PRESERVATIVE TREATED TIMBER PRODUCTS IN NEW ZEALAND

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Copper Chrome Arsenic (CCA) is a potent wood preservative. It is currently the dominant wood preservative used in Aotearoa (New Zealand). Internationally, CCA has been phased out in many jurisdictions over the last decades due to health and environmental concerns. This review summarises the current knowledge about the health and environmental risks of CCA treated timber, revisits the risk assessment of New Zealand authorities of CCA treated timber and discusses the challenges New Zealand is facing from the continued use of this product. Overall, the attitude towards CCA treated timber is changing, with local government bodies and agricultural industries facing increasing challenges around the disposal of CCA treated timber and site remediation from CCA leaching.

Keywords: Copper Chrome Arsenic (CCA), disposal, end-of-life, environmental risks, recycling

WOOD PRESERVATIVES

Wood is a natural and biodegradable material. The speed of biodegradation depends on environmental conditions and the nature of the wood. Premature biodegradation, *i.e.* rot of timber when in use, is a problem and detailed instructions for remediation of dry-rot infested buildings were already described in the Bible (Leviticus 14:33-57). However, some timbers can withstand conditions favourable for biodegrading, *i.e.* moist environments, for a considerable amount of time. Such naturally durable timber was highly sought after for construction purposes over millennia.[1,2] When European settlers arrived in Aotearoa (New Zealand), natural durability was the key wood characteristic for which native timber species were tested, as it was imperative for long-lasting outdoor constructions.[3,4] Natural durability is not common among timbers[5] and not strictly necessary for the construction of long-lasting buildings. Century old timber buildings,[6,7] which are still standing today, have been constructed from not particularly durable timbers, by adhering the good timber design rules of 1) avoiding ground contact, 2) preventing timber from getting wet and c) ensuring that timber is able to dry out quickly.[8]

In order for non-durable timber to resist biodegradation, it can be treated with wood preservatives, *i.e.* chemicals that are toxic to wood decaying organisms. While records of wood treatments to prolong the service life of timber date back millennia,[9] chemically engineered wood preservatives were developed in the 19th century, allowing to produce a highly durable and consistently performing building material from plentifully available non-durable timber species. In a New Zealand context, radiata pine (*Pinus radiata*) timber, which is non-durable and will decay within 5 years in ground contact,[10] can be efficiently converted into a highly-durable building material, due to radiata pine's excellent treatability, *i.e.* it is very permeable, making it easy to get wood preservative solutions into the timber.[11] This is not the case for all timbers. For example, Sitka spruce (*Picea sitchensis*), the main softwood grown in UK plantations, is non-durable, but also resistant to treatment.[11] The excellent treatability of radiata pine might be a reason why New Zealand has developed a stronger focus on timber treatment, compared to other countries. This has not only manifested in treated timber utilisation, but also in building standards.[12] Countless wood preservatives have been developed over time to cater for different products and applications.[9] What wood preservatives are used or allowed to be used has changed over time and differs between jurisdictions.[13]

New Zealand

NZS3640:2003 – A5 (2012) lists the current wood preservatives to be used for construction timber.[14] As of June 2021, 13 preservatives are listed (Table 1). Not all can be used for every application or product.

Other wood preservatives have been used in the past. Their use has not necessarily been terminated because of unsatisfactory timber protection, but owing to the associated health and environmental risks. Preservatives historically used in New Zealand are listed in AS/NZS 1604.[15] An inventory of historically used wood preservatives is necessary, as the treated timber is in service for many decades and consequently still present in our environment.

On an international level

Changes in the utilisation of wood preservatives are not unique to New Zealand. For example, the European Union (EU) introduced the Biocidal Products Directive in 1998, which among other regulates timber preservatives.[16] Around 40 substances for use as wood preservatives were registered (Table 2). This has been a considerable reduction, because under the BPR, producers of the approved substances need to provide evidence of both a) their effectiveness as a wood preservative and b) their safety in terms of health and environment; conditions that the industry did not want to or could meet for most of their products. It is worth noting that wood preservatives that are widely used in New Zealand are not approved (anymore) for use in the EU.

