Productivity Commission Issues Paper December 2005

Submission
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Inquiry into Waste Generation & Resource Efficiency

1. Introduction

The urban waste problem in all Australian states is in dire need for urgent attention. The Commonwealth needs to play a leadership role in fostering better waste management I believe the productivity commission "*Inquiry into waste generation and resource efficiency*" could fulfil this role and address the current failure of industries to be responsible in providing products that have a full life cycle *"cradle- grave-cradle"*

A recent article in the Inside Waste publication http://www.insidewaste.com.au issue 10 page 9 paints a stark picture of the poor state of waste management in Australia. Mark Glover (mark@ecowaste.com.au) writes
"--- Every day the Australian Community commits 50,000 tonnes of materials to wasteful disposal, mostly Landfill. That's a footy field 20 metres high everyday to grandstand height or every footy field in the country filled every 10 year---"

My submission will be in two parts with a supplementary attachment pt A.
Part 1 will present a range of general comments on questions raised in the productivity Commissions issues paper.
Part 2 will address an issue neglected. /avoided by the waste generation of an unsustainable product namely treated timber.

Special Supplementary Attachment addresses Extender Producer Responsibility EPR issue mainly addresses manufacture & production of treated timber products.

Inquiry into Waste Generation & Resource Efficiency- Part 1
General Comments

2. Types of waste covered by the inquiry

Issues paper page 11

Question

"Are there any items (either specifically noted above or not listed) that should be included or excluded from this inquiry? What are they and why should they be included/excluded?

Yes include:
(a) Treated Timber. For full explanation refer to Pt2 of this submission
(b) Industry waste transfers. See Item 3 and appendix A for inclusion reasons.
(c) Although already included E waste is an emerging environmental waste hazard of concern. The need for a range of Commonwealth regulations for e waste products is canvassed. Refer to Appendix B

3. Overview of solid waste

Question

"Where is solid waste coming from and how much is being recycled and disposed?"

We are recycling more waste but also we are generating/creating more waste per capita -so there is no net gain in reducing waste

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The need for more data

Question

To what extent is the lack of disaggregated data (that is, the lack of information about quality and composition of waste) a problem

Industry should document how waste is disposed of when it leaves the factory gate by means of "waste transfers" Placing a record of these transfers on the National Pollutant Inventory (NPI). This record would track how Industries disposed of their waste.

Preventing this data collection

- Industry is opposed to this measure siting extra costs*.*
- Chronic lack of funding to expand current Commonwealth NPI to cater for additional date need to track what is done with factory waste eg reuse, recycled or landfill. Refer Appendix A

Question

What countries collect and use the data on waste more effectively than we do and what are the lessons for Australia

The United Kingdom Environmental Agency Web site "What's in Your Backyard" The UK "Pollution Inventory " now shows amounts of waste (Tonnes) from an industries being transferred and indicates what is done with it. As an example I have show in Appendix A table of how waste transfers occur from a typical metal production & processing foundry

4.Benefits and costs

Page 14 Para 2 States:

"---*The benefits of disposing of waste to landfill can include avoiding the need to resort to more costly alternatives, and it can help in the rehabilitation of disused quarries".*

Comment

The above assertion that" disused quarries" will deliver a cost benefit for landfalls is fraught with danger Most disused quarries are unsuitable .for MSW landfall purposes and can result in environmental problems . Moreover, properly engineered landfills can leach toxic pollutants into groundwater supplies (modelling estimates 30-year containment period)

Resource efficiency

Question

Are there any other interpretations of resource efficiency that should be taken into consideration when considering policy in the waste management area?

The current policy the National Industry Chemical Notification & Assessment (NICNAS) Governmental agency has exacerbates electronic waste problems by it's failure to review the use of Brominated & Chlorinated Flame retardants (BFR's) in electronic equipment. Resulting in future environmental and health problems

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Resource efficiency (Cont)

Question

How can Australia improve the economic efficiency with which resources are used in waste management and disposal?

- Government regulations are needed to inform the consumer of a product and designed recyclability "life Cycle" from cradle to grave.

- Producer to have more responsibility for product waste "Extender producer Responsibility" EPR.

- Front end loads the costs of products to consumers through increased costs of the product at the point of sale. A much lower levy would be placed on purchase of a recyclable product and it's disposal at no costs. Whereas the throw away product should incur steep taxes & fees for disposal

Question

Are the levels of waste generation and disposal in Australia too high? If so, what is the basis for assessing this?

Many products (electronics) are imported from overseas (Asia) and

- Have a very short-term life cycle (< 2years) & cannot be repaired or reused. eg printers
- Cannot be recycled

Question

What are the costs and benefits of the different approaches to waste management (such as reuse, recycling and energy recovery)?

5. Arguments for government intervention

Comment

Australian economy is consumer driven and much of the waste produced is generated by "throw away" products" which contains little or no penalties for excessive waste generation

Market failure arguments for government intervention

Comment

Intervention by governments to enable

- Original design of product to have "in built whole of life cycle"
- Front end load (price signal) of product disposal costs at point of purchase

I take issue with the statement para 1 page 18 "---- Government Intervention is only warranted when the benefits it is likely to provide are greater than the costs involved**."**

Comment

How do you evaluate damage to the natural environment: Air, water, soil & biota.

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Negative externalities associated with waste disposal

Question

How large are the external costs of properly constructed and managed landfills and other types of waste disposal in Australia

Constructing an expensive landfill does not mean that the site will not still contaminate the environment. Present computer modelling can only predict a 30-year life span for most engineered. The result being that no long-term security Toxic leachate from landfills whatever the costs. Eventually most liners fail and allow leachate to contaminate local groundwater supplies.

A suggested measure to minimise local groundwater pollution is to reduce/stop large quantities of toxic waste being sent to landfills For example declare some waste such as Copper Chromate Arsenate (CCA) treated timber as Hazardous waste

Question

How large a problem is illegal dumping and littering? What types of waste cause most of the problems?

- The issues paper does not address disposal of waste through Illegal burning of waste products eg Vineyards waste treated timber CCA poles.
- Wood waste and disused mattresses are of concern as both quite bulky take time to break down and use a lot of air space.

Question

To what extent do negative externalities associated with resource extraction and materials processing (and other stages of the product life cycle) result in non-optimal levels of waste?

The act of extracting materials from waste can result in:

- Increased greenhouse gas emission through transportation of waste
- Increased Toxic emissions to communities from waste transfer stations

Unsustainability of current practices

Question

What case is there for using waste management policies to improve the sustainability of 'resource use?

- Part 2 of this submission addresses the continued use & increased huge volumes of waste treated timber products that will need to be disposed of over the next 30 years. Waste CCA contains substantial amounts of Arsenic which will eventually leach out into the environment,
- Appendix A highlight how Industries in UK sustainably manage their waste. However in Australia Industry are resisting a waste transfer method. At present little is know of what happens to industrial waste after leaving the factory gate much what
- Appendix B highlights the lack of firm governmental policy to reduce the growing "mountain of E waste.

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6. Policy Options

Key Performance indicators and target settings

Question

How are targets being set? What consideration is given to the social, environmental and economic costs of achieving these targets? How should targets be set to optimise social, environmental and economic outcomes*?*

The bar should be set at the highest level to place the greatest value on human health and the environment. At all times the precautionary principal and prevention of any damage to the environment. should be exercised

Recycling

Question

How well have these policies worked in generating economically efficient levels of recycling?

- The container deposit legislation in South Australia has been very successful in containing litter stream as well recycling valuable metals, paper & glass So much so, that the scheme was expanded to include milk cartons.
- Western Australia is now considering adopting a similar deposit scheme.
- However on the eastern seaboard most waste Industries are opposed to a deposit scheme
- Industry self-regulation of the National Packing covenant has been an abject failure with a token industry participation

Question

What policies or mix of policies are likely to work best in this regard?

- The NEPM for National packing covenant need to be enforceable (backed by Commonwealth & state legislation
- Commonwealth to enable uniform state legislation for container deposit scheme

Question

How useful is full life-cycle analysis in determining the environmental and economic costs and benefits of recycling various products?

All consumer products should be subject to a stringent life cycle analysis “cradle to grave to cradle” prior to point of sale to the consumer***.***

Question

Are there particular products or locations for which disposal rather than recycling might be a more efficient option?

All consumer products should be able to be recycled or reused. However due to many remote location in Australia this may not be practical. Nevertheless the recyclable waste could be temporarily stored in a dedicated landfill with a view for eventual recycling at a later date

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Energy recovery from Waste

Question

What are the economic, environmental and social benefits and costs of recovering energy from waste?

Recovering of energy from waste clear benefit to the environment is to reduce greenhouse gas emissions and cost effective eg landfill gas extraction

Question

What is hindering the greater use of recovering energy from waste in Australia?

Incineration is not a preferred use of waste product in Australia. Hazardous by-products of the incineration process, such as production of dioxin emissions and the disposal of toxic ash pose environmental problems. And the hazardous ash generated from the incinerators is not readily disposed of in MSW landfill.

Question

Are there particular products or locations for which recovering energy from waste would be the most efficient approach to waste management?

Cement Kilns are presently using tyres and waste wood as a substantial secondary fuel to supplement the normal gas supplies (reduce greenhouse gas emissions). However, large EFW schemes need to formulate a proper protocol setting out the guidelines for EFW operations, Eg protocol for secondary fuel use in a Le Farge Cement kiln in UK.

Producer responsibility for waste*

*Refer also to Special Supplementary paper Attachment A that address EPR

Question

What are the advantages and disadvantages of extended producer responsibility and product stewardship schemes?

A functioning EPR can lead to better quality “Australian” products. However the EPR cannot address a similar “imported “product. This puts the local manufacture at a decided cost disadvantage

Question

How effective have they been in achieving optimal levels of waste?

Refer to Appendix B. The WME article discussed the complete failure of industry & government to properly address the serious e waste problem.

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Producer responsibility for waste (Cont)

Question

How should importers be treated under these schemes?

The present EPR schemes does not adequately address the massive amount of foreign product (Electrical) imported into Australia. Commonwealth legislation is required to include “Value added “ fee for eventual disposal of product. Rated on its ability to be recycled.

Question

Who should bear the responsibility for the disposal of ‘orphaned’ products (that is those products in circulation before the scheme is introduced)?

An Industry “super fund” should be created to ensure the past manufacture of these products is catered for during disposal phase.

Question

What are the advantages and disadvantages of the different regulatory options for setting up extended producer responsibility or product stewardship schemes: self-regulation, co-regulation and explicit legislation?

If you use the example of e waste (refer appendix B) the voluntary Industry recycling scheme for the computer sector where “self regulation” has been a dismal failure There are no short cuts. Efficient waste management schemes need “tough” government regulation and the backing of National Environment Protection Measure (NEPM) eg electronic products

Question

What should be the relative roles of industry and government in the development of such arrangements?

Governments should seek advice and consult widely with Industry for a consensus prior to framing the appropriate any Commonwealth waste legislation .eg e waste

Question

How effective has the National Packaging Covenant (in both its initial and subsequent forms) been in promoting optimal levels of packaging wastes?

The packaging covenant has been and still is ineffective with self-regulation a failure. Very little public awareness of any savings achieved by a voluntary scheme

Question

What is the role of levies in extended producer responsibility and product stewardship schemes?

