

# **The Precautionary Principle**

**and**

**Residual Products:**

**CCA as a Case-Study**

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MARY ELIZABETH SCOTT

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## **SYNOPSIS**

The goal of the Precautionary Principle is to safeguard the environment and humans through reducing unnecessary risks and minimizing harm likely to be generated by industry. A range of products were introduced before the advent of the Precautionary Principle. These have since been banned from sale because of their potential risks.

It is imperative that the Precautionary Principle be applied to residual and waste products and not just future applications. Timber preserved with copper chrome arsenate (CCA) is a residual product requiring urgent attention. CCA-treated timber provides a good case study to demonstrate the need for extending the Precautionary Principle to residual products containing toxic substances.

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## INTRODUCTION

Toxic chemicals are part of our everyday lives. They are not restricted to secure chemical laboratories where workers are trained to use them cautiously according to carefully designed safety protocols. Toxic chemicals - and there are now 'more than 100,000 synthetic chemicals on the market' - are everywhere.<sup>1</sup> As Gay Daly, senior editor at *Discover* says:

They enter our bodies and those of other animals through every possible route of transmission. They are in our food supply, so we eat them. They drift in the air, so we breathe them.<sup>2</sup>

They are contained in products that are touched and used regularly, with little acknowledgement or attention paid to their toxic contents and potentially harmful short- and long-term effects.

The public are expected to rely on the advice of experts and government regulators as to whether or not a product is safe for them, their families, their animals and the environment.<sup>3</sup> This reliance is understandable considering that '2,000 new chemicals go to market every year.'<sup>4</sup> However, toxicologist Romeo Quijano claims that information about the toxicity of the chemicals provided to the public 'is not something that may be true or false but something that is created and packaged to sell a product.'<sup>5</sup> Yet, until scientific evidence of any harmful effects is brought to the attention of

politicians and their regulators, their potentially dangerous presence remains unchecked.

According to Environmental Working Group (EWG) researchers, in order to ‘test 100 chemicals in combinations of three for just one health effect (cancer, for example, as opposed to birth defects) would require 162,000 new tests.’<sup>6</sup> They further claim that the ‘official operating principle is use first, test later, or better yet, don’t test at all.’<sup>7</sup> Thus, many products containing toxic chemicals are able to enter the daily lives of humans and animals and the environment and be continuously reproduced without any restrictions being placed on their manufacture or their ongoing availability, use and presence in the environment. It is in this context that only the Precautionary Principle (PP) has been devised to give guidance for dealing with this situation.

The Precautionary Principle’s main goal is to protect health and the environment from potentially harmful human activities. As Joel Tickner says:

To support the precautionary principle, science and policy must be able to identify and anticipate harm to health and the environment and support the development of options for precautionary action. This requires scientific methods, tools, and institutions that are adequately adapted to decision-making problems that policy makers face.<sup>8</sup>

For this to occur it is necessary to identify potentially hazardous residual products as likely sources of harm and include these in precautionary decision-making frameworks. The precautionary principle is seldom applied to residual products and needs to be extended in this regard. There is a tendency to minimise, or dismiss the previously unforeseen impacts and uncertainties of residual products, relegating them to the ‘too hard basket’, whilst amended regulations or restrictions apply to future production only.

The monitoring of long-term effects on human health and the environment from existing chemical-containing manufactured products already in circulation is neglected. Examples of existing, or residual products containing a toxic substance that have been neglected in the past despite warnings of harm or recommendations for cessation of future manufacture include: lead in paint, asbestos in building materials, Perfluorooctanoic Acid (PFOA) in Teflon used in cookware<sup>9</sup>, phthalates in children’s toys<sup>10</sup> and beauty products<sup>11</sup>, antimony in polyethylene terephthalate (PET) bottles<sup>12</sup> and arsenic-based preservatives in timber. The harmful presence of these manufactured items will continue long after their intended purposes are fulfilled.

The timber preservative known as CCA contains copper, chromium and arsenic. All three substances have been identified as harmful to human health and the environment. As such, existing timber structures containing CCA timber preservative provide a particularly good example of potentially significant, but uncertain, dangers emanating from products containing toxic substances. This uncertainty, as well as the sheer amount of the residual

products that have been generated, the disposal and replacement problems these pose, and the recent Australian Pesticides and Veterinary Authority's (APVMA) review, all demonstrate the need to apply the precautionary principle to residuals.

The APVMA, in its capacity as the Australian regulator of CCA-timber preservatives, undertook an assessment of environmental and health impacts following expressions of concern and uncertainty about its safety from within Australia, and in response to overseas restrictions on CCA use in timber destined for recreational purposes. Due to insufficient Australian-based research and remaining uncertainty about the dangers arising from such products, the review implicitly invoked the precautionary principle to prevent the use of CCA-treated timber in the future manufacture of products requiring physical public contact. Precautionary restrictions were not applied to residual recreational products, despite remaining uncertainty as to their dangers.