Table 1
Wood preservatives included in New Zealand Standard 3640 [14]

	Wood preservatives (NZS3640)
1	CCA oxide
2	CCA salt
3	Boron
4	TBTO
5	Copper naphthenate
6	Copper azole (as emulsion)
7	TBTN
8	Propiconazole + tebuconazole + permethrin
9	Triadimefon + cyproconazole + bifenthrin
10	Permethrin
11	Micronised copper azole (as dispersion)
12	Micronised copper quaternary (as dispersion)
13	Alkaline copper quaternary

Table 2
Summary of wood preservatives registered by the European Chemicals Agency according to Biocidal Products Regulation (BPR)[16]

	Wood preservatives (PT8)
1	(+/-)-cis-4-[3-(p-tertbutylphenyl)-2-methylpropyl]-2,6-dimethylmorpholine (Fenpropimorph)
2	(2RS,3RS;2RS,3SR)-2-(4-chlorophenyl)-3-cyclopropyl-1-(1H-1,2,4-triazol-1-yl)butan-2-ol
3	(RS)-α-cyano-3phenoxybenzyl-(1RS)- cis,trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate (Cypermethrin)
4	1-(4-chlorophenyl)-4,4-dimethyl-3-(1,2,4-triazol-1-ylmethyl)pentan-3-ol (Tebuconazole)
5	1-[[2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]methyl]-1H-1,2,4-triazole (Propiconazole)
6	2-methylbiphenyl-3-ylmethyl (1RS)-cis-3-[(Z)-2-chloro- 3,3,3-trifluoroprop-1- enyl]-2,2-dimethylcyclopropanecarboxylate (Bifenthrin)
7	2-octyl-2H-isothiazol-3-one (OIT)
8	2-thiazol-4-yl-1H-benzoimidazole (Thiabendazole)
9	3-iodo-2-propynylbutylcarbamate (IPBC)
10	3-phenoxybenzyl (1RS,3RS;1RS,3SR)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate (Permethrin)
11	3-phenoxybenzyl-2-(4-ethoxyphenyl)-2-methylpropylether
12	4,5-Dichloro-2-octylisothiazol-3(2H)-one (DCOIT))
13	4-bromo-2-(4-chlorophenyl)-1-ethoxymethyl-5-trifluoromethylpyrrole-3-carbonitrile (Chlorfenapyr)
14	Alkyl (C12-16) dimethylbenzyl ammonium chloride (ADBAC/BKC (C12-C16))

15	bis(N-cyclohexyl-diazenium-dioxy)-copper
16	Boric acid
17	Coco alkyltrimethylammonium chloride (ATMAC/TMAC)
18	Copper (II) hydroxide
19	Copper (II) oxide
20	Copper(II) carbonate- copper(II) hydroxide (1:1)
21	Creosote
22	Cyclohexylhydroxydiazene 1-oxide, potassium salt
23	Diboron trioxide
24	Dichloro-N-[(dimethylamino)sulphonyl]fluoro-N-(ptolyl)methanesulphenamide (Tolylfluanid)
25	Didecyldimethylammonium chloride (DDAC)
26	Disodium octaborate tetrahydrate
27	Disodium tetraborate
28	Ethyl [2-(4- phenoxyphenoxy) ethyl]carbamate (Fenoxycarb)
29	Granulated copper
30	Hydrogen cyanide
31	N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine (Diamine)
32	N-Didecyl-N-dipolyethoxyammonium borate / Didecylpolyoxethylammonium borate (Polymeric betaine)
33	Penflufen
34	Poly(oxy-1,2-ethanediyl), .alpha.-[2-(didecylmethylammonio)ethyl]- .omega.-hydroxy-, propanoate (salt) (Bardap 26)
35	Potassium (E,E)-hexa-2,4-dienoate (Potassium Sorbate)
36	Reaction mass of N,N- Didecyl-N,N-dimethylammonium Carbonate and N,N-Didecyl-N,N-dimethylammonium Bicarbonate
37	Sulphuryl difluoride
38	Tetrahydro-3,5-dimethyl- 1,3,5-thiadiazine-2-thione (Dazomet)
39	Thiamethoxam
40	*Trichoderma harzianum* strain T-720

SAFETY ISSUES

Wood preservatives are biologically active compounds, which typically have an effect not only on the target organisms, *i.e.* wood-destroying fungi, insects and molluscs, but also on humans and the environment. These health and environmental risks are the main reason why some very effective wood preservatives are not used any longer.