Costs of disposal/recycling of product should be “front end loaded” at the point of sale of the consumer product.

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Producer responsibility for waste (Cont**)**

Question

If producers are required to pay a mandatory levy, what other obligations should be placed upon them?

A recycling certificate should be part of a product sal. This measure would indicating this product is recyclable and will incur no cost when disposed.

Question

What is the appropriate mix of producer levies and post consumer charges (including local government rates and tipping fees)?

Appendix B discusses e waste and methods of "—passing on the collecting & reprocessing costs to consumers either through purchase price or a recycling fee/tax at point of sale". My view is that cost should be a point of sale

Regulation of landfill and other waste management facilities

Question

What constraints are urban planning requirements placing on the efficient disposal and recycling of waste?

The placement of large waste transfer stations and recycling depots should not be sited close to any urban communities. As both landfill & transfer stations sites can be subject to toxic emissions, excessive dust, noise & odour as well as seasonal vector problems.

Question

How can or should waste disposal and recycling facilities be treated in an urban planning context?

Planners must be mindful of transportation & infrastructure cost of waste disposal (most use road transport). Also long haul transportation exacerbates greenhouse gas emissions and the usually diesel vehicles emit toxic emissions harmful to human health and the environment.

Litter

Question

What are the main costs of littering and how substantial are they? What sort of litter is the most costly or problematic to deal with?

Most littering costs are hidden. The result being long term damage to the local environment (waterways) and a marked effect on land & sea creatures. Clean up of any litter is usually a lengthy process and labour intensive***.***

The annual clean up "Australia day" highlights extent & labour required to reduce unwanted litter.

- Cigarette butts. Waterway pollution marked effect on marine life.
- Chewing gum produces unsightly pavement pollution and very expensive to remove. The manufacturers should produce a product, which is easy to remove and does not stain the pavement.

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Litter (Cont)

- Plastic bags and associated plastic wrapping is still an integral part of retail shopping. Can have fatal consequences for marine creatures.

In all the above examples of sever litter pollution non-of the manufacturers have seriously address “harm /environment reduction measures” and costs are born by the community.

Question
What are best practice examples of using enforcement and education to reduce the extent of littering?

Consumer deposits legislation enacted in South Australia and recently amended to include milk cartons.

Question
What are the advantages and disadvantages of container deposit legislation in reducing litter and increasing recycling? What part do they play in optimising waste management outcomes?

Provides a public awareness that there is some value in a used product and can be recycled. The costs incurred in the transportation of recycled products to recycling depot is born by the consumer***.***

Education Programs

Question
Do the benefits of community and business education programs on the creation and disposal of waste justify the costs involved? Which types of programs are more successful in this regard?

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Question
Are government programs to reduce waste cost effective for the agencies concerned? Do they provide effective signals to the wider community?

Trade in recyclables

Question
What effect is international trade having on the level and disposal of waste in Australia? What effect is international trade having on recycling?

Countries should manage where possible most their waste and not export difficult recyclables to third world countries because of cost differentials***.***

Question
What effects are international agreements (including but not limited to the Basel Convention and the GATT) having on the level and disposal of waste in Australia? What influences are such agreements having on exports and imports of recyclables?

Australia should not be considering any agreements that export waste to third world countries. Hazardous E- waste has environmental consequences

- Toxic Pollution of the environment.
- Human health exposure to toxic

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National coordination of policies

Question

Are there any significant regulatory differences between the states and territories in waste management? What are the costs of these differences?

Yes. There are significant differences.
For example CCA waste treated timber. The Australian Pesticides & Medicines Authority (APVMA), who regulate chemicals use in CCA treated timber products has issued new recommendations for use of this product to be enacted by 31/3/2006. However, these APVMA recommendations are not enforceable and each state jurisdictions are able to interpret these recommendations differently. Resulting in a lack of uniformity Australia wide!

Question

When is it appropriate to implement uniform national approaches and when is it appropriate for the jurisdictions to pursue their own agendas?

Since its inception the Ministerial Councils have been effective in focussing on wastes of concern eg tyres This national approach has seen significant success in the NEPM related to ambient air quality measures. Conversely the NEPM for packaging was a voluntary measure and has proved to be ineffective. However, the NPHC should have leant lessons from this and should investigate new NEPM, s for E waste & CCA waste effective Local jurisdictions role would be to provide appropriate legislation to regulate these waste products.

Question

What role should the Australian government play in pursuing uniform national approaches when this is the appropriate course of action to take?

Facilitate debate and discussion through forums such the "Productivity Commission" and use of the NEHC Ministerial Council's meetings as an umbrella to standardise waste protocols. Eg EPR's for waste treated timber

Question

How well is the Environment Protection and Heritage Council functioning in developing waste management policies that are in the national interest? What other models for developing policy should be considered?

They agency must ensure that a uniform national standards (NEPM's as a vehicle) are promulgated throughout Commonwealth & all State jurisdictions. This ensures enforcement at a more local level For example uniform plastic bag legislation has been accepted by almost all of Australia**,**

**********END**********

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Inquiry into Waste Generation & Resource Efficiency

1.Introduction

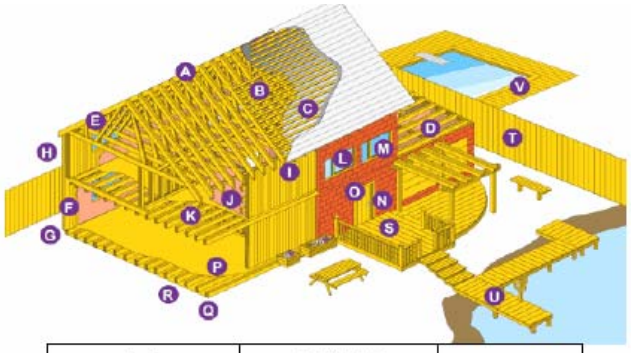
To open part 2 of this submission, which will be mainly devoted to treated timber (unsustainable product) Copper Chrome Arsenate (CCA) below is an extract from Australian Timberman July 2005 Page 17.

The quote from this publication illustrates how the treated timber industry, has set out to, and succeeded to minimise any reduction in the use Arsenic treated Timber products in Australia. Unfortunately, the effect of sustaining the production of very large quantities of arsenic treated timber will have long term consequences for the environment *"----The Australian Timber Treaters Coordination Group, set up as lobbying arm for industry players at the big end --- has been rolled into A3P*

ATTCG sharpened its teeth on the backsides of politicians when the APVMA bloodhounds were set loose on CCA back in March 2002

The group came together out of a need to lobby governments on behalf of Industry, rather than chemical registrants" Peter Zed of Weyerhaeuser pointed out "at times, we can appear to be a fragmented industry in the way we communicated, so putting ATTCG into A3P is a good thing.------"

In housing construction most internal & external Timbers treated with various biocides included CCA are used throughout Refer Figure 1 below



A, K **Roof timbers, internal joinery dry** EHC 1	G, H, I, J P **Ground floor joists, external walls** EHC 2	T **Fencing posts** EHC 4
B, C, D, **Roof timbers (risk of wetting)** EHC 2	Q, R **Sole plates below DPC** EHC 4	U **Timber in salt water** EHC 5
E, F, L M N O **External joinery** EHC 3	S **Fence, garden decking** EHC 3	V, **Timber in fresh water** EHC 4

Figure 1 Examples of preservative treated wood products and the associated European hazard class (EHC)[7]

Source3: "*Final report: Treated Wood Waste Assessment of the Waste Management Challenge" Enviros Consulting Ltd 3-2004*

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2.Treated Timber- Environmental effects

Environmental effects of CCA on the environment could result serious damage to natural systems if the present stance by bodies such as: treated timber Industry, & state jurisdictions is adopted A quote from NSW waste CRC *"---- there was no pressure on Industry from governments to act---"*

Documented evidence shows that CCA treated timber does leach out significant amounts of Arsenic, Chromium & Copper. This has significant major implications for landfills

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2.Treated Timber- Environmental effects (Cont)

- NSW EPA's Extended Producer responsibility report [4] (EPR's) listed waste treated timber (CCA) as a priority waste issue but failed to list CCA waste as an urgent issue (Ni Cad batteries appear as more important)
- The Victorian EPA's paper "Towards Zero Waste" also flagged waste CCA as a priority issue but has failed to address this product as a priority until 2009/10
- In a letter from SA Environment Minister in relationship to management of waste treated timber (CCA) to me he said*"--- timber treatment industry research and development project undertaken with EPA was unsuccessful. Clearly the management of CCA is technically challenging and it will be appropriate to await the outcome of work carried out on behalf of Environment Protection & Heritage Council. This will ensure that the matter is handle on a nation wide basis. ---"*
- In a letter from the Federal Minister for the Environment in relationship to CCA waste being put on agenda of the Environment Protection Heritage Council (EPHC) Environment Ministerial meetings he said"

" –The waste working group of the EPHC discussed CCA treated timber earlier this year and similar concerns to those you have been raised. The chair of the waste working group wrote to APVMA on 21st May requesting issues ----------use of and management of waste arsenic treated timber as part of the review. The waste working group is also seeking to participate in the review as it progresses. ----"

3. Treated Timber-Overseas Developments

3.1 European

The New European standards and changes in wood preservation have placed stringent restrictions on the use of CCA treated wood

The European Commission published a directive, Commission Directive 2003/02/EC on the 6 January 2003, relating to restrictions on the marketing and use of arsenic 76/769/EEC) Since the 30 June 2004, CCA treated wood is not allowed for certain end-uses,

These measures will restrict the marketing and use of CCA wood preservatives as well as CCA treated wood particularly in domestic dwelling or where there is potential of human contact. These restrictions also apply to imported treated wood and waste wood in re-use. Refer table 4 below

During 2004-2005, arsenic was evaluated as an active substance in CCA and as from 2007/2008, CCA preservatives will require authorisation according to the Biocidal Products Directive (BPD)[8].

Other nations such as Denmark, Finland, Germany, Japan, the Netherlands, Norway and Sweden have also imposed their own stricter regulations on the use of toxic chemicals in wood preservatives, these range from almost a total ban to restrictions on areas of use Refer to Table 5

The EU directive 76/769/EEC has classified treated timber (CCA) as a hazardous waste resulting in a total ban from landfills

Inquiry into Waste Generation & Resource Efficiency

Treated Timber-Overseas Developments

3.1 European (cont)

Table 4. Permitted and unacceptable uses of CCA treated wood under European directive 2003/ 02/EC.

