature review of the best environmental management practices used by the wood preservation industry, and trends affecting the industry worldwide.

The EPA is reporting the results of the pilot as an *Environmental Compliance Report: Wood Preservation Industry.* This report, 'Part B Review of Best Practice and Regulation', summarises:

- the regulation and best environmental management practices of the Wood Preservation Industry
- global trends and issues facing the industry and regulators.

'Part A Compliance Audit' is a summary of the findings of the audit phase of the pilot.

Parts A and B are being issued concurrently.

The EPA will conduct a review of all wood preservation licences as required under section 78 of the *Protection of the Environment (Operations) Act 1997* (POEO Act). The review will involve reassessing the environmental protection issues and the licensing decisions made regarding each site, and varying licences where necessary. It is expected that these reviews will be completed by August 2003. The licences to be reviewed will be advertised, and listed on the EPA website www.epa.nsw.gov.au/licensing/review.htm. Details of licence variations will be made available through the EPA's Public Register on www.epa.nsw.gov.au/prpoeo/index.htm

Selection of industry sector

The EPA regularly deals with all licensed activities. In addition, the EPA conducts more intensive compliance audits on industry sectors. Sectors targeted in the EPA's Environmental Compliance Program are chosen on the basis of an assessment of major community and environmental concerns, and EPA corporate objectives and strategies.

Purpose of this report

This report, 'Part B Review of Best Practice and Regulation', is intended to identify and provide awareness of environmental issues and practice which could lead to improved environmental performance in the Wood Preservation Industry. Stakeholders may find this contextual information useful when making submissions regarding the review of Wood Preservation Industry licences. The EPA will advertise the licences to be reviewed, and the public is encouraged to make submissions to the EPA regarding those reviews

This report has been prepared for the purpose described and no responsibility is accepted for its use in any other context or for any other purpose.

It is also expected that both Part A and Part B of the report will be used to improve the environmental performance of the sector and of individual premises within it.

Description of Wood Preservation Industry

The Wood Preservation Industry treats timber and wood products with chemical preservatives to protect the wood from degradation (due to various organisms including fungi, insects and borers) and therefore to extend the range of applications and the service life of the wood. By design, the chemicals used to protect wood must be toxic to the target organisms, but they may also affect non-target organisms and the environment.

Types of preservatives

The following groups of preservatives are currently registered for wood preservation in NSW:

- copper chrome arsenate (CCA)
- copper-based alternatives to CCA
- boron
- creosote

pyrethroid- and metal-based light organic solvent preservatives (LOSPs).

CCA

CCA consists of three metals: copper, chromium and arsenic. All three metals pose a risk to the environment. Both hexavalent chromium and arsenic are known to have carcinogenic effects in humans. CCA concentrate is diluted with water to create a working solution that is used in pressure treatment.

CCA-treated timber is commonly identified by a greenish hue, but this is also common with the other copper-based preservatives. CCA-treated timber is registered under the *Timber Marketing Act 1977* for NSW use in all hazard level applications; varying from internal use to ground, freshwater and marine contact.

Copper-based alternatives to CCA

The copper-based alternatives to CCA, ammoniacal copper quaternary (ACQ) and copper azole, are diluted with water to create the working solution. ACQ is registered to treat timber for use in all hazard levels except marine immersion, and copper azole for all hazard levels except fresh water and marine immersion.

Boron

Boron-based preservatives are colourless and odourless. Boron is only registered to treat timber for internal, above-ground applications completely protected from the weather.

Creosote

Creosote contains about 300 different compounds, including polycyclic aromatic hydrocarbons (PAHs), some of which have known carcinogenic effects. Creosote is generally used to treat timber used in industrial applications such as railway sleepers, poles, bridges, and marinas. Creosote is applied to timber both under pressure, when it is diluted with distillate, and by surface application.

LOSPs

LOSPs are used to treat timber for above-ground applications. They contain active ingredients which include tri-butyl-tin (TBT) and permethrin, which are diluted with a light organic solvent, such as white spirits, to produce a working solution for pressure treatment.