Chopper Chromium Arsenic (CCA) is an effective timber preservative, which is widely used in New Zealand. A plethora of studies on the health and environmental risks of CCA have been conducted by academia and government agencies.[17-19] Key findings are summarised below.

Health risks

CCA has a prominent use in New Zealand, while its use is nowadays heavily restricted or banned in many jurisdictions (EU, Australia, US).[20] Concerns were predominately around the toxicity of arsenic and chromium, in particular when used for playgrounds and picnic tables,[21] but also the occupational risk of workers.[22,23] Like many countries in the 1990s/2000s, in New Zealand the Environmental Protection Agency (EPA) reviewed the scientific evidence around the safety of CCA. In 2003, while evaluating the same body of work, EPA came to a different conclusion from that of many other jurisdictions (*e.g.* EU, US, Canada, Indonesia), *i.e.* that "*the weight of current evidence with respect to health risk seems insufficient to support measures such as replacement of CCA-treated wood structures in current use or banning all future use*."[22]

As a result, CCA is widely used in New Zealand and regarded as a safe and good product by most of the population, industry and government. No restrictions are in place for the use of CCA treated timber and CCA treatment is even required for timber products.[14]

So, it is worth asking the question: how is it possible for such a different outcome to emerge from the same evidence?

First, EPA's advice came with some recommendations:

- "… *having new playground equipment in schools, early childhood centres, and public parks built of alternative materials to restrict public 'involuntary' contact* *with CCA-treated wood since alternative materials are available;*

- *sealing recently constructed (i.e. = 6 months old) CCA-treated wood playground equipment in schools, early childhood centres and public parks;*
- *consumer information at the point of sale;*
- *greater dissemination of precautionary health advice to the public and builders…;*"[22]

which are in line with overseas regulations,[24] but have been largely ignored in New Zealand. Secondly, EPA's assessment focused on health and excluded environmental risks:

"*The scope of the project is limited to undertaking a literature review and interpreting the findings in a New Zealand context that focuses on current public and occupational health risk.*

Occupational risks related to the manufacture of copper, chromium and arsenic (CCA) treated timber, risks to the environment, and alternatives to CCA-treated timber are excluded."[22]

However, the report stated that for overseas jurisdictions, apart from being extremely conservative regarding CCA toxicity, environmental risks were likely the driving force for implementing restrictions.[22]

Before looking into these environmental risks, it is worth briefly collating the information on the health risks of CCA treated timber, which came to light during the two decades after EPA's assessment.[22]

Mitchell[25] identified contaminated wood ash from burning CCA treated timber in household fireplaces as a significant health risk of CCA treated timber. As little as 1/5th of a teaspoon can cause acute poisoning of a child.

Fire damage of structures built from CCA treated timber cause site contamination. This is a well-recognised hazard in Australia after bushfires.[26,27] Fires in playgrounds and picnic areas are common in New Zealand. The New Zealand Fire Service records an average of ~100 such fires per year. Per 1 m^3 of CCA treated timber can release 0.5-5 kg heavy metals into the environment, dependent on treatment class.[14,28]

An international study on heavy metal contamination of residential indoor dust found that arsenic levels exceeded the non-cancerogenic hazard index for children in New Zealand, which was the only case out of the 35 participating countries (with Australia – a distant second) and the seven assessed heavy elements, apart from chromium in New Caledonia.[29] The study also pointed out that indoor dust has a 13 times higher arsenic concentration due to anthropogenic activity.[29] The authors linked their findings directly to production, use and burning of CCA treated timber.

Environmental risks

Since 2003, the EPA has revisited the CCA assessment,[22] focusing on the environmental aspects in 2005, 2006 and 2009.