Unacceptable uses	Permitted uses
• In residential or domestic constructions, whatever the purpose • In any application where there is a risk of repeated skin contact • In marine waters • For agricultural purposes other than for livestock fence posts and structural uses • In any application where the treated wood may come into contact with intermediate or finished products intended for human and/or animal consumption.	• As structural timber in public and agricultural buildings, office buildings, and industrial premises (no human contact) • In bridges and bridgework • As constructional timber in freshwater areas e.g. jetties and bridges • As noise barriers • In avalanche control • In highway safety fencing and barriers • As debarked round conifer livestock fence posts • In earth retaining structures • As electric power transmission and telecommunications poles

(Source: BWPDA, 2003)

Source 3: "**Final report: Treated Wood Waste: Assessment of the Waste Management Challenge" Enviros Consulting Ltd 3-2004**

Table 5. A summary of national restrictions on the use of wood preservatives

Country	Restrictions	Reference
Germany	First country to regulate against arsenic preservatives. CCB and CC were introduced followed by new generation copper formulations such as Cu-HDO.	Drysdale, 2002[21]
Japan	Provision in 1997 to reduce arsenic in wastewater to 0.1mg/l, dramatically altered the use of CCA.	Suzuki and Hagio, 1998[22]
Denmark	Considering an environmental tax on the use of chromium, including in treated wood.	Drysdale, 2002[21]
Sweden	Restricted CCA treatment, since 1998, only for under ground and critical above ground applications. Ban on use of organo-tin based wood preservatives in 1995.	Jermer and Nilsson, 1999[24] Edlund and Jermer, 2002[25]
Finland	Dimension based restrictions, labelling and consumer information sheet requirements and CCA to be fixed properly with artificial drying or some other method.	Braunschweiler, 2002[26]
The Netherlands	Ban on import, trade and use of wood treated with copper compounds, (Later postponed).	Jaeger, 2002[27]
Norway	Ban on production, import, sale, reuse and use of treated timber with chromium and arsenic from 2001. The restriction is also meant to cover copper, but the date for banning copper has been postponed. There are no restrictions on the use of copper-based preservatives. Considering an environmental tax on preservatives containing copper, chromium or arsenic. CCA is permitted for use in transmission poles, harbour poles and poles with a high demand of security while banned for fence posts.	Evans, 2000[28], 2001[23]

Source 3***: "****Final report: Treated Wood Waste: Assessment of the Waste Management Challenge"* Enviros Consulting Ltd 3-2004

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Treated Timber -Overseas Developments

3.1 European (cont)

Also EU restrictions on the use of creosote treated wood (directive 2001/90/EC86) came into force in June 2003, a light brushing grade of creosote is not longer available to do-it-yourself (DIY) users[9]

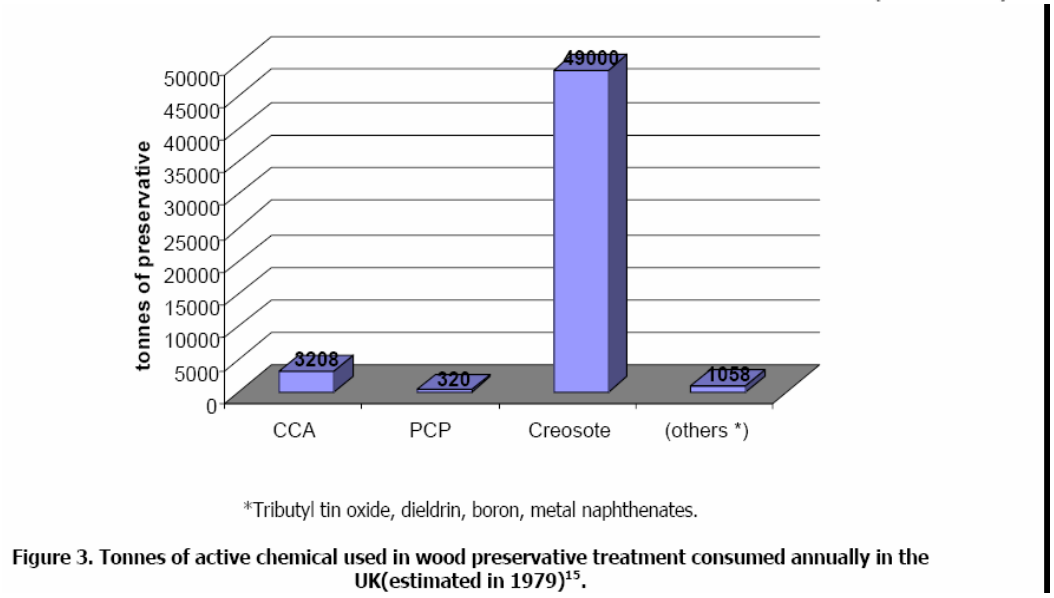
And the use of creosote is restricted where there is risk of frequent skin contact or where it may come into contact with or contaminate animal or human foodstuffs. Creosote will continue to be used to treat telegraph and electricity poles and for fencing and many other uses Refer Table 6 &Figure 3.

Source3*: "*Final report: Treated Wood Waste: Assessment of the Waste Management Challenge" *Enviros Consulting Ltd 3-2004*

Table 6. Permitted and acceptable uses of creosote treated wood under European directive 2001/90/EC.

Unacceptable use	Permitted use
• Any DIY use • Inside buildings, whatever their purpose • In toys • In playgrounds • In parks, gardens and outdoor recreational and leisure facilities where there is a risk of frequent skin contact • In garden furniture such as picnic tables • In the manufacture, use and any re-treatment of containers intended for growing purposes and packaging that may come into contact with animal or human foodstuff.	• Telecommunication and power transmission poles • Railway sleepers • Fencing • Agricultural purposes (e.g. stakes for tree support) • In harbours and water ways

(Source: Ref.29)



*Tributyl tin oxide, dieldrin, boron, metal naphthenates.

Figure 3. Tonnes of active chemical used in wood preservative treatment consumed annually in the UK(estimated in 1979)[15].

Source 3: "*Final report: Treated Wood Waste: Assessment of the Waste Management Challenge"* Enviros Consulting Ltd 3-2004

In the UK consultants report on "treated wood waste assessment of the waste management challenge" [10] treated wood wastes streams were featured. Refer figure 3

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Treated Timber-Overseas Developments

3.1 European (Cont)

The report finding indicate

- Reuse was the ***best practicable environmental option***. (BPBO)
- Incineration with energy recovery was the second most favourable option.
- Incineration without energy recovery and landfill with or without pre-treatment is not favoured

Conclusions

- Reuse and recycling are preferable to **incineration and landfill disposal.**
- The BPEO methodology does not compare the merits of reusing different types treated wood wastes. For example BPBO does not assess whether it is better to reuse sleepers rather than fencing.

3.2 Northern America –USA

Background

In February 2002, the USA EPA announced a voluntary decision by the United States preservative timber industry to replace Chromated Copper Arsenate (CCA) treated wood with new alternative wood preservatives to consumers by 31 December 2003.

The US EPA decision affected residential uses of CCA treated wood, including: play-structures, decks, picnic tables, landscaping timbers, residential fencing, patios and walkways/boardwalks. After January 2004, the EPA disallowed CCA products to be used for any of these residential uses. Industrial & Agriculture uses are under review.

USA-disposal of CCA waste wood [5]

The amount of CCA-treated wood purchased in the USA in 2000 was estimated at 14 million cubic meters and 2 million cubic meters of waste CCA were disposed. In the next 20 to 30 years (typical service life of treated wood products) an estimate 14 million cubic meters per annum of waste CCA-treated wood will require disposal.

In 2000 Florida the amount of CCA-treated wood purchased used was one million cubic meters, which corresponds to roughly 1500 metric tons of arsenic. And the amount waste CCA-treated wood disposed in is approximately 0.1 million cubic meters **which equates to 180 metric tons of arsenic**.

The total amount of CCA-treated wood sold within the state of Florida since the early 1960s have used estimated at **26,000 metric tons of arsenic** (Townsend et al. 2001a). This huge quantity of arsenic is very significant and will have a long term impact on the environment (contaminate groundwater) if the waste wood is not properly disposed of. Refer Figure 2

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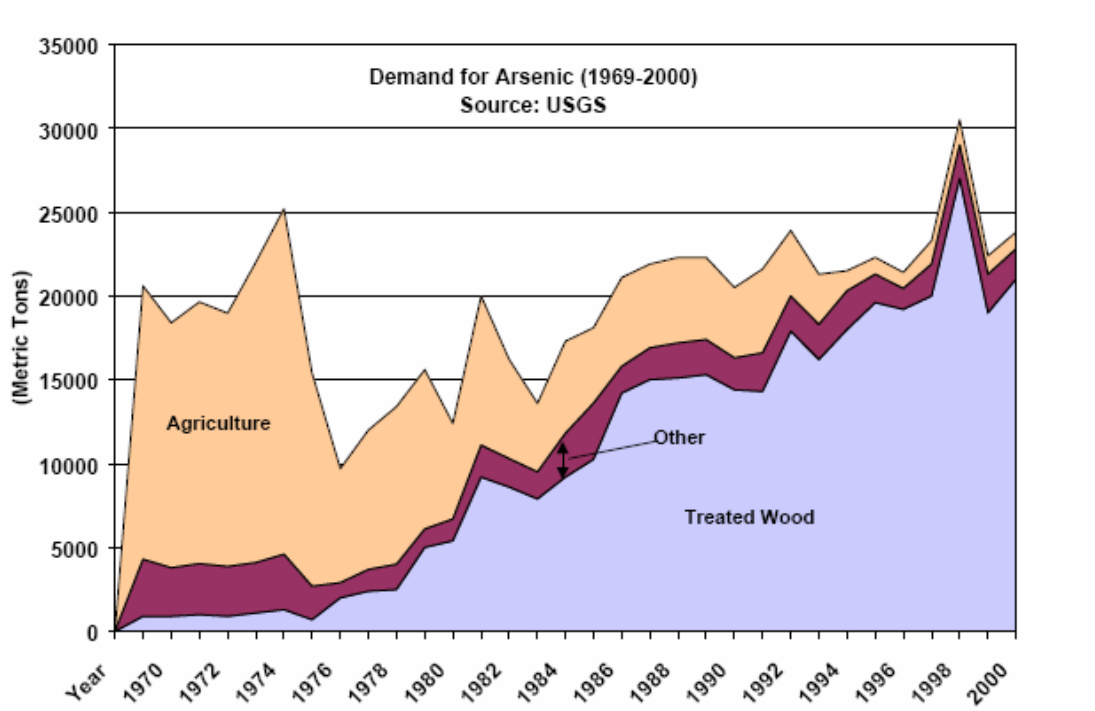
3.2 Northern America-USA

Disposal of CCA waste wood (Cont)

Figure 2 Demand for Arsenic in USA 1969-2000 [6]



Source *"The Phase Out of CCA in the United States* **"**John Schert Florida Centre for Solid and Hazardous Waste Management IRG 34 conference Brisbane Australia

CCA waste disposal pathways -Florida

The primary disposal pathway for CCA-treated wood in USA Florida is through construction and demolition recycling facilities. These C&D landfills are generally unlined, and recent research has shown that CCA-treated wood waste exceeds leaching guidelines. Recent studies indicates that CCA-treated wood should also not be disposed in MSW unlined landfills and questions the current US EPA exemption, which permits the disposal of CCA-treated wood within landfills as long as the wood is disposed by the end user.

Recycling CCA waste as a Wood Fuel [5]

Contamination of wood fuel with CCA-treated wood waste is of concern in USA due to

- Toxic air emissions (arsine gas) during the incineration process
- The accumulation of high concentrations within ash of Toxic heavy metals (As, Cd & Cu). CCA-treated wood ash wood is considered a hazardous waste,
- Potential dioxin formation from bottom ash -combustion phase 250-400 ^{0}C

Recycling CCA Waste treated timber as Mulch –Florida [5]

In Florida the use of C&D wood waste within the mulch industry, has resulted in a high probability of such wood to be contaminated with CCA. Recycled of C&D wood waste enables CCA-treated wood to be applied to soils throughout the State of Florida, thereby increasing the potential for contaminating the environment (soils) with high levels arsenic, chromium, and copper.