Preservation processes

There are two methods of treating timber and wood products with preservatives: non-pressure and pressure.

Non-pressure methods

Non-pressure methods involve the application of preservative by brushing, spraying or dipping the piece to be treated. These are superficial treatments usually restricted to field treatment during construction (for example, when a pressure-treated piece of timber must be field cut), or the remedial treatment of wood in situ. When such treatment is undertaken beyond the environmental controls of wood preservation plants, the risk of diffuse pollution from the preservative is increased.

Pressure methods

Improved preservation may be achieved by driving the preservative into the wood cells with pressure. Various combinations of pressure and vacuum are used to force appropriate levels of preservative into the wood.

Risk of harm to the environment

The preservative chemicals pose a potential risk of harm to the environment throughout the wood preservation process. Environmental management practices must be employed by the Wood Preservation Industry to address such risks arising from:

a) chemical transport, storage and use

b) timber treatment processes

c) waste storage and disposal

d) treated timber storage.

BEST ENVIRONMENTAL MANAGEMENT PRACTICES USED IN THE WOOD PRESERVATION INDUSTRY

As highlighted in the previous chapter, the activities undertaken by the Wood Preservation Industry have the potential to pose a risk of harm to human health or the environment. The EPA has identified a number of best environmental management practices which would best prevent or mitigate those risks.

Best environmental management practices

Both the Australian Wood Preservation Industry and regulators have worked to develop guidance material for wood preservation plant operators, issuing the first Australian Standards in 1985, AS 2843 *SAA Timber preservation safety code. Part 1: Plant design* and AS 2843 *SAA Timber preservation safety code. Part 2: Plant operation*.

In 1996 the *Australian Environmental Guidelines for Copper Chrome Arsenate Timber Preservation Plants* (the ANZECC Guidelines) were issued by the Australian and New Zealand Environment and Conservation Council (ANZECC) and the Timber Preservers Association of Australia (TPAA). The guidelines, in reference to AS2843.1.1985 and AS2843.2.1985, were developed to generate a national performance standard for designing new CCA treatment plants and upgrading existing plants.

The AS 2843 standards were updated in 2000 to become AS/NZS 2843.1:2000 and AS/NZS 2843.2:2000. The updated standards outline the requirements for siting, designing and operating timber preservation plants, including plants using preservatives other than CCA. The standards deal with these aspects in a manner intended to reduce the occupational health risk to plant operators and to lower the potential for environmental harm. They incorporate the guidance material in the ANZECC Guidelines.

The EPA conducted a literature review of environmental management guidelines and codes from other jurisdictions. Best environmental management practices appropriate to NSW were also found in:

- Brudermann G E for Environment Canada 1999, *Recommendations for the Design and Operation of Wood Preservation Facilities*
- British Wood Preserving and Damp-proofing Association 1998, *Timber Treatment Installations 1998: Code of Practice for Safe Design and Operation*
- New Zealand Ministry of Health and Ministry for the Environment 1997, *Health and Environmental Guidelines for Selected Timber Treatment Chemicals*
- Occupational Safety and Health Service, New Zealand 1994, *Approved Code of Practice for the Safe Use of Timber Preservatives and Antisapstain Chemicals*
- South African Wood Preservers Association 1995, *Environmental Guidelines for Industrial Wood Preservation*
- United Nations Environment Programme Industry and Environment Programme Activity Centre 1994, *Environmental aspects of industrial wood preservation— a technical guide. Technical Report Series No 20. Site design*
- Western Wood Preservers Institute, North America 1996, *Best Management Practices for the Use of Treated Wood in Aquatic Environments.*

These guidelines all address the prevention or mitigation of health risks to workers and the risk of harm to the environment.