This thesis explores the way the precautionary principle can be extended to residuals. Copper-chromium-arsenic, CCA-timber preservative is used as a case-study. The extension of the precautionary principle to cover residual products has not been discussed in the literature to date and so this has been written with the intention of drawing attention to this gap in the scholarship surrounding the precautionary principle with the hope that policy may be developed in this area in the near future.

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- <sup>1</sup> G. Daly, "Bad Chemistry," *National Resources Defence Council On-line OnEarth Magazine*. National Resources Defence Council, 2006. Retrieved 3 February 2006 from <http://www.nrdc.org/OnEarth/06win/chem1.asp>.
- <sup>2</sup> Ibid.
- <sup>3</sup> S. Rampton and J. Stauber, *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future* (New York: Penguin Putnam Inc., 2001).
- <sup>4</sup> Daly, op. cit.
- <sup>5</sup> R.F. Quijano, "Elements of the Precautionary Principle," in *Environmental Science, Precaution and Preventive Public Policy*, ed. Joel A. Tickner (Washington, DC: Island Press, 2003). p. 22.
- <sup>6</sup> J. Houlihan and R. Wiles, "Beauty Secrets: Does a Common Chemical in Nail Polish Pose Risks to Human Health?," (Washington, DC: Environmental Working Group, 2000). p. 1.
- <sup>7</sup> Ibid. p. 5.
- <sup>8</sup> Joel A. Tickner, ed., *Precaution, Environmental Science, and Preventive Public Policy* (Washington, DC: Island Press, 2003).p. xv
- <sup>9</sup> US EPA, *Perfluorooctanoic Acid (PFOA)*. US Environmental Protection Authority, 2006. Retrieved 27 March 2006 from <http://www.epa.gov/oppt/pfoa/>.
- <sup>10</sup> Ministry of Environment and Energy and Danish Environmental Protection Agency, *Statutory Order No. 151 of March 15, 1999: Banning Phthalates in Toys for Children Aged 0 - 3 and in Certain Childcare Articles with Reference to Council Directive 98/34/Eec; Directive 88/378/EEC, and Directive 92/59/EEC*. Ministry of Environment and Energy, 1999. Retrieved 3 March 2006 from <http://www.mst.dk/rules/Ministerial%20Orders%20in%20force/Chemicals%20in%20force/02030700.doc>.
- <sup>11</sup> Houlihan and Wiles, op. cit.
- <sup>12</sup> K. Sanderson, "Toxic Risk in Bottled Water?," *Chemical Science*. Royal Society of Chemistry, 19 January 2006. Retrieved 3 March 2006 from <http://www.rsc.org/Publishing/ChemScience/Volume/2006/02/>.

## **CHAPTER 1**

### **The Precautionary Principle**

Definitions of the precautionary principle (PP) have sometimes been labelled as vague by those likely to be affected by the introduction of regulations.<sup>1</sup> However, the goals of the PP have always been to safeguard the environment and humans through reducing unnecessary risks and minimizing harm likely to be generated by industry.<sup>2</sup> In 2005, a working definition of the precautionary principle was developed in Europe to facilitate clarification of the intent and scope of the precautionary principle. This definition reinforces that the PP is not a preventative tool for use when harmful effects are already known and documented. It is to be used when ‘human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain.’<sup>3</sup> (For the complete working definition see Appendix 1).

There are many risks emanating from modern day activities. These activities are conducted by a wide range of industries that have significant potential to undermine the goals of global sustainable development. These goals, that supposedly seek a balance between economic, environment and social ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’,<sup>4</sup> were negotiated at the United Nations 1992 Earth Summit held in Rio de Janeiro. These goals were contained in Agenda 21 which ‘is the blueprint for achieving the principles contained in the Rio Declaration’<sup>5</sup> to which Australia is a

signatory.

It was at the Rio Conference, in the Rio Declaration, that Principle 15<sup>6</sup>, now known as the precautionary principle, was included amongst twenty-seven ‘non-legally binding’ principles.<sup>7</sup> Although the precautionary principle appeared to be focused on protecting the environment from human activities, this focus has widened and evolved to accommodate protection of all living creatures, especially humans. As Roberto Adorno says:

Sustainable development is at the core of the precautionary principle, because this latter is in the end an instrument to ensure a good quality of life for present and future generations.<sup>8</sup>

The Wingspread Statement, drafted during the 1998 Wingspread Conference on Implementing the Precautionary Principle has become, for many advocates and critics of the PP, the defining resource for interpretation and criticism of the precautionary principle.<sup>9</sup> The main thrust of the Wingspread statement specifies that:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context the proponent of an activity, rather than the public, should bear the burden of proof.<sup>10</sup> (See Appendix 2 for the complete statement.)