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3.3.Australia

3.3.1 Outline

Australian Pesticides Veterinary Medicines Authority (APVMA) recommendation in March 2005 in regard to CCA products to take effect 31/3/2006 was limited to just:

- Children's Play equipment.
- Decking
- Handrails
- Picnic tables.

In Australia annual use of treated timber is estimated 6,500 tonnes per annum (APVMA). With a composition of 34% arsenic content in CCA timber products, the result is that **1000 tonnes of arsenic is put into Australian environment each year**

With the life cycle of CCA treated timber estimated at 30—50 years we have an enormous long term environmental problem of proper disposal CCA treated timber waste.

3.3.2 South Australia

It is estimated by year 2030 that in South Australia 160,000m3 per annum will be require to be disposed of. And the cheapest option by far for disposal of treated timber waste is still to landfill with disposal cost is a low $45--$50 per tonne.

In South Australia 100,000 m3 of round wood are produced per annum. With 63,000 pa of other products And overall 230,000 m3 of treated timber products were produced in South Australia in 1999 with 30% sold interstate

South Australia has huge stockpiles of waste treated timber. A major contributor is the growing bottleneck in vineyards where ups to 15%-20percent of "treated poles" are damaged per annum. The result being an estimated 400,000 waste CCA posts which is equates to 10,000m3 locally and nationally estimates of 800,000 waste CCA posts added with an another 300,000 creosote posts makes this waste issue of a national concern.

3.2.4 *The Wine Industry -Why is their concerns about the CCA?*

There are significant volumes of treated pine used as trellis posts in established vineyards. In 1999, a report [1] prepared for the South Australian EPA found that wineries were the largest purchaser of preservative treated timber in South Australia, mostly CCA-treated timber. **Estimates based on ABS statistics for the area of vines planted indicate that there are between 60 and 120 million posts currently used** for trellising in Australian vineyards. Approximately 75% of these are CCA-treated timber posts

Can we continue to produce a treated timber product (CCA) that has no identifiable "end life"?

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4 Disposal

4.1 CCA -is the end in sight?

There is no life cycle in place for CCA treated timber products and the waste produced is highly toxic, containing heavy metals Arsenic (broad acting carcinogen) and Chromium a known carcinogen

How to dispose of treated wood (CCA) is a vexing concern? The chemicals used for treating wood Copper Chrome Arsenate (CCA) are designed to kill or repel biological organisms, so it is a reasonable assumption that their disposal could pose environmental and health risks.

There is presently no acceptable disposal method for CCA treated timber. Projected volumes equate to 100,000m3 landfill-air space

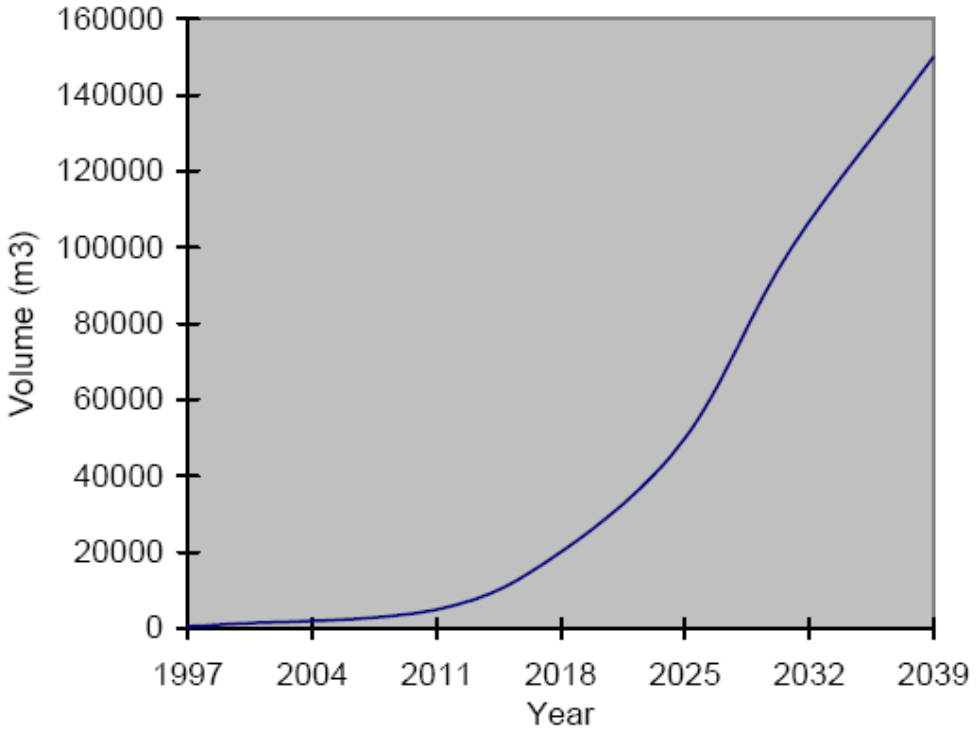
4.2 Landfilling

Safe, environmentally responsible disposal of waste should be paramount factor in any landfill practice. However, in many cases state jurisdictions have ignored the '*precautionary principle"* and continue to dispose of arsenic treated wood products to landfill sites. The current huge volume of CCA in Inquiry into Waste Generation & Resource Efficiency presents the most challenging/urgent priority for proper utilisation CCA-treated waste wood

Most State jurisdictions still promote landfilling of CCA-treated wood as the only environmentally acceptable disposal option. The problem is that landfills are filling up, and tremendous quantities of CCA-treated wood will be coming out of service over the coming decades. Refer to Figure below

Figure 3 - Predicted Volumes of Treated Timber Disposed Yearly South Australia [1]

Source 1 " *Review of the landfill disposal risks & potential recovery & recycling of treated timber*" Sinclair, Knight & Merz 1999



4.2 Landfilling (Cont)

As expensive, lined municipal landfills near their capacities, there is increasing pressure to keep bulky C&D waste out, sending it instead to less expensive, unlined C&D landfills. These unlined landfills may not adequately protect area groundwater from contaminants in CCA-treated wood.

CCA-treated wood should not be burned- even in state-of-the-art incinerators, as the heavy metals in CCA are not destroyed. The copper, chromium and arsenic heavy metals become very concentrated in the ash and must be handled as hazardous waste,

4.2 Incineration

Incineration is clearly unacceptable from an environmental standpoint, in Australia. This leaves only landfilling as an option and the tremendous increase of CCA-treated wood waste entering the waste stream makes this option increasingly unattractive

Conclusion

The bottom line with CCA-treated wood is that, other than reuse, there are currently no acceptable alternatives to landfilling.

Given these disposal-related concerns, the only viable solution is to phase out the use of CCA-treated wood in favour of preservative treatments (biocides) that offer a better recycle options. CCA-treated wood is already outlawed in several European countries

5.Alternative to CCA treated Timber

5.1 Natural Preservatives[3]

There are real concerns about existing preservatives (CCA) effect on the environment There are various studies of the potential of naturally occurring compounds, with biocidal properties, found in wood and other plant materials, as preservative treatments which will replace heavy metal compounds used in treated timber products...

A number of plants are known for their ability to repel insects, for example, the resin material extracted from the guayale plant (Parthenium argentatum) has been found to have anti termite and anti fungal properties[8,9].Resin obtained from this shrub has been shown to be useful as both a preservative (decay) and a fire retardant agent[10]

.

Naturally occurring bacteria and fungi may also prove of use to the preservative industry. For example components found within tree bark, particularly tannins have been investigated as alternative, environmentally benign, preservative systems. A development that has shown particular promise is the use of tannins in combination with other biocidal compounds.

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5.2 Non-Biocidal Methods[3]

- Physical treatments, like heat can permanently alter the structure/composition of the wood rendering it less susceptible to biological attack
- Chemical methods, which involve reacting various chemical compounds directly with the wood cell wall polymers The wood treated in this way becomes less susceptible to biodegradation.

A number of European states such as Finland, are currently producing thermally modified wood (Table 47) for a variety of above ground uses[11] These heat treatment processes include the Finnish “ThermoWood” and “Stella wood”, the Dutch “Platowood”, the German “Oil heat treatment” and the French “ Retification”, The end uses for heat-treated wood include: exterior cladding, windows, doors, joinery, garden furniture and interior applications such as flooring[12]

Table 47. Production of heat treated wood in some European countries [2]

Country	Number of companies	Annual production in m^3
Finland	12	150,000
France	6	25,000
Germany	1	2,000

Concluding Remarks

The potential use of an alternative wood preservatives should be promoted by both the Federal and State jurisdictions as a replacement product for Copper Chromate Arsenate (CCA), a highly toxic product, to minimise the CCA waste stream and thus the amount of arsenic leaching into our soils & groundwater

Prior to any adoption of alternatives biocides , assurances should be provided that these alternatives are less harmful to humans and the environment than the toxic chemicals found in CCA. Given that the fact that the alternatives do not contain arsenic, a highly toxic metal to humans, these replacement alternatives will likely represent a lower human health threat than CCA.

The effects of CCA waste will be observed in the disposal stream (long term) after the typical service life of CCA-wood products, which are roughly 25 to 40 years. Better waste minimisation efforts, improved disposal, better management practices will be needed to assist in disposal of waste CCA within the short term of (25 to 40 years) due to the present very large inventory of CCA-treated wood that is currently in service in Australia

New automate waste CCA disposal strategies to process the sorting of CCA-treated waste wood from untreated waste wood will have to be implemented within the disposal stream. (Niton XRF analysers) These new technologies should be explored further and be implemented in a full-scale operation to validate and fine-tune an efficient waste wood sorting process.

Reducing the impacts of waste CCA-treated wood on the environment must be a priority of this productivity commissions review

References

1.*" Review of the landfill disposal risks & potential recovery & recycling of treated timber*" Sinclair, Knight & Merz 1999

2. *"CCA Treated Timber –a problem"* Glen. Scott. Towards Zero Waste Conference Adelaide 2004

3*"Final report: Treated Wood Waste: Assessment of the Waste Management Challenge" Enviros Consulting Ltd 3-2004*

4*"Extended Producer Responsibility Priority Statement 2004"* Public Consultation Report NSW DEC 8/2004

5*"A Summary from Seven Years of Study Focusing on the U.S. Florida Environment "* Helena M. Solo-Gabriele Timothy G. Townsend John Schert IRG/WP 03-50205 IRG 34 conference Brisbane Australia

6*"The Phase Out of CCA in the United States* **"**John Schert Florida Centre for Solid and Hazardous Waste Management IRG 34 conference Brisbane Australia

7 Osmose, Protim Solignum Ltd: http://www.protimsolignum.com/osmose/frames.htm

8 ATP Arch Timber Protection, 2002, available at http//www.archtp.co.uk

9 "*Inventory of the use of preservative-treated wood and wood preservatives in Sweden 1900-1997",* J,.Jermer, and K. Nilsson 1999, International Research Group on Wood Preservation, Document No. IRG/WP 99-50137.

10 "*Durability of surface preserved wood particleboards submitted to atmospheric influence"*, L. Valcheva, 1995, International

11 "*The efficacy of guayule resin as a pesticide*." J.D. Bultman, R.K. Gilbertson, J. Adaskaveg, T.L. Amburgey, S.V. Parikh, C.A. Bailey, Bioresour. Technol. 1991, 35, 1997.