Practices addressing risk of use or storage of preservatives

A summary of the best environmental management practices identified that prevent or mitigate the risks identified for all preservatives during transport, use and storage include the following from AS/NZS 2843.1 and AS/NZS 2843.2:

- all bulk and packaged preservatives should be off-loaded directly to the chemical storage area
- all areas where preservatives are stored and used should be imperviously bunded, roofed and secured
- all storage and mixing tanks should be fitted with level indicators and fail-safe devices that will automatically shut off liquid supply to prevent overflow
- all treatment vessels should be inspected regularly and certified (according to WorkCover NSW requirements)
- all valves controlling preservative delivery between storage tanks, mixing tanks and treatment vessels should have locking devices to prevent accidental or unauthorised delivery
- all drainage collection sumps should be fitted with an alarm to warn of overflow
- operators should follow regular maintenance and inspection schedules.
- The EPA also identified the following appropriate environmental management practices from the guidelines of other jurisdictions:
- the system of piping delivering preservative between storage tanks, mixing tanks and treatment vessels should be closed, that is, isolated from water supply and drainage systems
- all storage and mixing tanks should be fitted with high level alarms, in addition to fail safe supply shut-offs.

Practices addressing risk of stormwater pollution from wood preservation

A summary of the best environmental management practices identified that prevent or mitigate the risk of stormwater pollution includes the following from AS/NZS 2843.1 and AS/NZS 2843.2:

- all uncontaminated surface stormwater should be diverted away from chemical storage, treatment, drip pad and timber storage areas
- all chemical storage, treatment and drip pad areas should be roofed, and run-off quality monitored prior to discharge
- all chemical storage, treatment and drip pad areas should have impervious flooring and bunding to prevent contamination of surface stormwater
- all contaminated stormwater should be collected and either reused, or treated prior to discharge
- all freshly treated timber should be held on the drip pad area until drip-free.

Note: AS/NZS 2843.1 identifies that the best environmental management practice to mitigate the risk of soil or groundwater contamination from CCA-treated timber storage is holding freshly treated timber for 48 hours prior to removal from the drip pad. However, due to the uncertainty regarding the fixation process, the EPA considers that fixation testing prior to removal from the drip pad area may constitute better environmental management.

The EPA also identified the following appropriate environmental management practices from the guidelines of other jurisdictions, and operational experiences:

- operators should regularly monitor the water quality of adjacent water bodies
- operators should monitor all discharges to waters from wood preservation sites.

Practices addressing risk of air pollution from wood preservation

A summary of the best environmental management practices identified that prevent or mitigate the risks identified from air emissions at wood preservation premises include the following from AS/NZS 2843.1 and AS/NZS2843.2:

- all discharges to air from ventilation equipment should be directed through filters or scrubbers
- all discharges to the atmosphere through vents from the vacuum system and exhausts from vacuum pumps should be directed through a mist eliminator or condensing trap, as appropriate
- there should be no incineration of treated wood, sawdust and shavings except in plants designed for that purpose.

Practices addressing risk of soil and groundwater contamination from wood preservation

In addition to the practices identified above that address the risks of chemical use and stormwater pollution, further best environmental management practices identified that prevent or mitigate the risk of soil and groundwater contamination include the following from AS/NZS 2843.1 and AS/NZS 2843.2:

- all preservative drips and spills in the timber storage area should be regularly collected and, if possible, recycled
- all bunds should have leak detection systems which are regularly monitored.
- In addition to this, the EPA identified the following appropriate environmental management practices:
- operators should regularly monitor the water quality of groundwater bodies
- operators at sites where activities were carried out before 1985, or in a manner likely to risk the environment by not being consistent with the Australian Standards, should carry out site investigation, assessment and remediation where appropriate.