Land – soil and water

Contamination of land associated with wood preservatives can originate from production, use and disposal of treated timber. The latter is discussed in more detail in a separate section. Preservative treatment plants are known HAIL (Hazardous Activities and Industries List) sites[30] with contamination originating from spills, as well as from 'dripping-pads', where freshly treated timber is stored.[31] Preservative treatment plants are regulated and need to comply with AS/NZS Timber preservation plants.[32]

On the other hand, the use of preservative treated wood, including its installation, is not regulated in New Zealand. Wood preservatives can leach from the wood into the surrounding environment. The susceptibility to leaching differs among individual wood preservatives. While leaching is a technical problem, shortening the service life of preservative treated timber in moist environments, it is also a cause for contamination of the environment.

Soil contamination owing to leaching of CCA from treated timber, the typical wood preservative used in New Zealand for in-ground timber applications, is well known and findings have been recently summarised by *e.g.* Begbie, Wright and Rait.[20] Arsenic concentrations in soil surrounding CCA treated posts exceed soil contamination standards[30] several times. However, the contamination is restricted to halos of several centimetres around and below the posts. Soil contamination from CCA treated timber is not restricted to agricultural posts, but was also detected under residential decks[33] and fences,[34] sound barriers,[35] or wetland boardwalks.[36]

Another area of concern is land contamination under stacks of stored new or broken CCA posts used by the horticultural industry.[37] New Zealand

Wine advises vineyard owners on best practice guidelines for storing CCA treated timber and the need to record them as HAIL sites.[38] Under the 'buyer beware' principle, the land owner is responsible for remediation, even if the current owner did not contaminate the land or has been aware of the contamination when buying the land.[31]

While soil contamination is localised around the CCA treated timber,[39] these hotspots can be frequent, considering the high density of posts (500-600 posts per hectare), for example in vineyards of kiwifruit orchards. Land-use change, for example for urban development will require significant remediation efforts. The Waikato Regional Council identified 'mix and dilute' as the most viable option for remediating such sites, which is an explicit departure from best practise guidelines of 'dig and dump'.[20] A similar low-cost approach was suggested for soils contaminated from the use of CCA treated timber for raised garden beds.[40] Remediation of CCA contaminated sites by electrokinetic methods,[41] or chemical accumulating plants[42, 43] are expensive and/or still in an experimental state.[44]

Soil contamination from burnt CCA treated timber after (bush)fires are a recognised hazard in Australia.[26, 27]

Wood preservatives could also contaminate groundwater. The concentration will depend on the quantity and mobility of the contaminant, as well as on the ground water flow. Significant contamination of flowing aquifers was deemed unlikely,[45-47] but arsenic concentration could exceed drinking water standard in slow flowing Marlborough aquifers.[48] Installation of ponds and water bodies with more static water in residential redevelopments on land previously featuring horticultural posts was recommended to be precluded.[20]

Research in Christchurch showed that arsenic concentrations in compost produced from green waste was inversely related to temperature, indicating improper disposal of ash from log burners in green bins.[28] Less than 100 kg of ash from CCA treated timber (*i.e.* ~10 m^3) placed in green bins is enough to contaminate Christchurch's entire compost production of one month. Contamination of compost is not always unintentional. Deliberately composting of treated timber by the Taranaki based business 'Remediation New Zealand' has been recently uncovered.[49]

Environmental problems from preservative treated timber can turn up unexpectedly, as I recently discovered while chatting to my colleague over tea. He was enjoying his newly bought house, but while gardening discovered that the soil is laced with nails, likely stemming from the previous owners scattering ash from burning waste wood over decades in the vegie garden. Unfortunately, he now might own arsenic contaminated land devaluing the property, being liable for remediation and only apprehensively using the garden.

Air

Air pollution related to preservative treated timber typically stems from burning. This is particularly the case for timber containing arsenic, as it becomes volatile and most is carried into the air with the flue gases.[50] While official[51] and industry[52] communications state to never burn CCA (or any treated or painted timber), the awareness in the population is not prevalent,[25] indicating a lacklustre outreach and communication effort and/or demand for an easy and cheap disposal option.