In many respects this provides the basic ingredients for producing the platform from which the PP can be used as a decision and policy making tool. Whilst it requires some level of scientific evidence that harm is a potential outcome from an activity, it does not need full authentication or certainty that the particular activity is the sole contributor. It reverses the onus of proof by actively encouraging those responsible for generating potential harm to provide scientific evidence of proof of harmlessness. If and when such evidence is not forthcoming, restrictions can be imposed on the activity or product. Such restrictions are likely to inspire the development of safer alternatives.<sup>11</sup>

#### SCIENTIFIC UNCERTAINTY

Humans and the environment have been exposed to harmful activities that could otherwise have been prevented. These have resulted in loss of life, loss of species and contamination of air, soil and water. In the past governments and industries have demanded that victims provide irrefutable scientific evidence that the activity was solely responsible for their condition before initiating preventative action.<sup>12</sup> These harmful activities have not only created victims amongst recent generations but their residual products have the potential to become a source of harm for future generations.

Decision-makers and regulators, who require scientific evidence to demonstrate a causal link between an activity and harmful effects prior to

implementation of preventative measures, expose the public and the environment to unnecessary harm. The evidence of harm and associated costs eventuating from such delays, have been well documented as case studies in *Late Lessons from Early Warnings: The Precautionary Principle 1896 – 2000*.<sup>13</sup> As co-authors David Gee and David Stirling explain it:

The case studies are all about false negatives in the sense that they are agents or activities that were regarded at one time as harmless by governments and others, at prevailing levels of exposure and “control,” until evidence about their harmful effects emerged.<sup>14</sup>

Peter Montague, editor of *Rachel's Environment & Health News*, suggests that application of the precautionary principle enables policy-makers to ask the question ‘How much harm is avoidable?’<sup>15</sup> This seems especially pertinent to proposed activities and new technologies and products. Perhaps a more encompassing question could be framed as: “Is there sufficient evidence that public health and the environment are *likely to be unharmed* by introduction or continuation of certain products or manufacturing processes?” This enables a precautionary approach to be applied to both proposed and residual products.

### NEED FOR PUBLIC PARTICIPATION

Perhaps the most consistent ‘lesson’ that emerges from these case studies, that still gets overlooked by today’s policy-makers, is the need to listen to,

and act upon other forms of evidence of harm. This requires collaboration between experts and subjects of harmful effects, or their advocates. The outcome is achievable when governments include the precautionary principle in their regulatory decision-making processes.

When there is insufficient evidence about the safety or *harmlessness* of an activity, technology, product or substance, then decisions on appropriate precautionary action should include advice from a range of levels of expertise and experience.<sup>16</sup> These include public participation in ‘an examination of the full range of alternatives, including no action.’<sup>17</sup> As Matthias Kaiser, director of the National Committee for Research Ethics in Science and Technology (NENT), Norway states ‘there are a wide variety of participatory tools for decision making in public policy.’<sup>18</sup> Implementation of the precautionary principle enables expansion of public participation rather than relying upon “science-based” risk assessment that, according to pharmacologist, toxicologist and author Romeo Quijano, ‘has proven to be more effective in protecting vested interests rather than protecting health and the environment.’<sup>19</sup>

Public participation in decision-making concerning potentially harmful activities needs the public to be fully informed of any possible and plausible consequences likely to emerge. This requires governments to be transparent about their dealings with industry, especially those concerning activities with potentially harmful outcomes. The public’s responses to the information will indicate politically expedient ways for governments to respond.

Such transparency has apparently been a fairly frequent occurrence in Europe leading up to, and during implementation of the precautionary principle.<sup>20</sup> Some European governments have used the PP to their advantage. It has enabled them to develop ‘cleaner’ and safer technologies that are exported globally, as well as to restrict importation of genetically-modified food products.<sup>21</sup> Other countries, such as the United States, have had export markets for their technologically-altered foods closed on PP grounds, giving rise to claims that the precautionary principle is being used as a political tool to prevent free-trade for protectionist purposes.<sup>22</sup> No doubt this interpretation of the PP will continue to stimulate debate and dissention within and amongst those who regard its implementation as either harmful or beneficial to their financial interests. Such debate should be welcomed since the intended purpose of the precautionary principle is to establish a balance between economically-driven sustainable development and the current and future health of the public and the environment.