Practices addressing risk from an emergency

In addition to the practices addressing the risks from chemical use outlined above, the environmental management practices identified that best prevent or mitigate the risks from an emergency include the following from AS/NZS 2843.1 and AS/NZS 2843.2:

- operators should prepare and maintain an emergency plan, a site diagram and signs regarding emergency management procedures
- operators should ensure adequate staff delegation and training in emergency procedures
- risk-specific fire fighting equipment should be installed, maintained and certified
- all flammable materials should be safely stored and vessels containing dangerous materials should be clearly marked (according to WorkCover NSW requirements)
- all electrical equipment in areas containing flammable materials should be of flameproof design
- the system of piping delivering preservative between storage tanks, mixing tanks and treatment vessels should be fitted with back-flow prevention devices
- operators should ensure adequate capacity for containment of spillage of liquids and plans for recovery and disposal of spillages.
- The EPA also identified the following appropriate environmental management practices from the guidelines of other jurisdictions and EPA experience:
- operators should ensure that fire-fighting plans include controls over the volume of fire-water used and the control of fumes/smoke by water fog

- operators should ensure adequate capacity for containment of fire-water and plans for recovery and disposal of fire-water
- all stormwater drainage outlets from the site should have cut-off valves fitted.

Further useful guidance for wood preservation sites is provided in AS/NZS 4360: Risk Management.

Practices addressing risk of waste transport, storage and disposal

A summary of the best environmental management practices identified that prevent or mitigate the risks from all preservative-contaminated wastes includes the following from AS/NZS 2843.1 and AS/NZS 2843.2:

- operators should manage treatment processes to minimise sludge wastes
- all preservative should be recovered and recycled from sludge wastes and contaminated material residues where possible
- operators should keep appropriate records of waste management, storage and disposal
- all waste should be segregated and stored in adequately labelled, appropriate containers
- all waste storage areas should be imperviously bunded, roofed and secured
- all sludge wastes should be disposed of according to approval of the relevant regulatory authority
- all contaminated material residues should be disposed of to a landfill area approved for the purpose by the relevant regulatory authority
- all used preservative drums/containers should be triple rinsed and returned to the supplier
- all rinsings from used preservative drums/containers should be recycled as process water.

The EPA also identified the following appropriate environmental management practices from the guidelines of other jurisdictions and EPA experience:

- operators should seek to re-use treated wood rather than dispose of it
- operators should track the transport of wastes in accordance with the requirements of the POEO Act.

Note: Wood preservation operators in NSW are required to 'classify' the chemical sludge and contaminated material wastes generated. The EPA's *Environmental Guidelines: Assessment, Classification & Management of Liquid & Non-liquid Wastes* describe how to do this. Chemical sludge wastes from wood preservation are likely to be classified as hazardous waste due to their chemical contaminants or their dangerous goods properties. Boron and ACQ sludge wastes, which do not exhibit hazardous properties, are likely to be classified as solid waste.

The EPA has requirements for disposal of treated timber waste. Treated timber waste from the construction and demolition waste stream is classified as inert waste and can therefore be disposed of to a landfill or a facility that can lawfully receive inert waste. Generally, treated timber wastes from sources other than construction and demolition would be classified as solid waste and therefore can be disposed of to a solid waste landfill that has an appropriate leachate management system. The EPA has gazetted *General Approvals of Immobilisation* confirming the solid waste classification for waste timber treated with CCA, creosote and 'Tanalith E' (a copper azole-based preservative).

Practices addressing risk of treated timber finished products

In addition to the practices addressing the risks outlined above, a summary of the best environmental management practices identified that prevent or mitigate the risks from treated timber finished products from wood preservation premises include the following from AS/NZS2843.1 and AS/NZS2843.2:

- holding freshly treated timber on-site until fixation has taken place.

The EPA also identified the following appropriate environmental management practices from operations observed in NSW and the guidelines of other jurisdictions:

- conducting a final vacuum treatment of timber charges, prior to discharge from the vessel, to remove excess preservative
- testing regularly that adequate fixation has taken place prior to moving treated timber out of the (covered) drip-pad area.

Due to ongoing human exposure to arsenic and PAHs from CCA- and creosote-treated timber, the best environmental management practices may not be adequate to prevent or mitigate all impacts on human health or the environment.