Spikes in arsenic concentrations in the air during the winter month, exceeding New Zealand's ambient air quality guidelines,[53] have been related to inappropriate burning of CCA treated timber in log fires, but also burn-offs by the agricultural sector.[25,54-57] Burning waste timber covered with lead-based paint contributes to spikes in lead concentration in the air during winter.

While CCA treated wood is burnt because of people's unawareness of the environmental impact,[25] CCA treated timber is also burnt in full awareness of the environmental impacts as an easy disposal option. For example, rural fire fighters are checking the base of burn-off piles before assisting farmers, because it is common for CCA treated timber to be hidden beneath the slash. Preservative treated wood is frequently sold as firewood. For example, on the 8th of July 2021, 3 of the first 50 firewood listings on Trade Me were preservative treated timber (Fig. 1).

End-of-life

All products, including those made from recycled products, have a finite service life and require reuse or disposal.[58] Waste disposal is expensive, impacts the environment and is a contentious topic in society. Government, councils and industry sectors have ambitious

Waste Minimisation targets. Timber, the largest organic waste category, makes up 12% of the total landfill waste in New Zealand.[59] However, the proportion of treated timber is unknown, but likely substantial, considering the domestic usage of treated wood.[12,60] The amount of treated timber in the waste stream was found to be significant in other countries, which rely less on treated timber than New Zealand.[61,62]

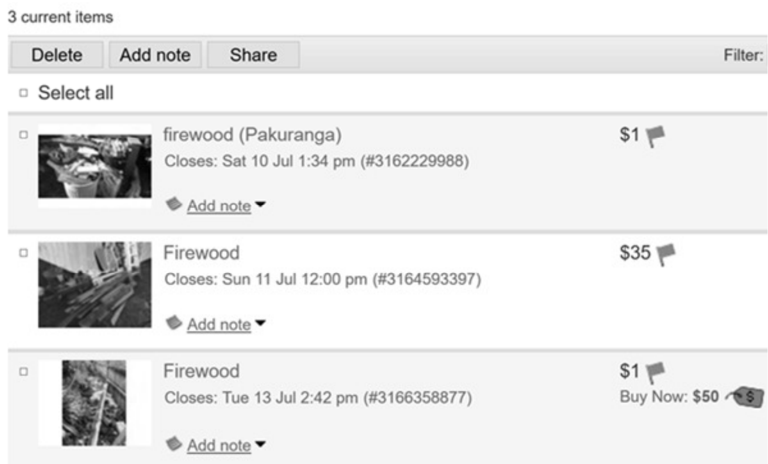

Figure 1: Trade Me listings for firewood on the 8th of July 2021: 3 of the first 50 listings were preservative treated timber

Disposal in landfills

New Zealand has detailed guidelines for the correct disposal of waste resulting from the treatment processes, *i.e.* sludge, contaminated soil, *etc.*[63,64] For preservative treated timber, the only disposal option in New Zealand is secured landfill (Class 1 out of 6), *i.e.* a landfill with managed leachate and gas emissions.[65] While this applies to all timber preservatives, CCA and PCP are of most concern. Leaching and decomposing of CCA treated timber is a slow process in a landfill[66] and, as heavy metals do not decompose like organic molecules do, toxic leachate will need to be dealt with for millennia.[67]

It is interesting to note that, until recently, the Australian[68] and New Zealand timber industry[69] promoted the disposal of CCA treated timber in landfills with the argument that the treated wood will linger around and lock-up carbon for longer and therefore mitigate climate change.

Landfill capacity is becoming scarce, with residents not wanting a new landfill established in the neighbourhood (NIMBY). For this reason alone, alternative end-of-life options are needed. This situation is not unique to New Zealand and many countries have gone through this, decades earlier, as will be discussed below.

Recycling

The reuse of timber is a well-established procedure.[70] For timber, this should proceed along a product cascade as due to material deterioration, reuse options and value reduction with each step (Fig. 2).[58,71] The reuse as a material should be prioritised over 'thermal utilisation', which has the least demands on the material and ought to be the last step.