12*"The leachability of guayule resin from treated wood*," J.D. Bultman, W.W. Schloman Jr, Ind. Crops Prod., 1993, 2, 33.

13 "*Alternatives to Petroleum-Based Biocides for Protecting Hardwood Lumber and Manufactured Products"*, W. Murdoch,1992, National Institute of Standards and Technology, U.S. Department of Commerce, Transferring Technologies for Industry No. 4, ISSN 1064-3451.

14, "*Emerging technologies in wood "*, P. Evans Forest Products Journal, 2003, 53 (1), 14-22.

Inquiry into Waste Generation & Resource Efficiency

References (Cont)

15 “*Wood preservation in the UK*” R. Cockcroft. STU, 1979, 153.

16 *“Assessing heat treated timber for cladding”, 2003*, BRE,available at http://www.bre.co.uk/news.jsp?id=126 Accessed 1/12/03

29 BWPDA, British Wood Preserving and Damp-proofing Association, 2003, available at http//www.bwpda.co.uk/news

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Appendix A

Excerpt from UK Environmental Agency Web Site

"What's in your Backyard" ***Pollution Inventory***

Site details

Operator H.J. Enthoven & Sons Ltd
Darley Dale Smelter
South Darley Matlock, DE4 2LP

Type of Industry

Metal production and processing

The method for reporting waste transfer data in 2003 has changed from previous years. Greater detail is now provided by the Industrial Operator in terms of Waste type and Disposal or Recovery Route.

Route	Substance	Year	Amount	Notifiable Release
Disposal – Deposit into or onto land	waste transfer	2003	25296 t	-
Disposal - landfill (1998-2002)	non-special waste	2002	5874 t	-
Disposal - landfill (1998-2002)	non-special waste	2001	4700 t	-
Disposal - landfill (1998-2002)	non-special waste	2000	3200 t	-
Disposal - landfill (1998-2002)	non-special waste	1999	1700 t	-
Disposal - landfill (1998-2002)	non-special waste	1998	60 t	-
Disposal - landfill (1998-2002)	special waste	2002	18070 t	-
Disposal - landfill (1998-2002)	special waste	2001	18000 t	-
Disposal - landfill (1998-2002)	special waste	2000	17700 t	-
Disposal - landfill (1998-2002)	special waste	1999	18000 t	-
Disposal - landfill (1998-2002)	special waste	1998	19829 t	-
Disposal - Physio-chemical treatment	waste transfer	2003	314 t	-
Recovery - other (1998-2002)	non-special waste	2001	90 t	-
Recovery - Recycling/reclamation of metals	waste transfer	2003	979 t	-
Recovery - Use principally as a fuel	waste transfer	2003	4 t	-
Reuse (1998-2002)	non-special waste	2002	5062 t	-
Reuse (1998-2002)	non-special waste	2001	5100 t	-
Reuse (1998-2002)	non-special waste	2000	5200 t	-
Reuse (1998-2002)	non-special waste	1999	3500 t	-
Reuse (1998-2002)	special waste	2002	4 t	-
Reuse (1998-2002)	special waste	2001	10 t	-

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Appendix B

No easy solution for e-waste problem

WME December 2005

http://www.wme.com.au

Australia's environment ministers say the computer industry's plan for dealing with e-waste is simply not good enough, reports Garth Lamb

Environment ministers are "concerned with the slow progress by the computer industry" on waste.

While extended producer responsibility (EPR) is a hot conversation topic for many industries, the most complicated discussions have centred on computers. The very public debate highlights some of the issues for other industries in developing EPR schemes, which are much in favour with governments around Australia.

E-waste is a problem in need of a solution, accounting for around 125,000 tonnes of potentially hazardous waste a year and growing three times faster than municipal waste. The Australian Information Industry Association (AIIA) spent two years and $250,000 developing a voluntary industry take-back scheme. In October, the Environment Protection Heritage Council (EPHC) rejected the scheme and decided to investigate regulatory measures, saying it was "disappointed the proposal does not explain what can be done to recycle existing computers in homes and businesses".

A recent report from NSW's EPR Expert Reference Group also rubbished the industry's progress: "The computer sector has been slow to respond to the challenge of product stewardship and early proposals were largely conceptual, lacked substance and indicated an unwillingness to take responsibility in a number of key areas". It recommended "regulatory action to mandate EPR" unless a satisfactory plan for an industry scheme was developed by Christmas.

A big concern for the EPHC was the scheme failed to "adequately cover the computer sector". Part of the problem is that the peak computer body only accounts for 10 per cent of companies in the sector and 50 per cent of sales, a fact frankly acknowledged in the e-waste report from AIIA and Planet Ark

Consulting, released in June.

“The fragmented and variable nature of the market, together with the high percentage of orphan or unbranded products amongst historical material makes it difficult to design and enforce the implementation of a scheme that is equitable and competition-neutral and that covers the cost of the recovery of this material (which is as yet unknown),” states the report.

Disagreement over numbers and cost

Understandably, the big companies represented by AIIA do not want to pay to dispose of other companies products, either unbranded “white box” computers or orphaned products from manufacturers that no longer exist. AIIA put on the table a forward-looking scheme only, promising to deal with the historical problem once a solid system was up and running.

“We proposed something we think will stop adding to the backlog, and [plan to] use it to start leveraging ways to deal with historic waste We think that’s the most viable system,” association spokesman James McAdam told *WME*. “Any scheme that involves a small part of the industry picking up the tab for the entire industry is just not fair or viable.”

The EPHC says a total solution would cost far less than the industry claims. At the heart of the disagreement is the question of how big the historic problem actually is. The AIIA report says at best there are about 5.2 million units in storage and possibly as many as 23.2 million. With a recovery and reprocessing cost per unit of $30-50, it says cleaning up historic e-waste could cost the industry up to $1.1 billion, and at least $156 million.

Jon Ward, business and industry programs manager with Sustainability Victoria, rejects these figures. A national phone survey of 1,700 metropolitan households along with data collected through the Byteback collection scheme by the former EcoRecycle Victoria and Hewlett Packard produced a figure of just 640,000 obsolete household computers. He says they can be processed at $25.50 a piece, bringing the bill to just $16 million.

“People have already thrown out more of these [old computers] than anybody thought,” says Ward. “There is a relatively small liability in the marketplace, most have already gone to landfill.”

McAdam says excluding 16-17 million computers from the figures because they are still in use makes no sense, as they will have to be dealt with eventually. AII A’s proposed Producer Responsibility Organisation (PRO) to coordinate the industry scheme also needs a hard target, as it could not be legally established with a huge unfunded liability. Ward says the liability has been over-stated and a $10 levy per sale would more than meet it.

The Byteback study also found only 11 per cent of the waste stream was white box or orphaned products, much lower than the 45 per cent figure in the AIIA proposal. McAdam stands behind the industry figure gleaned from members, but Ward says figures in the AIIA report “were early estimates

based on models. We now have actual data . . . [and] we need to go back to the table – it's a totally different problem than what they thought".
And back to the table is exactly where the plan is headed, with more discussions between industry and the EPHC before Christmas. The EPHC wants options "set out in a more robust proposal" at its next meeting in April 2006.

Finding a fair solution

While the EPHC's desired outcome is obvious, the path to achieving it remains unclear. "We're trying to set out where we want to go," says EPHC executive officer Bruce Kennedy, but "we don't have a particular view at the moment".

AIIA suggested passing collection and reprocessing costs to consumers either through increased purchase prices or a recycling fee/tax at the point of purchase. A recycling certificate would be provided for all computer-related equipment guaranteeing the consumer environmentally friendly disposal at no further cost.

But what regulation should support this to ensure everyone participates? AIIA accepts "some level of regulation will be required," but does not want a National Environment Protection Measure (NEPM), the government's current tool of choice for underpinning voluntary schemes. Gerard van Rijswijk of Planet Ark Consulting says a NEPM would not work for the computer industry due to the difficulty in covering all the small players.

Both camps say they want a fair solution, but with the disagreement over the size of the problem it looks unlikely that both will leave in festive spirits.
More information at http://www.aiia.com.au/ *(Our groups – Environment)*

Fact File	**Australian Information Industry Association Estimate (2005)**	**Survey and Victoria Byteback project actual data (2006)**
National E waste (note in use or no longer working households 25% of total	1.3 m to 5.8 m units	642,000 units
Collection & Recovery/recycling Cost per unit	$30 to $50	$25.50
White Box and orphaned products % of waste stream	45%	11%

Productivity Commission Issues paper 12/2005

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Copy of

Consultation Paper

Extended Producer Responsibility

Priority Statement

DEC (NSW) 3/2004

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Extended Producer Responsibility Priority Statement
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Appendix D: "*Characteristics of chromated copper arsenate-treated wood ash"* Journal of Hazardous Materials B89 (2002) 213–232 Helena M. Solo-Gabriele a,*, Timothy G. b,Brian. Messick b, Vandin Calitu a ----------15

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1.Introduction

This Submission primary focus will be on the EPR waste product of concern "*Treated Timber (CCA)"* .The paucity of respondents to make a comment on this product (CCA) in the EPR consultation paper (2003) was very disappointing. So it was not surprising that the DEC (NSW) EPR priority statement paper (2004) failed to recognise that CCA Treated Timber is a first priority issue. The decision to relegate CCA as a priority 2 is wrong. My submission will outline why the priority status of treated timber should be upgraded to PRIORITY 1 status. To support my case I will refer to the current APVMA review and reports from Environment Australia & Therapeutic Goods Administration (TGA)

All state jurisdictions have placed this product (CCA) in the "*too hard basket*". And all have failed to properly address the crisis in disposal of large amounts of waste CCA. disposal issue. The primary source is from the viticulture industry All state EPA are avoiding firm action and are still that something will turn up and save the day. This attitude is reflected in NSW EPR Priority Statement paper page 14 Treated Timber *"—number of studies are investigating new recovery options"*. being conducted at the Sydney University.

2. The proposed EPR framework

2.1.Consultation Process

There should be full public disclosure meetings etc. This process could be similar to the Californian Resources Board (CARB) which posts all its proceeding on the Internet such as minutes of meeting agenda

2.2.Review by Technical referee

There should be full disclosure of proceedings of any technical reference group eg CARB meetings reported "verbatim" meeting proceedings.

2.3.Negotiations: Industry

There is a need for progress reports from industry and a need a level playing field. For example the packaging area present problems especially in regard to the *"Free Trade agreement"*.

Packaging for imported products eg wine The Australian product is at a disadvantage by producing an "environmentally friendly package which may cost more. Whereas the imported product that has a poor eco friendly packaging has a cost advantage of a non-level of playing field). Studies have found when consumers are faced with the fact with two similar product, one which is Environmentally friendly and the other non- friendly environment which costs less 90% consumers will choose the cheaper non-environmentally friendly imported product.

2.4. National Focus

. When governments introduce EPR schemes they should have a national focus eg Treated Timber. The present proposal for "Electronic Collect" scheme is not an Australia wide scheme. The present proposal is to restricted scheme to NSW & Victoria.

2..5. Recovery/Disposal

The EPR fails to address the issue of additional cost at point of purchase for disposal /recycling costs. The NSW EPR statement quoted 6,000,000 tons of waste are landfilled annually including 4.5 million tons in Sydney areas Waste timber occupies by volume a large area of lined landfill sites. So it is puzzling why the NSW EPR has chosen to relegate *treated timber* is as a priority 2 waste of concern.