Further policy documents of interest to the Wood Preservation Industry

The following policy documents may also affect environmental management decisions made by the Wood Preservation Industry:

- ANZECC 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC Water Quality Guidelines)—stormwater management should take into account the water quality objectives for receiving waters as outlined in these guidelines
- EPA 1999, *Guidelines on Significant Risk of Harm from Contaminated Land and the Duty to Report*—information in these guidelines may help with contaminated sites investigations, assessments and auditing
- EPA 2001, *Draft Policy Assessment and Management of Odour from Stationary Sources*—this document contains information regarding the assessment and management of odour emissions
- EPA 1999, *Environmental Guidelines: Assessment, Classification & Management of Liquid & Non-liquid Wastes*—these guidelines outline the criteria for classifying wastes, such as chemical sludge or contaminated material wastes from wood preservation plants.

GLOBAL TRENDS IN THE WOOD PRESERVATION INDUSTRY

The EPA has identified the following global trends in the Wood Preservation Industry which may have an impact upon the industry in NSW.

The CCA issue

CCA preservatives will not be used for treating timber destined for residential (domestic and contact) uses in the US and Canada after December 2003, and in the EU after June 2004. In addition to domestic uses, CCA preservatives will also not be used for timber destined for marine and most agricultural uses in the EU after June 2004. The Wood Preservation Industry estimates that the reduction in CCA applications may reduce the volume of CCA-treated timber produced in the US by about 80%, meaning that 52% of all treated timber will be treated with a different preservative. Due to the varying concentrations of preservatives in working solutions, the impact on the total volume of high risk chemicals being used (identified in the US as CCA, pentachlorophenol and creosote) may only be reduced by about 5%.

This trend away from CCA-treated timber has been driven by four factors.

1. The most recently completed risk assessment of arsenic, carried out by the Commission of the European Communities CSTEE (Scientific Committee for Toxicity, Ecotoxicity and the Environment) concluded that it is appropriate to consider that no threshold exists for the carcinogenic effect of arsenic. The US EPA and the Canadian Pest Management Regulatory Authority (PMRA) have not assessed that CCA-treated wood poses unreasonable risks to the public or the environment when used in accordance with normal handling procedures. The US EPA and the US Consumer Products Safety Commission are currently conducting a probabilistic assessment of potential cancer risks to children from exposure to CCA in residential settings.

2. Following from the CSTEE's risk assessment, the CSTEE concluded that it would be appropriate to apply the precautionary principle, and move to reduce the production of CCA-treated timber.

3. The US wood preservation industry perceived a consumer demand shift away from CCA-treated timber, driven by increased public awareness of arsenic risks, and media coverage of recent studies into the risk of preservatives leaching from treated timber playground equipment.

4. Viable alternative preservatives are now available on the market to replace CCA, and maintain the same level of hazard protection for the timber product. Alternatively treated timber costs between 8–15% more than CCA-treated timber, but this premium is expected to be diluted through economies of scale once production expands to fill the current CCA market.

The New Zealand Environmental Risk Management Authority (ERMANZ) has decided not to change the registration of CCA following a recent review of the potential public health risks arising from the continuing use of CCA-treated timber. ERMANZ found that the extent of any risk to public health from CCA remains unclear but is considering further investigation into the possible environmental and occupational health risks.

The Australian Pesticides and Veterinary Medicines Authority (APVMA) announced in March 2003 that it is reviewing the registration and labelling requirements of arsenic-based timber treatments, including CCA. The Australian industry association of the Wood Preservation Industry, the Timber Preservers Association of Australia (TPAA) supports the continued production and use of CCA-treated products, but some of the factors influencing the global European and North American moves are already apparent in Australasia. Consumer awareness of arsenic risks, and related media attention, has already begun in New Zealand and, to a lesser extent, Australia. This may drive a similar shift in demand away from CCA-treated timber. The

alternative preservatives, copper quaternary and copper azole, are available in NSW and in the markets from which NSW imports timber.