### ASSIMILATIVE CAPACITY

Many decision-making authorities accept unquestioningly the doubtful assumption that the earth and the human body have the capacity to absorb scientifically pre-determined levels of toxic substances. As authors and PP proponents Tickner, Raffensperger and Myers say with regards to North American conditions:

In some cases, to some extent, precaution is already being exercised. But we do not have laws covering each possible

industrial hazard or chemical... Most current regulations are based on the assumption that humans and ecosystems can absorb a certain amount of contamination without being harmed. There is extreme uncertainty about "safe" or "acceptable" levels, and we are now learning that in many cases we cannot identify those levels.<sup>23</sup>

In Australia, especially within work-related settings, some precautionary measures, such as Work Place Standards, Codes of Practice, Safety Guidelines and Material Safety Data Sheets have been instituted.<sup>24</sup> These appear to have been put in place due to the acknowledged legal responsibility employers have towards their employees. Where there is no formal demarcation of legal responsibility for outcomes of activities and products then the public tends to remain unprotected.

This lack of protection is often justified by assumptions about the assimilative capacity of the earth to absorb developments deemed necessary to increase the economic well-being of the nation. The general public continues to witness and experience the effects of industry claims, often supported by governments, espousing the need for sound economic growth over safety and precaution.<sup>25</sup> They continue to experience the frequent negative effects emanating from human activities that governments have ignored in the interests of 'fair trade', 'economic expansion' and 'global competitiveness'. In effect, countries that have failed to formally include and execute implementation of the PP in their decision-making processes have enabled industries to initiate new, and maintain existing, activities that

may have detrimental long-term effects on public health, the environment, and sustainable development.

*Late Lessons from Early Warnings: The Precautionary Principle 1896 – 2000* documented government disregard and neglect, which contributed to the continuation of harmful activities, despite mounting evidence of potential harm. The public, mostly excluded from decision-making processes, had to place their faith and trust in the ability of scientists and policy-makers to protect their health and environment. However, policy and regulation decisions were mostly based upon the information supplied by scientific research, and risk assessments funded and supported by proponents of industries engaged in the harmful activities.<sup>26</sup>

### MINIMISING RISKS

Historically, the concept of scientific uncertainty regarding short-term as well as medium and long term negative effects of human activities was ignored. Any uncertainty about potential effects has effectively been secreted within complex science-based models of risk assessment and risk management, using a language that is foreign to most lay people. As Dorothy Nelkin stated in 1987:

Decisions are made in a context of limited knowledge about potential social or environmental impact, and there is seldom conclusive evidence to reach definitive resolution. Thus power hinges on the ability to manipulate knowledge or to

challenge the evidence that is presented to support particular policies.<sup>27</sup>

To overcome manipulation of knowledge and an uninformed public Joel Tickner makes the following recommendation, '[p]recautionary assessment can be a critical step toward making precaution an overarching guide to environmental and health decision making in the United States...',<sup>28</sup> since 'it lowers the amount and strength of evidence needed before preventive action can take place...'.<sup>29</sup> He further adds:

Precautionary assessment provides a structural approach to agency priority setting by ranking hazards based on evidence of harm, accumulated experience and understanding, and opportunities to prevent harm.<sup>30</sup>

Such an assessment tool would be beneficial to decision-makers in Australia.

### THE PRECAUTIONARY PRINCIPLE CHALLENGE

In theory the precautionary principle, when applied consistently and transparently, has the capacity to challenge the undemocratic influence of industry in government decision-making that has previously relied on inappropriate assumptions, propaganda, and insistence on unattainable scientific certainty to maximize industry's best interests. This capacity to challenge is possible because the PP recognizes and utilizes the concept of

scientific uncertainty.<sup>31</sup> The precautionary principle, in other words, draws attention to what is not known about the ‘cradle-to-grave’ effects of an activity, technology, product or substance. It challenges previous claims of insufficient evidence of harm from thwarting decisions that will better protect public health and environmental interests *alongside* economic interests. As such it is not intended to sidetrack economic interests through stifling innovative development as some detractors suggest.<sup>32</sup> It is, however, about looking to the future and encouraging innovative development that is better suited to sustaining a healthy environment for current and future generations.<sup>33</sup>

However, even after the PP is applied to a certain product or manufacturing process, and innovatory stimulation has led to replacement, old residual products may remain in service for extended periods. To date these residual products have largely escaped the application of the precautionary principle and, except when known imminent danger has required a product recall, they remain in use in the community. When this happens a ‘wait-and-see’ approach is applied until strong evidence of danger makes it politically expedient to apply preventative action: as was the case with residual products involving asbestos, PCBs and lead additives for paint and petrol.