2.6 The use of treated timber

When any product is produced there should a mandatory provision by government for a full life Cycle plan to include (1) Production. (2) In service use. (3) Disposal at end of life.

No such plan of "*cradle to grave"* exists for treated timber products. The only current measure of waste disposal by jurisdictions is to send this product is Landfill. Moreover, the true cost of treated timber is not reflected in current landfill disposal prices. Of treated timber *The increase in volumes of waste treated timber predicted in the next decade will require additional landfill sites.* **Refer appendix E**

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3.General-Treated Timber (CCA)

3.1. Outline

Chemical wood preservatives (Arsenic) account for one of the single largest pesticide uses in Australia and pose threat to public health and the environment. The hazards associated the use, storage and disposal of these chemicals (arsenic Chromium & Copper) treated timber product (CCA) are unnecessary, given that alternative materials to treated wood have been available for many years in Europe.

These chemicals (CCA) are designed to preserve the wood by killing living organisms And because they can easily move in the air, water and soil, these chemicals (CCA) is a threat to human life by causing both short- and long- term health effects In addition, the environmental impacts are profound. This suite of chemicals (CCA) has potential to contaminate the soil and leach into groundwater supplies Refer Appendix A.

Currently, the industry uses large quantities of pure arsenic each year. And ultimately, ***the vast majority of these chemicals (Arsenic) will end up in local landfills where it can leach into soil and local waterways.***

In addition small quantities of ash from a burning CCA wood (bushfires) creates a highly toxic ash which contains a lethal does of **Dioxin &Arsenic.** Refer Appendix B, C & D.

3.2 Treated Timber in USA

USA EPA's current regulatory measures. provide assistance to both federal and state regulatory bodies to regulate treated timber.

The Investigations & Compliance, WI Dept. of Agric., Trade, & Consumer Protection, noted

- A major concern is that CCA treated wood is being burned or used in wood mulch.
- ***Consumer protection laws are the only handle government agencies have in getting rid of treated wood.***
  - . The jury is still out on risk assessment.
- Question regarding the new generation of wood treatment products: will they work?

3.3.Treated Timber (CCA) an Australian perspective

In Australia CCA-treated timber has been available for over 50 years. However, it was not until late 1970s when it came into wide use in the community as an outdoor consumer product of choice. And although World Health Authorities has long warned against use of these toxic chemicals (arsenic) by the breathing of sawdust from pressure-treated wood or burning the material no serious long term human health or environmental impact studies were conducted by either industry or government.

For decades, Community playgrounds, builders of outdoor decks and a myriad of other treated structures in Australia have relied almost exclusively on the greenish wood known as pressure-treated lumber. Annual sales of some 800,000 m3 of this wood have created an Australian industry worth millions of dollars per year.

What makes treated Timber so useful is what the pressure treatment forced into it: a toxic cocktail of arsenic and other pesticides that deters termites, other insects, fungi, and microbes. *Nearly 85 percent or more of pressure-treated wood had been infused with chromated-copper arsenate, or CCA in Australia.* In 2001 alone, in the USACCA production devoured some 40 million pounds of arsenic and 64 million pounds of hexavalent chromium. And in Australia context, annual estimates of 6,500 tons of CCA is used per year. *Arsenic is carcinogen at relatively low levels and is of great concern because it leaches from the CCA wood more readily.*

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3.3.Treated Timber (CCA) an Australian perspective (Cont)

Australian Government Agencies has approved pressure-treated wood for decades. In May 2003 issued a scoping paper on CCA product (APVMA) stating that it would be re-evaluating whether CCA's ingredients posed a cancer risk to children and should be banned from community use. In late December 2003 the APVMA introduced a review of CCA with a proposal to a limited phase out arsenic treated timber from domestic use but that existing CCA domestic structures should remain intact.

The existing Code of practice of Australian standards for treated timber is not enforceable. The code relies on self-regulation.

Despite the fact that CCA is a hazardous product, the producers of these chemicals, wood preservative treaters and the end users of the treated wood products have all fought successfully to limit any restrictions of CCA products in Australia. An example of this is the failure of industry to properly label CCA treated timber products as a hazardous product at retail outlets.

And there remains the question: what about environmental and health risks from continuing exposures to the CCA (arsenic) leaching from existing outdoor structures that will remain in place for years?

4.Treated Timber Plants: Site Audits

4.1.Australia treated timber manufacturing plants

Present Australian CCA treated timber Industry sites produce:

- **A non-renewable/recyclable product.**
- Highly toxic waste materials.

The Australian Environment Guidelines standards 1996 for treated timber plants rely on a voluntary Industry code of practice. Previous environmental audits conducted by the NSW EPA found that 3 out of 5 plants they audited, failed to comply with current environmental standards set for this industry

These plants have been found not have adequate Industry standards for protection of human health &environment. (NSW EPA Audit)

Some being

- No Waste management plans for proper disposal from the plant sites of toxic soil & water. resulting in increased contamination of soil & water.
- One of the poor practices were found during the NSW treated timber plant sites audit was the incineration of waste treated timber eg sawdust without the use of proper designed facilities. The end result being that volatised arsenic emissions and CCA ash residue were polluting these treated timber plants. Refer Appendix C & D.
- Lack of NPI accurate data for some of the treated timber sites.

4.2.Conclusions

In Australia, some state jurisdictions have no proper contaminated site register .For example former wood preservation sites and landfill sites that have been contaminated with toxic ash from burnt CCA treated timber. Refer Appendix B,C &D.

In Australia a recent study reported indicated Waste CCA-treated lumber should never be burnt This study featured in Sept. 15, 2003 *Environmental Science & Technology* found that burning this wood not only releases arsenic into the air, but also creates copious **amounts of dioxin**, another human carcinogen. The chemistry of the dioxin formation isn't clear. but the experiments showed that PCDD/F toxic equivalent of (TEQ) levels of 35ng/kg from bottom ash Tame et al 2003RefAppendix B.

The present Industry voluntary code for environmental standards at treated timber sites in Australia is not acceptable. There must be uniformed codes for these sites in all state jurisdictions.

For licensing of treated timber plants site in Australia, a new Commonwealth environmental standards/guidelines be enacted.

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5.Health effects treated timber (CCA)

5.1.USA: Recent developments

The USA EPA in February 2002 announced a safety re-evaluation of long-used pesticides such as CCA. It was to investigate cancer risks that CCA-treated wood might pose to consumers and focus on children because they tend to spend much more time on decks and play equipment than adults do and because young children frequently put hands, toys, and other items into their mouths.

In May 2001 the Washington State Environmental Working Group (EWG) petitioned the Consumer Product Safety Commission (CPSC) to require removal and safe disposal of treated wood from equipment in public playgrounds In response on Nov. 4, 2003, the Commission unanimously rejected the petition saying that children already confront comparable exposures to arsenic from the diet and other sources, But the CPSC did concede that CCA-treated equipment ***"could be a significant source of (a day's) arsenic for children" who play on it.***

In December 2003, USA EPA issued a draft risk assessment for CCA-treated decks and playground equipment. It concluded **that some U.S. children, depending on where they live and how they behave, could indeed face an unacceptably high cancer risk from exposure to the treated wood.**

5.2. USA EPA's Revised hazard assessment findings

(a) *Presumes route of most CCA exposure is from the wood to hands or other items that enter a child's mouth.*

(b) Considered how much time children play outside.

(c) USA EPA's study of some 1,000 samples of pressure-treated timber revealed CCA leaches from weathered wood at widely varying rates. This is because ultraviolet light and rain can accelerate CCA's release**.**

The presumption is that CCA outdoor wood products structures in the southern United States release more arsenic than outdoor products such as decking and swing sets further north.

(d). Children Probabilistic risk assessment from exposure to CCA

These variables prompted a cancer-risk estimate for children in the top 10 percent of projected exposures, the bottom 10 percent, and the groups in between. The normal cancer risk as excessive considered by the USA EPA is when it's higher than 1 in a million. On average, children exhibiting extensive hand-to-mouth behaviours who live in warm environments, face a 2.5 in 100,000 cancer risk—or more than 10 times the risk that triggers USA EPA concern.

Projections are that the top 5 percent of exposed children, the cancer risk could be 1.4 in 10,000, or more than 100 times the value that might be deemed acceptable. [1]

5.3 USA. Long –term leaching of Arsenic from CCA

In the USA last year, the EWG in a statement before CPSC, said that tests they conducted indicated that home owners with old CCA-treated decks, play sets, and picnic tables "*remain at risk from high levels of arsenic . . . for 20 years, the entire useful life of the wood."*

The EWG group study measured arsenic residues on the surfaces of 598 treated-wood structures, including play sets, picnic-tables, decks and cubby houses. Moist swabbing of 100 square centimetres of the surface—an area comparable to the size of a preschooler's hand—picked up 0 to 2,813 micrograms of arsenic. The median value was 9 µg, though on 10 structures the amount exceeded 500 µg. In general, the EWG observed, the swabbed value "typically far exceeds what EPA allows in a glass of water."

5.4. In service CCA—harmful effects.

(1) Ultra Violet radiation in warmer climates increase greater arsenic leaching from treated CCA timber.

(2) Leaching o arsenic continues for a life of the treated CCA timber structure.

(3) Product labels do not contain adequate label instructions for

- Occupational safety measures for handling product at timber treatment plants.
- **Occupational safety handling practices at wholesale & retail outlets.**

[1] Source: EPA report dated Nov. 10, 2003, outlines the details of these calculations

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5.4.In service CCA----harmful effects. *(Cont)*

Last October 2003, CPSC staff updated and increased their estimate of arsenic exposure for children playing on CCA-treated play sets.

"According to the new data, a child's hand could pick up 7.6 µg arsenic from the wood. The scientists calculate that "a young child who plays primarily on CCA-treated wood playground structures in early childhood has an increased lifetime risk of 2 to 100 per million of developing lung or bladder cancer."

6.Disposal of CCA treated wood & waste

6.1. Is Landfills Final Resting Place for Arsenic?

(a)General

The EU has classified Treated timber as a ***Hazardous waste*** and cannot be sent to an ordinary landfill. treated timber as a "Hazardous Waste "In Germany waste wood treated with wood preservatives eg CCA, such as railway sleepers, telephone masts, hop poles, vine poles as well as other waste wood which, due to its contamination, cannot be assigned to landfill must be disposed of using thermal processes. Land filling is not permitted. Vast amounts of waste CCA timber put onto unprotected soil or in unlined landfill can create major problems Eg Viticulture Industry.

(b) USA Experience

The treated timber industry has used about 30,000 tonnes of arsenic to treat the wood that has been sold in Florida since 1970. Most of the arsenic that has been used is still in the wood that is in service.

Leachate data from Class I landfills indicates that some Florida landfills have elevated concentrations of arsenic that are above the pre-treatment standards for some waste water treatment plants. Refer Appendix A

Groundwater data that has been collected at groundwater monitoring wells near Construction and Demolition Debris Landfills suggests that some of these wells have elevated concentrations of arsenic.

- Research is underway to determine how much arsenic will leach out of CCA treated wood after it has been placed in a Class 1 Landfill?
- Similar research is underway to determine how CCA behaves when it is placed in a Construction and Demolition Debris Landfill.
- EPA authorities have proposed that all CCA taken out of service be placed in lined landfills.