However, the options for preservative treated timber are reduced,[72,73] especially for timber treated with more potent preservatives now banned or restricted for use, but still present in waste streams. Of main concern are PCP (pentachlorophenol), CCA and creosote. Standards for acceptable levels of contaminants in waste wood and the products manufactured from waste wood have been developed in some jurisdictions.[61,70] It is necessary to thoroughly sort waste timber before using it as raw material for higher value uses. For example, German regulations assign waste timber into 5 categories, of which only 3 accept wood not treated with preservatives,[74] and only those 3 categories are allowed to be recycled into other materials.

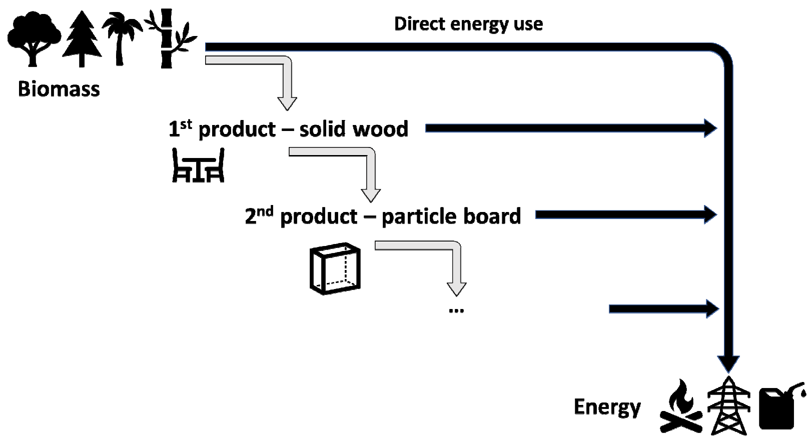

Figure 2: Cascading use of wood

Sorting waste wood is challenging, as no industrial scale method for detecting preservative treated timber exists.[72,75,76] Currently, classifying waste timber makes use of knowledge of its source (*e.g.* sawmill waste, packaging *etc*.).[70,77]

In New Zealand, preservative treated timber needs to be labelled or colour-coded to aid identification.[15] However, as colour fades after decades of use or is covered with dust,[75] the guidelines to recover timber from construction and demolition waste recommend that: "*treated timber is best separated at source because it is difficult to identify once mixed with untreated timber*" and "*…going to a municipal solid waste landfill*."[73]

While reuse of preservative treated timber is challenging, the problem is bigger. As treated timber cannot be economically separated from untreated timber, the reuse of untreated timber is hindered if the two are mixed in the waste stream.[72,73]

Reuse options for treated timber are required, as a) organic waste is a considerable source of greenhouse gas emissions,[78] b) it can be a sustainable resource, c) expensive landfill capacity is scarce, and d) treated timber is a toxic waste and we should not pass the liability for it on to the next generation.

Appropriate disposal or recycling of CCA treated timber is a long-standing issue in New Zealand.[79] New Zealand government institutions and increasingly also consumers have become aware of the lacking end-of-life options for, in particular, CCA treated timber and are frustrated with the negligible progress with this process led by the wood processing industry.[23,37,38,80-82]

John and Buchanan[83] pointed out that the New Zealand steel and concrete industries are trying to exploit the absence of a recycling option for treated timber and its negative effect on the otherwise excellent life-cycle-balances.[84]

Product stewardship or Extended Producer Responsibility, the concept that producers take responsibility for their products at the end of their life, is an efficient way to increase recycling and correct disposal. Product stewardship has now been mandated for the first 6 product groups in New Zealand.[85] While treated timber was not included, this has been suggested and is practice in other jurisdictions.[24, 60]

Recycling options of CCA treated timber

Recycling and disposal options for CCA treated wood have been reviewed.[19,61,76] CCA treated timber can be reused for products and markets that allow the presence of CCA. For example, a small business has emerged in Marlborough, which repurposes broken vineyard posts as fencing products (www.repost.co.nz). Reuse is not possible in products with restrictions on the presence of CCA.[61] For example, in its Protocol for the Recycling of Redundant Utility Poles and Bridge Timbers,[86] the New South Wales government points out the restriction to use CCA treated wood in products such as children's play equipment, garden furniture, picnic tables, external seating, domestic decking boards and handrails. In the UK, the Wood Panel Industries Federation developed a standard based on European regulations for safe contamination levels of children's toys, essentially excluding the use of CCA treated timber for particleboard manufacturing.[70]

Among engineered wood products, wood-cement boards appear to be the only viable recycling option for CCA treated timber as the cement stabilises the heavy metals in the material.[76] However, internationally no commercial product has been developed.