In the cases of asbestos, PCBs and lead the rights of people exposed to the dangers contained within those residual products were violated, by the unwillingness of governments to apply precautionary measures to those products, when there was already plausible evidence of harm. A statement

by Klaus Toepfer, Executive Director of the United Nations Environment Program claims:

Human rights cannot be secured in a degraded or polluted environment. The fundamental right to life is threatened by soil degradation and deforestation and by exposures to toxic chemicals, hazardous wastes and contaminated drinking water. Environmental conditions clearly help to determine the extent to which people enjoy their basic rights to life, health, adequate food and housing, and traditional livelihood and culture. It is time to recognize that those who pollute or destroy the natural environment are not just committing a crime against nature, but are violating human rights as well.<sup>34</sup>

The PP platform enables policy-makers to withhold approval or re-registration of potentially harmful products and human activities. As Jared Blumenfeld, director of San Francisco's Department of the Environment says, 'lack of proof of harm tended to be misinterpreted as proof of safety.'<sup>35</sup> This sentiment is still current today, especially with regard to residual products. It neglects the possibility of long-term effects that can be harmful to public health and the environment, especially in relation to lack of safe disposal options for those products. This aspect will be discussed in subsequent chapters.

When significant doubts remain about the potential dangers and hazards of a product, substance or activity the precautionary principle can be used to

steer decision-making towards outcomes that minimize risk to public health and the environment. But, without commitment from governments to ensure its implementation the precautionary principle remains an underused resource and opportunities are missed to develop alternative safer activities, technologies, products and substances.

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<sup>1</sup> COMEST and World Commission on the Ethics of Science and Technology, *The Precautionary Principle* (Paris: United Nations Educational, Scientific and Cultural Organization, 2005). p. 12.

<sup>2</sup> R. Harding and E. Fisher, eds., *Perspectives on the Precautionary Principle* (Leichhardt, Australia: The Federation Press, 1999).; T. O'Riordan and J. Cameron, eds., *Interpreting the Precautionary Principle* (London: Earthscan Publications, 1994).; Joel A. Tickner, ed., *Precaution, Environmental Science, and Preventive Public Policy* (Washington, DC: Island Press, 2003).

<sup>3</sup> COMEST op. cit., p. 14.

<sup>4</sup> S. Beder, *The Nature of Sustainable Development*, Second Edition ed. (Newham, Vic.: Scribe publications Pty Ltd, 1996). p.3.; Sustainable Development Division, *Documents*. UN Department of Economic and Social Affairs, 2004. Retrieved 12 February 2006 from <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>.

<sup>5</sup> DEH, *Agenda 21 - Sustainable Development: Factsheet*. Australian Department of Environment and Heritage, 2002. Retrieved 10 February 2006 from <http://www.deh.gov.au/commitments/uncsd/publications/agenda21/index.html>.

<sup>6</sup> DEH, *Rio Declaration on Environment and Development: Appendix 4*. Australian Department of Environment and Heritage, n.d. Retrieved February 10 2006 from <http://www.deh.gov.au/esd/la21/guide/pubs/appendix4.pdf>.

<sup>7</sup> European Union, *Communication from the Commission on the Precautionary Principle: COM 1* (Brussels: Commission of the European Communities, 2000). p. 8.

<sup>8</sup> R. Adorno, "The Precautionary Principle: A New Legal Standard for a Technological Age," *Journal of International Biotechnology Law*, no. 1 (2004). p. 12.

<sup>9</sup> P. Montague (a), "Answering the Critics of Precaution Part I," *Rachel's Environment & Health News*, no. 789 (2004).; P. Montague (b), "Answering the Critics of Precaution: Part 2," *Rachel's Environment & Health News*, no. 790 (2004).

<sup>10</sup> Peter Montague, "The Precautionary Principle," *Rachel's Environment and Health Weekly*, February 19, 1998.

<sup>11</sup> Montague (a), op. cit.

<sup>12</sup> P. Harramoes, D. Gee, M. MacGarvin, A. Stirling, J. Keys, B. Wynne and S. Guedes Vaz, eds., *Late Lessons from Early Warnings: The Precautionary Principle 1896 - 2000*, Environmental issue report no. 22, (Copenhagen:

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- European Environment Agency (EEA), 2001).
- <sup>13</sup> Ibid.
- <sup>14</sup> D. Gee and A. Stirling, "Late Lessons from Early Warnings: Improving Science and Governance under Uncertainty and Ignorance," in *Precaution, Environmental Science and Preventive Public Policy*, ed. Joel A. Tickner (Washington, DC: Island Press, 2003). p. 198.
- <sup>15</sup> Montague (a), op. cit.
- <sup>16</sup> COMEST, op. cit., p. 39.
- <sup>17</sup> GDRC Urban Governance, *The Wingspread Statement*. The Global Development Research Center, 1998. Retrieved 12 November 2005 from <http://www.gdrc.org/u-gov/precaution-3.html>.; Montague, 1998, op.cit.
- <sup>18</sup> M. Kaiser, "Ethics, Science, and Precaution: A View from Norway," in *Precaution, Environmental Science, and Preventive Policy*, ed. Joel .A. Tickner (Washington, DC: Island Press, 2003). p. 49.
- <sup>19</sup> R.F. Quijano, "Elements of the Precautionary Principle," in *Precaution, Environmental Science, and Preventive Public Policy*, ed. Joel .A. Tickner ( Washington, D.C.: Island Press, 2003). p. 21.
- <sup>20</sup> N. de Sadeleer, *Environmental Principles: From Political Slogans to Legal Rules* (Oxford: Oxford University Press, 2002).
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- <sup>22</sup> H.I. Miller and G. Conko, "The Perils of Precaution," *Policy Review* June/July, no. 107 (2001).; EUbusiness, *W.T.O. Biotech Ruling Due out February 1: US* (26/01/2006). EUbusiness.com, 2006. Retrieved 13 February 2006 from <http://www.eubusiness.com/Trade/060126160103.renvd35c>.
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- <sup>24</sup> Office of the Australian Safety and Compensation Council, *Australian Sites*. Australian Government Department of Employment and Workplace Relations, n.d. Retrieved 14 February 2006 from <http://www.nohsc.gov.au/>.; MSDS Australia, *Material Safety Data Sheets* [Website] (MSDS n.d. Retrieved 25 March 2006 from <http://www.msds.com.au/>.
- <sup>25</sup> S. Beder, *Global Spin: The Corporate Assault on Environmentalism*, Revised Edition. (Carlton North: Scribe Publications Pty Ltd, 2000).; S. Rampton and J. Stauber, *Trust Us, We're Experts: How Industry Manipulates Science and Gambles with Your Future* (New York: Penguin Putnam Inc., 2001).; N. Myers, "The Precautionary Principle Puts Values First," *Bulletin of Science, Technology and Society* 22, no. 3 (2002). p. 214.; See also recent allegations of coal industry influence in Australian government decisions regarding climate change and the 'greenhouse effect'. J. Cohen, "The Greenhouse Mafia" *Four Corners*. Australian Broadcasting Corporation, 13 February, 2006 Retrieved 16 February 2006 from <http://www.abc.net.au/4corners/content/2006/s1568867.htm>.
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- <sup>27</sup> D. Nelkin, "Controversies and the Authority of Science," in *Scientific Controversies: Case Studies in the Resolution and Closures of Disputes in Science and Technology*, ed. H. Tristram Engelhardt, Jr. and Arthur Caplan, L. (Cambridge: Cambridge University Press, 1987). p.289.
- <sup>28</sup> Joel A. Tickner, "Precautionary Assessment: A Framework for Integrating Science, Uncertainty, and Preventive Public Policy," in *Precaution*,

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- Environmental Science, and Preventive Public Policy*, ed. Joel .A. Tickner (Washington DC: Island Press, 2003). p. 265.
- <sup>29</sup> Ibid. p. 267.
- <sup>30</sup> Ibid. p. 268.
- <sup>31</sup> Harding and Fisher, op. cit.; O'Riordan and Cameron, op. cit.; Anon, "Precautionary Precepts: The Power and Potential of the Precautionary Principle - an Interview with Carolyn Raffensperger," *Multinational Monitor* 25, no. 9 (2004).; Government of Canada, *A Canadian Perspective on the Precautionary Approach/Principle: Discussion Document*, (Government of Canada, 2001).; S. Boehmer-Christiansen, "The Precautionary Principle in Germany - Enabling Government," in *Interpreting the Precautionary Principle*, ed. T. O'Riordan and J. Cameron (London: Earthscan Publications, 1994).; C. Weiss, "Scientific Uncertainty and Science-Based Precaution," *International Environmental Agreements: Politics, Law and Economics* 3, no. 2 (2003).
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- <sup>33</sup> Joel A. Tickner, D. Kriebel, and S. Wright, "A Compass for Health: Rethinking Precaution and Its Role in Science and Public Health," *International Journal of Epidemiology* 32 (2003).; T. Schettler, K. Barrett, and C. Raffensperger, *The Precautionary Principle: Protecting Public Health and the Environment*. The Collaborative on Health and the Environment, 2002. Retrieved 27 February 2006 from <http://www.protectingourhealth.org/corethemes/precaution/2002-1125schettlerprecautionary.htm>.; M. O'Brien, "Science in the Service of Good: The Precautionary Principle and Positive Goals," in *Precaution, Environmental Science, and Preventive Public Policy*, ed. Joel A. Tickner (Washington, DC: Island Press, 2003).
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## CHAPTER 2

### **CCA-Treated Timber**

The most significant problem with CCA-treated timber is that it leaches the chemicals used in the treatment process. The leachates can form as residues on the timber's surface as well as seep into the surrounding soil or water. This chapter considers how the chemicals are 'fixed' and government and industry responses to the problems associated with leaching.