The creosote issue

Creosote is a chemical mixture of up to 300 different compounds, including polycyclic aromatic hydrocarbons (PAHs) some of which are known carcinogens. Due to the smell (diesel-like) and feel (often sticky) creosote-treated timber is not generally used for residential or contact uses, but because of creosote's efficacy in protecting wood, creosote-treated timber is used in industrial applications in NSW and North America.

The EU will restrict the use of creosote to only some industrial uses after June 2003. In December 2002, the largest creosote producer in the US, Kerr-McGee LLP, announced that it was leaving the forest products industry following several law suits involving harm caused by wood preservation plants using creosote. A factor in this trend is the availability of viable alternative materials, such as steel, composites and concrete, for the applications of creosote-treated timber.

CCA and creosote are the only timber preservatives approved by State Forests NSW to treat timber to be used in marine water applications (H6 hazard class). Alternatives to treated timber are available that are environmentally acceptable. At least one local council in NSW has decided to use alternatives to treated timber for wharf/jetty piles.

Other metals issues

ACQ and copper azole, the preservatives available in NSW as alternatives to CCA, retain copper as a fungicide component. Metals such as copper are persistent in the environment, though the concentrations of copper likely to leach from well-treated timber do not pose a high environmental risk.

Tri-butyl-tin (TBT)-based products for marine use are expected to be withdrawn from use in Australia by July 2003. TBT naphthenate is used in some wood preservatives as a fungicide, but those preservatives are not approved to treat timber for H6 (marine) applications. While the risk profile of the TBT-based wood preservatives differs from the products for marine use (mainly anti-fouling paints), the EPA still considers TBT-based preservatives to pose a high risk to the environment given the nature of the effects on the marine environment. There are alternatives to TBT-based preservatives already on the market and further formulations are close to commercialisation.

The hydrocarbon solvent issue

CCA, ACQ, copper azole and boron preservatives are delivered into the wood using a water-based working solution. Creosote and light organic solvent preservatives (LOSPs), such as TBT and permethrin, are delivered using hydrocarbon solvents. The use of hydrocarbon solvents instead of water may pose additional risks to the environment through air emissions and stormwater contamination at preservation plants. In the US, LOSPs are not used to treat timber because the risk of volatile organic compound (VOC) emissions make this technology relatively less attractive than using other preservatives. In rural areas of NSW, where most wood preservation premises are located, air pollution problems associated with VOC emissions and smog formation are unlikely to be significant.

In addition to these solvents, supercritical carbon dioxide ($scCO_2$) is being used as a solvent in a wood preservation plant in Denmark, and research is currently being undertaken into the viability of $scCO_2$ use in Australia.

The treated timber waste disposal issue

Following useful service, timber products treated with preservatives become waste, and may pose a further risk of harm to the environment. One option is to dispose of these wastes to landfill. The EU recently found that the arsenic-related risks of disposing of CCA-treated timber waste to landfill could not be established, but were sufficiently high to justify adopting a precautionary approach by moving to restrict the creation of the waste.

Although the EPA considers that the contaminants in CCA-, creosote-, and 'Tanalith E'-treated timber wastes are immobilised, such wastes must be disposed of to an appropriate waste facility, in accordance with the gazetted *General Approvals of Immobilisation*. In Australia, the National Environment Protection and Heritage Waste Working Group is being asked to consider the development of a national approach to CCA-treated timber waste. The NSW EPA has also listed CCA- and creosote-treated timber as 'wastes of concern' in the *Consultation Paper: Extended Producer Responsibility Statement* (EPA 2003).

Another option for disposal of treated timber waste is burning. While theoretical research indicates that combustion may allow plants to recover preservative metals from treated timber waste, the results of monitoring combustion/pyrolysis of waste contaminated with treated timber have shown that operational air emissions from such processes are likely to exceed allowable limits.

A third waste disposal issue noted by the EPA was that the recycling of treated timber waste through mulching/composting may be inappropriate given the additional risks of preservative leaching due to the higher exposed surface area. Compost products containing as little as 2% CCA-treated timber may exceed *AS 4454 Composts, Soil Conditioners and Mulches* limits for arsenic.