(c) Australian Landfills

Similar landfill condition to the USA exist in all Australia landfills, where most sites are not lined and most of the waste treated timber (CCA) is sent to ordinary landfill sites. CCA is not presently being classed as a *hazardous waste*. Most state EPA's allow household & community waste CCA products to be sent to ordinary unlined landfills. This may result in increase the risk of a long term potential for arsenic to leach into groundwater and contaminate drinking supplies. Refer Appendix A & B.

The NSW EPA's paper "Extended Producer Responsibility" has listed waste treated timber (CCA) as a priority waste but has failed to list CCA for urgent action. As a result CCA waste continues to go to landfill

Similarly the Victorian EPA's consultation paper on "Towards Zero Waste" also flags waste treated timber (CCA) which needs attention but also fails to address this product as a priority and waits until 2009/10.for action?

The Federal Minister for the Environment in relationship to waste treated timber (CCA) being put on the agenda of the Environment protection Council (EPHC) said

"*The waste Working Group of the EPHC discussed CCA treated Timber earlier this year and similar concerns to those you have raised. The chair of the waste working group wrote to APVMA on 21 May* (2003) *requesting issues of production, and use and management of waste arsenic treated timber are considered as part of the review. The Waste Working group is also seeking to participate further in the review as it progresses."*

There needs to be a more pro-active role by both Federal and State to *"kick start"* serious work on management of treated timber waste.

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6.2 Arsenic in landfill gas?

Most landfills in Australia have no proper air monitoring programme to continuously monitor any toxic emissions from arsine gas emissions produced from the conversion of arsenic to arsine gas from treated timber waste (CCA). Moreover Arsine gas released from landfill may be present in another volatile form

6.3Arsenic Contamination of Mulch

Commercial mulch presents a health hazard to both workers and households. Studies indicate (Report on treated timber Sinclair, Knight & Mertz 1999) waste CCA wood has entered the commercial chipped wood market. Wood recovered from C& D recycling industry is chipped & sold for either mulch or fuel. Further studies are needed to examine pathways for long term exposure from commercially sold mulch.

Recommend Recovered treated timber (CCA) that is selected for waste disposal, be placed in properly engineered lined landfills

6.4. CCA use in the Wine Industry

(a) Vineyard Posts

The South Australian EPA found that wineries were the largest purchaser of preservative treated timber in South Australia, mostly of which is CCA-treated timber. Refer Appendix E

Estimates based on ABS statistics for the area of vines planted indicate that there are between 60 and 120 million posts currently used for trellising in Australian vineyards. Approximately 75% of these are CCA-treated timber posts. Vineyard treated pine CCA- posts are relatively brittle and are regularly broken by mechanical pickers. The annual replacement rate of CCA posts is estimated between 15%----20%.

It is estimated that in five years, six million posts, will require disposal annually, equivalent to over 120,000m3 approximately twice the annual amount of waste deposited in landfill catering for a population of 60,000 people.

(b)Wine Industry: Disposal of waste CCA treated timber?

- There is a significant problem associated with the use of CCA treated posts is the disposal of broken or obsolete trellis posts.
- Burning of CCA-treated products has been prohibited for a decade in some states, as it has been acknowledged that the smoke produced constitutes an environmental and human health hazard.
- **Landfilling**
  - No uniformed policy in Australian states for disposal of Treated Timber (CCA).from wineries
  - Some state jurisdictions restrict CCA-treated timber products disposal to licensed or authorised landfills that are lined and/or have an appropriate leachate management system.
  - Authorised can be given to receive CCA-treated timber, but it is at the discretion of the landfill operator as to whether they shall accept treated timber (CCA).

7.Summary

In Australia it is becoming increasingly clear that CCA-treated wood presents a greater health and environmental risks than previously recognised.

7.1.Revision of timber treatment products

The NSW State jurisdictions to review and recommend to the Commonwealth
Improved:

- Extended Producer Responsibility. (EPR).
- Australian Standards
- Consumer Product Safety Acts.
- Hazardous Substances Acts.(banning of CCA)

7.2.Review of human health and safety

After consultation with the Federal & States government jurisdictions, the APVMA should implement a blanket ban of CCA-treated wood products. Eg children's playground equipment.

Furthermore, State jurisdictions should initiate mandatory programmes to audit & assess the safety of all treated wood that is used in the environment & the community

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7.3.Treated Timber & the Environment

Waste CCA treated wood should be re-classified as a hazardous waste product and on its disposal be restricted to designated hazardous secure waste lined landfill sites in Australia

All Australian State jurisdictions should promptly enact legislation to ban CCA products from community use and introduce a nationwide scheme to quickly phase out CCA treated timber.

This action will result in:

- Having less arsenic in the environment:
- No more victims (young children) of CCA wood from arsenic poisoning.
- Cleaner water---will give better protection to our precious underground water drinking supplies from waste CCA in landfills and burnt CCA ash.
- Better air quality for all the community from no burning of CCA in wood heaters.
- Efficient recycling of Waste wood resulting in no CCA wood to contaminate wood waste stream.

The Federal & State governments together with the APVMA and the wood preservative industry have a duty of care protect our children from toxic CCA treated wood and the environment from arsenic contamination. Protection of human health (young children) and the environment should be a priority.

- *Governments need to enforce the "precautionary principle rule & ban CCA treated timber from community use in Australia*
- *Federal & State Legislation should be enacted throughout Australia for removal of CCA from the environment.*

Recommend that:
For EPR's to be considered as an effective measure for waste management, Treated Timber products (CCA) must be made a "first priority waste of concern" by state jurisdictions.

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References

Dang, W., *et al*. 2003. *A Probabilistic Risk Assessment for Children Who Contact CCA-Treated Playsets and Decks*. U.S. Environmental Protection Agency (Draft Preliminary Report). Nov. 10 http://www.epa.gov/oscpmont/sap/2003/december3/shedsprobabalisticriskassessmentnov03.pdf.

Gray, S., and J. Houlihan. 2002. *All hands on deck.* Environmental Working Group. Aug. 29. http://www.ewg.org/reports/allhandsondeck/.

Sinclair,Knight,Mertz Report 1999 *Review of the Landfill Disposal Risks and Potential for Recovery and Recycling of Preservative Treated Timber*

Smith.t, Mollah.M, *CCA Review implications for Viticulture* ANZ Grapegowers & Winemaker 4/2004 Ryan Publication

Tame, N.W., B.Z. Dlugogorksi, and E.M. Kennedy. 2003. *Assessing influence of experimental parameters on formation of PCDD/F from ash derived from fires of CCA-treated wood. Environmental* Science & Technology 37(Sept. 15):4148-4156.

Tame, N.W., B.Z. Dlugogorksi, and E.M. Kennedy. 2003, *Increased CCDD/F formation in the bottom ash from fires of CCA treated wood.* Chemosphere 50 1261-1263

U.S. Environmental Protection Agency. 2003. *A Probabilistic Risk Assessment for Children Who Contact CCA-Treated Playsets and Decks Using the Stochastic Human Exposure and Dose Simulation Model (Draft Preliminary Report).* November 10, 2003 W. Dang, J. Chen

U. S. Environmental Protection Agency Office of Pesticide Programs, *Antimicrobials* http://www.epa.gov/oscpmont/sap/2003/december3/ shedsexposurereportsept03.pdf.

U.S. Environmental Protection Agency. 2003. *Consumer Product Safety Commission Documents, Fiscal Year 2003 Commission Briefing Packages.* http://www.epa.gov/oscpmont/sap/2003/december3/cspc.htm.

U.S. Environmental Protection Agency. 2002. *Evaluating the Wood Preservative Chromated Copper Arsenate (CCA).* http://www.epa.gov/pesticides/factsheets/ chemicals/cca_evaluating.htm

Welch Connie B *Where are Wood Preservatives Going?* (AAPCO) Conference 9th March 2004 US EPA Office of Management prevention pesticides & Toxic substances Antimicrobial Division

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APPENDIX A

Arsenic found in wells near Koppers

By ASHLEY ROWLAND Gainsville Sun staff writer

Arsenic has been found in two monitoring wells near the polluted Cabot Carbon-Koppers site, raising a red flag that contamination there could be worse than first projected.

The area's drinking water, however, is safe, according to Gainesville Regional Utilities officials.

GRU installed two monitoring wells near the site in the fall as an early detection system to make sure the pollution didn't spread. Arsenic was found in the first samples taken in November, and again in samples taken in December, said Brett Goodman, GRU senior environmental engineer for water and wastewater engineering.

Arsenic was detected in both wells at ranges between 19 and 44 parts per billion - slightly below the U.S. Environmental Protection Agency's current drinking water standard of 50 ppb, but well above the standard of 10 ppb that will go into effect in 2006, GRU General Manager Mike Kurtz said in a letter to the Gainesville City Commission on Tuesday.

GRU doesn't know if the arsenic is from the 170-acre Cabot-Koppers site or is naturally found in clay deposits, Kurtz said.

GRU will continue testing the monitoring wells to find the source of the arsenic and to make sure no sampling errors occurred, the letter said.

The Cabot-Koppers site included two facilities: Cabot Carbon, a pine tar and charcoal production facility that operated from the early 1900s until 1967, and Koppers Industries, a wood treatment plant and wood preservation site still in operation.

The EPA designated Cabot-Koppers as a federal Superfund site in 1983, making it eligible for financing that helps clean some of the country's most polluted spots.

Kurtz said in the letter that no other problem contaminants were found at the site, indicating the arsenic may be coming from a natural source.

But Chris Bird, director of Alachua County's Environmental Protection Department, said there's no other obvious source that would cause that much arsenic at Cabot-Koppers.

"It sounds like this could clearly be associated with the Superfund site," said Bird, who hasn't reviewed the data from the monitoring wells.

While Bird doesn't think there's an imminent danger to the city's drinking water,

GRU's findings "certainly gives us cause for alarm," he said.If it turns out the arsenic is from the Superfund site, the pollution would have spread farther from the Superfund site than originally thought, he said. The city then will need to toughen its cleanup measures at the site, Bird said.

The EPA announced in 2001 a $17 million plan to remove the contamination, which included installing a barrier wall to keep the pollution from spreading.

In addition, the Gainesville City Commission voted in October to ask the EPA to begin short-term cleanup measures at the site by June 1, and permanent cleanup plans a year later.

The monitoring wells are located 1,500 feet and 4,500 feet from the Cabot-Koppers site, and about two miles and 1.75 miles from GRU's water treatment plant, respectively. It would take between 25-50 years for water to travel from the Superfund site to the water treatment center, Goodman said.

Even if the arsenic were to seep into the city's drinking water system, GRU's water treatment facility would be able to remove the levels of arsenic found in the monitoring wells, Goodman said "We've never detected any arsenic in our drinking water," he said.

Arsenic also has been found at insignificant levels - 5 ppb - at the three residential wells within a quarter-mile of Cabot-Koppers, and is likely unconnected to the pollution from the Superfund site, said

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APPENDIX A (Cont)

Paul Myers, environmental health director for the Alachua County Health Department.

Naturally occurring arsenic found in clay deposits may have seeped into the monitoring wells when they were installed, several sources interviewed for this story said. Myers and others said it's normal to find low levels of arsenic in wells.
"Any well that you test in the county, I'd be surprised if we found zero arsenic in it," he said.