While reusing is making efficient use of the resource, the inherent degradation of the material only delays the challenge of appropriate disposal of the CCA treated timber.

As no technology has been developed able to commercially decontaminate CCA treated timber waste,[19,76] utilisation in engineered wood products restricting the presence of CCA is not possible.

Perhaps the favoured reuse or disposal of CCA treated timber is utilising it as source for biofuels.[19,76,81,87] Several processes have been developed to the pilot-plant stage, but none has been commercially realised.[88,89]

Energetic use

While all preservatives pose a challenge when reusing waste timber as feedstock for manufacturing engineered wood products, such as particleboard, thermal utilisation is reasonably straight forward for timber treated with organic preservatives, as these organic molecules can be broken down at high temperatures. CCA, being a mixture of heavy metal elements, cannot be thermally degraded as it would contaminate either the fuel products or the combustion gases and ash. Nevertheless, incineration is probably the only viable disposal method for CCA treated timber.[61,70,81] Incineration has been shown to be safe in appropriate facilities,[90] and it is the disposal option for treated timber in Europe,[72] and mentioned in Australia's Standard 'Guide to the safe use of preservative-treated timber'.[91] However, no sizable waste incineration plant has been commissioned in New Zealand.[92]

CCA treated timber can be used as a climate friendly fuel in cement kilns. However, there is a limit as: a) timber is a low energy fuel, preventing to reach the high temperatures needed, and b) there is a limit to the amount of chromium that can end up in the cement.[61]

The only alternative disposal option to secure landfilling for treated timber in New Zealand is in the fuel mix of GBC's (Golden Bay Cement) cement kiln in Whangarei since 2009. The use of treated timber by GBC at full capacity was estimated to be 3,000 t per year.[19] This is a fraction of the annual treated timber production estimated to be more than 800,000 m^3 in 2006.[60] Even if GBC could utilise more treated timber, its location in the far North would incur significant transport costs for most consumers. ECAN and probably the entire South Island sends all preservative treated timber to a secure landfill. A considerable amount of CCA treated timber waste is also stored on site (in South Island vineyards), posing a land contamination risk and awaiting disposal.[37,38]

On an international level

The treatment of (timber) waste in other countries differs significantly from the New Zealand system. In Europe, driven by a lack of available landfill capacity, since the 1970s, recycling and waste incineration have become well established.[92] Waste timber is seen as an essential resource needing to be utilised to establish bioenergy targets.[93] For example, German law, in accordance with EU directives, mandates that no timber, treated or not, is disposed of in a landfill.[74] The 10% of 'dangerous', *i.e.* preservative treated, waste timber,[72] which is not allowed to be reused as material, needs to be incinerated in controlled facilities.

OUTLOOK

Timber preservation is an important part of the modern wood processing industry, ensuring that timber performs well as a construction material. Modern wood preservatives have become safer with options for recycling and disposal. However, significant challenges remain around the safety and disposal of historically used preservatives. The ongoing widespread use of CCA in New Zealand is of concern, in particular regarding disposal. Urgency is needed to develop the recycling or disposal capacity for treated timber to ensure a licence to operate. However, New Zealand cannot rely on the technology leading jurisdictions, such as the EU, US and Canada, to develop a recycling option for CCA treated timber, as they have stopped its production decades ago and have suitable incineration facilities.

The New Zealand timber industry will need to follow overseas examples and move to more benign wood preservatives. The New Zealand standards[14,15] have approved alternative preservatives to CCA for all hazard classes, but one, H6, for "marine conditions". Therefore, New Zealand's dominating use of CCA over the more benign alternatives is not based on a technical argument, but likely on product price and tradition.

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