REGULATION OF THE WOOD PRESERVATION INDUSTRY

Legislation regulating the Wood Preservation Industry

The EPA administers various legislation regulating the Wood Preservation Industry.

Protection of the Environment (Operations) Act 1997

The *Protection of the Environment (Operations) Act 1997* (POEO Act) prohibits certain actions which may pose a risk to the environment, including the pollution of waters (section 120), leaks and spills of substances (section 116) and emission of offensive odours (section 129). These restrictions apply to the Wood Preservation Industry. Schedule 1 of the POEO Act also lists wood preservation as a 'scheduled activity', meaning that premises where the following works are undertaken must be licensed:

'wood preservation works being works that treat or preserve timber using chemical substances (containing copper, chromium, arsenic, creosote or any substance classified in the Australian Dangerous Goods Code) and that have an intended processing capacity of more than 10,000 cubic metres of timber per year.'

See 'Statutory instruments regulating the wood preservation industry' for further discussion of the environment protection licences issued to the Wood Preservation Industry.

Regulations, issued under the POEO Act, are also applicable to the Wood Preservation Industry. The Clean Waters Regulation 1972 limits the pollutants in discharges to 'classified waters', such as from wood preservation premises. The Clean Air (Plant and Equipment) Regulation 1997 limits the pollutants that may be emitted from point source air discharges, such as treatment vessels and incinerator stacks. The POEO (Control of Burning) Regulation 2000 prohibits the open burning of timber treated with CCA.

Schedule 1 of the POEO Act also requires premises generating or storing hazardous wastes, such as hazardous sludge wastes and hazardous contaminated materials waste at wood preservation sites, to be licensed as a 'waste activity'. Sites solely generating LOSP sludge wastes may be exempt from licensing as a 'waste activity' but are required to comply with waste management, recording and tracking requirements of the POEO (Waste) Regulation 1996.

The POEO Act establishes that local government is the appropriate regulatory authority for the approximately 20 wood preservation sites not licensed by the EPA where less than 10,000 cubic metres of treated timber is produced per annum.

Pesticides Act 1999

The EPA is responsible for administering the *Pesticides Act 1999*, which controls the NSW use of pesticides registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA). The APVMA is responsible for the evaluation, registration and review of pesticides including the chemicals used in wood preservation. The labels or permits issued by the APVMA for each pesticide detail how the pesticide is to be used. The Pesticides Act includes the requirement that pesticides be used in accordance with the instructions on the label. The Pesticide Regulation 1995 includes requirements for wood preservation premises to keep records of pesticide/preservative use.

Road and Rail Transport (Dangerous Goods) Act 1997

The EPA licences some transporters of dangerous goods, including some who transport wood preservatives and solvents under the *Road and Rail Transport (Dangerous Goods) Act 1997* and regulations. The criteria for classifying goods as 'dangerous' are outlined in the Australian Dangerous Goods Code (1998).

Environmentally Hazardous Chemicals Act 1985

Under the *Environmentally Hazardous Chemicals Act 1985* (EHC Act), the EPA has gazetted certain waste streams, including CCA, as 'declared chemical wastes'. There is no 'chemical control order' regarding the CCA waste stream, so no specific restrictions on wood preservation activities apply under the EHC Act.

Part 5 of the EHC Act dealt with the assessment and remediation of contaminated land, but has since been repealed and replaced by provisions of the *Contaminated Land Management Act 1997*. Between 1990 and 1998, the EPA issued seven notices under Part 5 of the EHC Act, regulating sites for contamination as a result of wood preservation activities.

Contaminated Land Management Act 1997

The *Contaminated Land Management Act 1997* (CLM Act) establishes a process for investigating and (where appropriate) remediating land areas where contamination presents a 'significant risk of harm' to human health or some other aspects of the environment. Wood preservation activities using current preservatives with poor operating practices, or that used higher risk preservatives and practices in the past, may result in soil contamination. The EPA regulates sites that are judged to pose a 'significant risk of harm' under the CLM Act. Local government manages other contaminated sites under the planning legislation.