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APPENDIX B

Chemosphere
http://www.sciencedirect.com/science
Volume 50, Issue 9 March 2003, Pages 1261-1263

Increased PCDD/F formation in the bottom ash from fires of CCA-treated wood

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Abstract
Bottom ash that was the result of the combustion of chromated copper arsenate (CCA) treated wood under controlled fire conditions showed an increase of several orders of magnitude in the levels of polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDD/Fs), compared to that of untreated timber. Wood that has been pressure treated with CCA contains copper (II), which is known to catalyse the so-called de novo formation of PCDD/Fs. Comparable levels of PCDD/Fs would be expected in residual ash from burning CCA-treated wood in backyard fires, stoves and wood heaters, as a consequence of similar combustion conditions

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Waste Management & Environment (WME) Vl14#10 November 2003
Extract of Promotion Article by Cleanerway
"Need an Environmental Solution?" pages 52- 53

"- - NSW/ACT
The January 18 bushfires which devastated Canberra and its outlying districts
was an event that was not easily forgotten. Four people lost their lives and over 500 homes were destroyed, along with many urban and recreational assets. These assets consist of children's playgrounds, road barriers, through to camping and picnic areas.

Cleanaway Technical services(CTS) in Newcastle was asked to provide its expertise in the clean up of many of Canberra's assets. CTS's primary focus ***was on the safe removal and disposal of areas affected by Copper Chromium Arsenate (CCA) contamination, resulting from treated timber which was burnt in fires. This project started mid March with 55 sites needing remediation.***

A program was developed which consisted of the following main points

- *Site assessment.*
- *Site excavation.*
- *Hazardous assessment of excavated material.*
- *Site validation.*
- *Appropriate disposal of excavated material.*
- *Backfilling of remediated sites.*

To date almost ***2000 tonnes of material has been removed from the affected areas****. Eighty percent of the affected sites have been remediated and now open to the public".*

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APPENDIX D

Journal of Hazardous Materials B89 (2002) 213–232

Characteristics of chromated copper arsenate-treated wood ash

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Abstract

"The combustion of recovered wood from construction and demolition waste as biomass fuel is a common practice. When chromated copper arsenate (CCA)-treated wood is present as part of the wood fuel mix, concentrations of arsenic, chromium, and copper become elevated in the ash. ***The objectives of this study were to estimate the fraction of CCA-treated wood needed to cause the ash to fail regulatory guidelines and to test a series of solvents for the purpose of extracting the metals from the ash****.*

Ash samples were prepared in an industrial furnace using samples of CCA-treated wood, mixtures of CCA-treated wood and untreated wood, and recycled wood waste collected at construction and demolition recycling facilities. Regulatory guidelines were evaluated by measuring total metals concentrations (using neutron activation analysis) and by conducting standardized leaching tests (toxicity characteristic leaching procedure (TCLP) and synthetic precipitation leaching procedure (SPLP)) on the ash. Ten different solvents, ranging from distilled water to strong acids, were also tested for their ability to extract metals.

Results of this study indicate that metal concentrations (chromium plus copper plus arsenic) can be as high as 36% of the ash by weight for treated wood samples containing high retention levels (40 kg/m3) of CCA.

All ash samples from the combustion of 100% CCA-treated wood and mixtures containing 5% CCA-treated wood leached enough arsenic (and sometimes chromium) to be characterized as a hazardous waste under *US regulations.*

Concentrated nitric acid, which was the most effective solvent tested, was capable of removing between 70 and 100% of the copper, between 20 and 60% of the chromium, and 60 and 100% of the arsenic for samples characterized by low retention levels. A particular finding of interest was the efficiency of distilled water and other weak solvents to extract measurable amounts of chromium, especially for ash samples containing low retention levels of CCA. -----"

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APPENDIX E

Excerpts from :*Review of the Landfill Disposal Risks and Potential for Recovery and Recycling of Preservative Treated Timber* *Sinclair Knight Merz Report 11/1999*

4.3.1.Overview

"This report is mainly focused on industrial use because there was poor cooperation with Distributors & resellers CCA is the most widely used timber preservative as it is inexpensive, binds to timber leaving a dry paintable surface and is relatively resistant to leaching (Lebow 1996). As a result of these characteristics CCA tends to be used in applications where human contact is more likely such as in fence posts in agriculture, fencing and decking (Soong and Emmett 1993).& Playgrounds.

Constituents of CCA are known to be toxic to humans, aquatic life and plants (Mclaren and Smith 1996, Yeates et al. 1994) and contamination of both soils and groundwater with CCA constituents at timber preservation sites is a major problem.

The timber in S.A. will eventually require disposal and this time may be significantly reduced should certain conditions change, such as a reduction in the viticulture industry
A study of the uptake of metals from grapevines in proximity to CCA-treated timber has shown no evidence for accumulation of metals in leaf and stem tissue over a three year period (Levi, Huisingh and Nesbitt 1974)."
Note: This Report does not investigate if their was any uptake of arsenic in any of the grapevine plant roots This was discussed at the 2003 IRG 34 conference.

4.3.2.Disposal

Treatment chemicals have been shown in some situations to leach into soils and groundwater causing potential environmental harm. The use of such products in other countries, such as Germany, Japan, Scandinavia and parts of the United States, has been restricted and in some cases banned due to "environmental concerns" (Crimp 1999).
CCA has been ------0n the listings Hazardous Waste. Current administrative, compliance and disposal practices (CSI 1992). special disposal requirements. NSW EPA Guidelines stipulate disposal options for CCA(NSW Assessment, Classification and Management of Liquid and Non-Liquid Wastes 1999). They require that treated timber be disposed to landfills with currently operating leachate management systems that are licensed to receive this waste.
It is considered that the use of preservative treated timber will continue to increase in South Australia due to the continued growth of a significant primary purchaser, the viticultural industry. Viticulture practices rely on preservative treated timber due to its moderate price and excellent durability. It is estimated that 250 000m3 of treated timber will be produced in SA in 1999.However not all of this timber will be sold in South Australia. It is estimated that 163 000m3 of timber will be sold in SA during 1999. At least 50% of this timber is expected to be round-wood (posts and poles).

Table.1 Estimated Volume of Treated Timber SA

Product	*1997 Total Estimate m3*	*1998 Total Estimate m3*	*1999 Total Estimate m3*
total treated timber	*210,000*	*240,000*	*250,000*

Source: Review of the Landfill Disposal Risks and Potential for Recovery and Recycling of Preservative Treated Timber Sinclair Knight Merz Report 11/1999
Hence the volume of treated timber produced by South Australia is approximately 250 000m3 per annum. We estimate approximately 50% of this volume will be round-wood (that is posts and poles). However, not all of the product is sold into South Australia. It estimated that only 70% of the product is sold in the State. There is also some timber imported into the State. Hence the volume of timber sold in South Australia is approximately 163 000m3 per annum.

It is worth noting that the volume of treated timber is significantly increased in the past three years due to viticulture. Life cycle may be significantly reduced, caused by breakage or removal from service due to economic changes. However, it is possible that a significant increase in disposal volumes may occur, with volumes in the order of up to 100,000-160 000 m3 being disposed of per annum within 25-30 years (see Fig below) provides an estimate of volumes of timber that are likely to require disposal at landfill in the future

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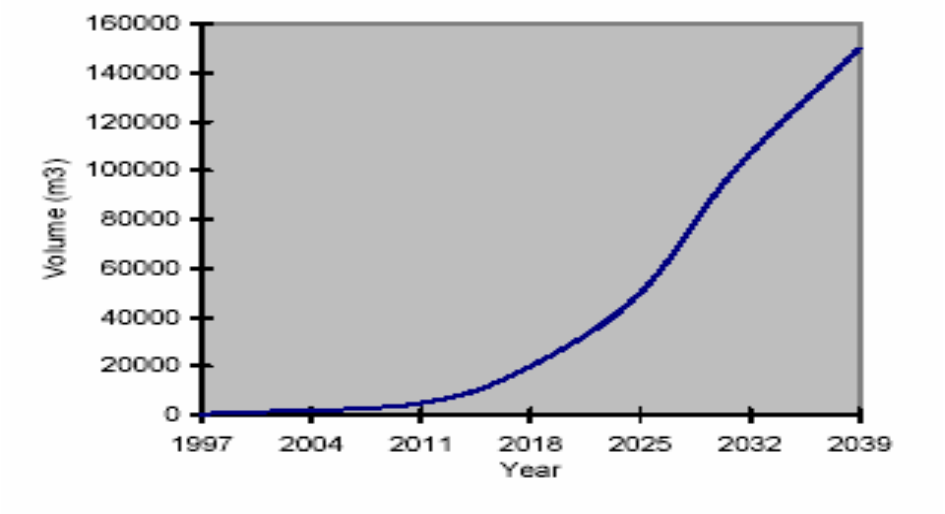
***APPENDIX E** (Cont)*
Fig 1 Predicted Volumes of Treated Timber Disposed Yearly in S.A.
Source: Preservative Treated Timber Sinclair Knight Merz Report 11/1999



4.3.3.Evironmental
There will be an Environmental impact from landfills with high levels of CCA on surrounding groundwater and soils is likely to occur and leachate from these landfill contained significantly high levels chromium, copper or arsenic. There is no record of any studies in South Australia that have been undertaken to determine the impact from the storage or disposal of treated timber. Comparison of CCA concentrations in above and below ground sections of treated wood have shown significant leaching of arsenic but not copper and chromium in both sandy clay and light clay soil. Studies consistently report that the elevated metal concentrations are confined to the soil immediately surrounding (<150mm) the timber (Lebow 1996).
Lysimeter studies report that Cu, Cr and As are not highly mobile in the soil environment (Gifford et al., 1997). Leaching of arsenic into the soil environment from treated timber has been reported as the greatest of the three metals (Gifford et al., 1996, Lebow 1993).
Greatest mobility of metals has been noted in sandy soils, and least mobility in loam/clay soils. Peat has been reported to enhance copper mobility, possibly due to complexation with organic acids and forming water soluble salts (Gifford et al 1997, Lebow 1996). Soils with high organic content may adsorb or mobilise the metals, depending on pH and organic acid contents. Soils with low pH and high organic acid content are likely to show increased mobility of the metals (Lebow 1996, Rouse 1997).
4.3.4.Recycling
Combustion or incineration as treatment options are not widely accepted due to the toxicity of the ash (Norton 1998). Incineration concentrates the metals and releases them from the timber matrix increasing mobility. As a consequence the ash contains high levels of extremely mobile metal ions. Between 22 and 70% of As, 15% Cr and 11% Cu may be volatilised during burning of CCA treated wood, the degree of volatilisation will depend upon temperature. High temperature incineration leads to greater metal volatilisation (Connell and Nicholson 1990).
4.3.5.Conclusions
Hence, the conclusions identified as part of this study are:
Tens of thousands of cubic metres of treated timber will need to be disposed of in South Australia, per annum in the future. This raises many issues such as disposal methodology, responsibility, and disposal locations.

- *It is unlikely that the existing landfills will be able to accept increasing loads of preservative treated timber without impacting on the environment.*

This is based on the fact that up to 160 000m3 of treated timber is likely to require disposal each year, in approximately 20-30 years time.
Presently there is insufficient research to predict optimum loadings of CCA and ------treated timber for landfill.