According to the CSIRO website the chemical compound known as CCA 'is Australia's most widely used wood preservative.'<sup>1</sup> It can increase timber's service life up to fifty years,<sup>2</sup> with twenty years being a common industry recognized lifespan. CCA refers to the chemical product Copper Chrome Arsenate also known in some countries as Chromated Copper Arsenate<sup>3</sup> which 'consists of three active constituents, copper, chromium and arsenic'. The Australian Pesticides and Veterinary Medicines Authority (APVMA) - an independent statutory authority whose powers are provided in the *Agricultural and Veterinary Chemicals Code Act, 1994* (Agvet Codes) has responsibility for the regulation of agricultural and veterinary chemicals in Australia<sup>4</sup> - succinctly describes the purpose of each constituent in the following way: arsenic primarily protects timber against insects, while copper acts as a fungicide, and chromium "fixes" these two chemicals in the timber.<sup>5</sup>

## CCA FIXATION AND LEACHING

Doubts exist about the efficacy of the ‘fixation’<sup>6</sup> due to scientific uncertainty about how chromium ‘fixes’ the other chemicals into the wood.<sup>7</sup> According to Kartal and Lebow the ‘literature indicates that differences in the chemical composition of wood, and especially the type and content of lignin, may affect the rate of CCA fixation and its subsequent leachability.’<sup>8</sup> They suggest that preservative formulation, preservative retention, processing techniques and ‘post-conditioning factors’ such as ‘temperature, humidity and airflow’ contribute to the efficacy of fixation reactions.<sup>9</sup>

Industry-based standards are in place that attempt to maintain consistency of chemical retention within the wood.<sup>10</sup> These standards, however, are set without full knowledge of the chemical processes involved or the effects of external climatic and soil factors.<sup>11</sup> This is especially pertinent to a country as vast as Australia. Despite variability in climate and soils, and known potential for dramatic weather, bush fires and floods the same product (CCA), and application/fixation processes are replicated in most parts of the country.

Although standardized, the technological processes used in application of the CCA preservative can also reduce the efficacy of fixation chemicals. The processes involve two main stages of treatment: the pressure injection of the measured waterborne CCA into the timber; followed by drying to remove water, leaving the concentrated chemicals intact within the wood.<sup>12</sup> The APVMA recognizes that ‘a large number of factors during the treatment

processing can influence fixation and leaching, and consequently the quality of the product. Similarly, a number of factors can affect leaching from timber in service.<sup>13</sup> Recent recommendations to provide ‘more detailed instructions for application, mixing and vacuum/pressure operations...’ on CCA-preservative labels are intended to reduce leaching from future treated timber products.<sup>14</sup> This precautionary measure, however, does not manage leaching problems in existing or residual products.

Leaching of the chemicals, especially arsenic, from within the timber onto the timber’s surface and into the surrounding soil has generated public health and environmental concerns.<sup>15</sup> According to Townsend, Stook, Ward and Solo-Gabriele, ‘studies have shown that the arsenic can be released by rubbing the wood.’<sup>16</sup> Further studies indicate that leaching results in the transport of the chemicals to the surrounding environment whilst *in situ* and after its disposal.<sup>17</sup> When the life-span of CCA-treated timber structures is combined with the propensity to continue leaching toxic chemicals, concerns about threats of harm to public health and the environment are not surprising.

### POTENTIAL DANGERS

Children’s exposure to CCA residues poses a threat of harm.<sup>18</sup> Concerns about young children’s exposure to CCA-treated timber, especially when playing on playground equipment have been a serious issue raised by ‘many scientists, politicians and news media reporters.’<sup>19</sup> Consequently this issue has become the subject of several research projects that focus on transfer of

inorganic arsenic residues through young children's hand-to-mouth behaviour, with ongoing debate regarding the frequency of hand-to mouth behaviour and the levels of inorganic arsenic being ingested.<sup>20</sup> Whilst there is a growing interest in leached chromium,<sup>21</sup> most investigations have focused on children's exposure to arsenic. Whilst most researchers agree there is some transfer of residue from existing structures to the child, few agree on the level of risk this poses to children.