Other State government agencies also administer legislation regulating the Wood Preservation Industry.

Timber Marketing Act 1977

State Forests NSW registers wood preservation plants producing treated timber for sale in NSW, under the *Timber Marketing Act 1977*, including the premises licensed by the EPA. State Forests information indicates that wood preservation is undertaken at approximately a further twenty sites in NSW, at a scale below the requirement for licensing by the EPA. Local government is the appropriate regulatory authority, under the POEO Act, for the activities undertaken at these sites.

Dangerous Goods Act 1975

WorkCover NSW, primarily, administers the *Dangerous Goods Act 1975*, including the Dangerous Goods (General) Regulation 1999, regarding the storage and handling of dangerous goods on wood preservation sites.

Statutory instruments regulating the Wood Preservation Industry

The EPA has issued eleven environment protection licences to premises where the scheduled activity is wood preservation, and a further two licences are issued to premises for other scheduled activities but where wood preservation is also carried out. 'Part A Compliance Audit' provides more information regarding the licensed premises and summarises the compliance performance observed at five licensed premises.

Conditions are attached to environment protection licences specifying the manner in which licensed activities must be undertaken. Conditions attached to all licences issued to the Wood Preservation Industry require licensees to undertake certain administrative, operating, monitoring and reporting actions. In particular, the licensed activity must be carried out in a competent manner, and plant and equipment installed at the premises, or used in connection with the licensed activity, must be maintained and operated properly and efficiently.

Site or risk specific conditions are also attached to environment protection licences. Some examples of the requirements placed on licences in the wood preservation industry are:

- one of the eleven licences contains specific leak/spill containment requirements
- six of the eleven licences currently address the risks of stormwater pollution by requiring monitoring of discharges, sediment ponds or groundwater
- two of the eleven licences have air monitoring conditions, one licence has burning restrictions and one licence has a note highlighting the odour provisions under section 129 of the POEO Act

- two of the eleven licences address the risks of soil contamination through pollution reduction programs requiring investigation and assessment for significant risks of harm
- six of the eleven licences address emergency spill management by requiring licensees to develop an emergency response plan
- six of the eleven licences contain specific waste transport tracking conditions and one of the eleven licences contains specific conditions requiring waste classification.

Section 78 of the POEO Act requires the EPA to review all environment protection licences every three years. The review of wood preservation licences will be undertaken in 2003. As a part of this review, all conditions attached to licences will be reviewed for appropriateness, consistency and enforceability.

WHERE TO FROM HERE?

Both *Environmental Compliance Report: Wood Preservation Industry—Part A Compliance Audit* and *Environmental Compliance Report: Wood Preservation Industry—Part B Review of Best Practice and Regulation* identify matters for consideration for the NSW Wood Preservation Industry.

The issues identified in 'Part A Compliance Audit' are likely to be generally typical of the whole Wood Preservation Industry sector in NSW.

The best environmental management practices identified in 'Part B Review of Best Practice and Regulation', are likely to be applicable to all wood preservation sites, regardless of production capacity. The global trends within the industry are likely to impact on preservative suppliers, wood preservation operators, users of treated timber and regulatory authorities in NSW.

In addition to audit follow-up procedures outlined in Part A, the EPA will be reviewing all wood preservation licences as required by section 78 of the POEO Act. The EPA will ensure that the matters identified in 'Part A Compliance Audit' are being considered at all licensed wood preservation premises.

The EPA recognises that reporting on the state of the Wood Preservation Industry sector's environmental performance, the best environmental management practices and industry trends will be a valuable management tool. The EPA will therefore circulate information in this report to relevant stakeholders and seek cooperative opportunities to work with the industry to improve its environmental performance.

Following the licence review phase of the pilot, the EPA will be issuing a final report which will identify the changes made and provide further guidance for the Wood Preservation Industry.

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