Recycling Options for Timber and Preservative Treated Timber

Stephen Mitchell

Sustainability Program Manager, Timber Development Association (NSW)
Project Manager, National Timber Product Stewardship Group
p 02 9279 2366 e: stephen.mitchell@tdansw.asn.au

National Timber Product Stewardship Group (NTPSG)

plus
National Government of Forest Industries
Strategy: *Timber - More Life*

- **Objectives:**
  - Double recovery of post-consumer timber for reuse, recycling and renewable energy
  - To 1 million tonnes per annum by 2017
  - Maximise positive environmental impacts of residual end-of-life timber that is landfilled
  - Have the industry recognised as achieving these objectives

---

**Progress: Timber – More Life**

Recovery up 12% to 530,000tpa

Sources: State Governments and Compost Australia. Available at [www.timberstewardship.org.au](http://www.timberstewardship.org.au)
Priorities: *Timber-More Life*

- **Streams:**
  - Wood packaging
  - Wood from demolition
  - Preservative treated timber

- **Actions:**
  - Market development / market pull
  - Education / communications
  - Well targeted research

---

Recovery Options: *Timber-More Life*

- Salvage for reuse (recycled timber)
- Recycled into particleboard
- Recycled into mulch and compost
- Recycled into chicken bedding
- Renewable Energy

Today: Two Case Studies

1. World first - Wood packaging
2. Power poles

Case Study #1
Wood Packaging

• 2007 - NTPSG commissioned research by Hyder Consulting
• Good quality feedstock for recycling and renewable energy
• Perception that all imported pallets are “treated” ie CCA
Toshiba kicks off notebook recycling program

“The company has also begun using recyclable high-density paper pallets instead of treated timber pallets, which are more difficult to recycle due to poison trace elements.”


Project: Product Stewardship of Wood Packaging

• Funded by:
  – WA Strategic Waste Initiatives Scheme
  – NSW Department of Environment and Climate Change
  – Qld Department of Tourism, Regional Development and Industry
Two Stages

I. Sampling and analysis
II. Industry consultation / education / communication

Stage I – Sampling and analysis

- Nine sites in WA, NSW and Qld
- Over 6,600 cubic metres of stockpiled wood packaging
- 342 representative samples analysed with handheld X-ray fluorescence analyser
- 165 samples also characterised for other attributes
XRF analysis

- Rapid / simultaneous / cheap analysis (incl. Cu, Cr, As, Pb, Mn)
- Greater range of analytes than chrome azurol
- Low detection limits (20 ppm for As)
- Readily available - Commonly used in other industries soil remediation, scrap metal, mining,
- Minimal training / licensing required
- EPA NSW accept in place of lab tests

Sampling method

- Taken at unprocessed stockpiles
- 20 samples every 1,000 cubic metres
- Samples taken at evenly spaced points around the stockpile
- Taken at random up/down the stockpile
- 2 replicate sample sets taken
- Analysis for 30 secs.
Results – of representative samples - 99% not preservative treated

n = 342
Positive Samples (representative)

Brewing Company (importing from manufacturing ops in NZ)

Organic Cosmetic Company (importing from manufacturing ops in NZ)

Unmarked packaging / adhoc crate

Results - Concentration of As, Cr, Cu

<table>
<thead>
<tr>
<th>Element</th>
<th>As</th>
<th>Cu</th>
<th>Cr</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration (mg/kg oven dry basis)</td>
<td>1747</td>
<td>1541</td>
<td>3041</td>
<td>6328</td>
</tr>
<tr>
<td>Proportion of Total (%)</td>
<td>28%</td>
<td>24%</td>
<td>48%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Average concentrations

- As <20 mg/kg
- Cu <20 mg/kg
- Cr ~30 mg/kg
- Not zero – however:
  - Well within (some) licensed limits for use as bioenergy in NSW
  - Well within limits for use in cement kiln in SA

Previous C&D Study (DECC NSW)

- As 77 mg/kg
- Cu 78 mg/kg
- Cr 107 mg/kg
- Not zero – and:
  - exceeds existing licensed limits for use as non-standard fuel in NSW
  - About the limit for use in cement kiln in SA
Average concentration of CCA in mixed C&D waste timber


Other elements
Other preservatives

- No other metal-based preservatives found in representative sampling with XRF
- No other non-metal wood preservatives found in representative sampling (visual assessment)
- However, non-representative example was seen of other preservative
  - Copper azole / ACQ
  - Synthetic pyrethroid
Findings

• Preservative treatments not a significant proportion 1% +/- 0.5%
• Verified anecdotal evidence
• Levels below concern
• Most CCA positive 75% coming from NZ
• Probably decrease over time due to introduction of ISPM-15
• XRF analysis a rapid and useful tool

Stage II - Industry Consultation / Education

Packaging in WA immunised with synthetic pyrethroids (permethrin and bifenthrin) to prevent infestation with European House Borer

www.timberstewardship.org.au
Case Study #2
Redundant Power Poles

- >2 million poles in the ground in NSW
- ~880,000 tonnes of carbon
- ~11,500 tonnes replaced each year
- ~4,750 reused or recycled locally
- ~1,500 sent to a recycler
- The rest stockpiled or disposed

Source: Integral Energy
Pole and Bridge Recycling Protocol

• Documents best practice
• Details on pick-up, storage and processing
  – OH & S
  – Environmental management
  – Licensing
  – Waste disposal
  – Sale / giving away of treated off-cuts (NSW Timber Marketing Act)
• Available at www.timberstewardship.org.au

Thank you
Questions?