A good example of the disagreement in this area has been played out in the 'Letters to the Editor' section of *Risk Analysis* journal.<sup>22</sup> An article in this journal by Hemond and Solo-Gabriele outlining their research and conclusions argued that, 'arsenic dosages for children who play in contact with CCA-treated wood can be in the range of tens of micrograms per day, a value high enough that it warrants further study'<sup>23</sup> ; their research was partly supported by the Florida Center for Solid and Hazardous Waste Management and the National Institutes of Environmental Health and Sciences. Challenges to their research methods and findings were made by Petito Boyce et al,<sup>24</sup> researchers for the Gradient Corporation, 'a consulting firm specializing in risk and environmental sciences.'<sup>25</sup> The researchers claimed that Hemond and Solo-Gabriele had made significant overestimations of 'plausible values for children's [arsenic] intakes associated with structures built of wood treated with chromated copper arsenate (CCA).'<sup>26</sup> This mirrors previous claims used by Gradient Corporation researchers to challenge the findings submitted by the U.S. Consumer Product Safety Commission in support of their *Petition to Ban Chromated Copper Arsenate (CCA)-Treated Wood in Playground*

*Equipment* (Petition HP 01-3).<sup>27</sup> On this occasion the Gradient Corporation services were purchased by the Wood Preservative Science Council.<sup>28</sup> Earlier work of another Gradient Corporation researcher, Dr. Barbara Beck, is still referred to by the Osmose Corporation that proclaims itself as ‘the world’s leading manufacturer and supplier of timber preservatives’.<sup>29</sup> Beck’s 2001 findings supported the Osmose Corporation’s stance that cancer and non-cancer health risks from exposure to CCA-treated timber are within U.S.EPA acceptable limits.<sup>30</sup> However, the risk assessment conducted in 2003 by the U.S. Consumer Product Safety Commission (CPSC) concluded:

CPSC scientists find that some children may face an increased risk of developing lung or bladder cancer over their lifetime from playing on playground equipment made from CCA pressure-treated wood. This risk is in addition to the risk of getting cancer due to other factors over one’s lifetime.<sup>31</sup>

Scientists continue to battle between themselves on behalf of their funding bodies about the amounts of toxic substances that children can ‘safely’ tolerate. However, there appear to be few demands made by official health authorities that the precautionary principle be implemented on the grounds that ‘safe’ levels of exposure are, as yet, unknown. The potential threat of harm to children’s health is ignored and the precautionary principle is neglected.

The New South Wales Environment Protection Authority (NSW EPA) states that ‘chemicals used to protect wood must be toxic to the target organisms, but they may also affect non-target organisms and the environment.’<sup>32</sup> The statement excludes humans. It ignores that the individual chemicals, especially arsenic and chromium, have been shown to pose risks to humans. A recent US EPA report stated that ‘[i]norganic arsenic is a known Group A carcinogen and hexavalent chromium (VI) is a probable carcinogen through the inhalation route.’<sup>33</sup> The National Library of Medicine states, ‘According to the Fourth Annual Report on Carcinogens (NTP 85-002, 1985), arsenic and certain arsenic compounds have been listed as known carcinogens.’ and ‘chromium and some of its compounds have been listed as known carcinogens.’<sup>34</sup> Other research shows that copper exposure may be associated with Parkinson’s Disease<sup>35</sup> and lung cancer.<sup>36</sup> No precautionary measures have been introduced to prevent possible harm from residual products leaching these chemicals; nor for any potential synergistic toxic effects emanating from combining the chemicals.

The New Zealand Environmental Risk Management Report states that ‘arsenic is the most toxic of the three components and has therefore been the focus of the health risk assessments that have been undertaken to date.’<sup>37</sup> Yet by focussing on the individual chemicals any potential synergistic effects remain unknown. As Caroline Cox, editor of the *Journal of Pesticide Reform* states:

CCA-treated wood is a concentrated source of metals that are acutely and chronically toxic to a wide range of organisms,

from single celled algae to humans. In humans, the ability of CCA's ingredients to cause disorders of the nervous system, damage to various organs, cancer, and birth defects is well documented.<sup>38</sup>

However, there appears to be little knowledge of, or research into, or concern for the long-term impacts of these chemicals through ongoing exposure to their combined effects.

According to Cox, a Special Review of CCA was undertaken by the U.S. Department of Agriculture in 1978.<sup>39</sup> Since then, there has been increasing international concern about the use of CCA-preservatives to 'treat' timber.<sup>40</sup>

The US EPA stated in its 2003 report on CCA-treated timber:

The U.S. Environmental Protection Agency's (EPA) Office of Pesticide Programs (OPP) is aware of increased concerns raised by the general public, municipal and state governments, and state/federal regulatory agencies regarding the safety of young children contacting arsenic and chromium residues while playing on Chromated Copper Arsenate (CCA) treated wood playground structures and decks.<sup>41</sup>

### AUSTRALIAN REGULATORY RESPONSES

In Australia similar concerns to those raised in Europe and North America about the potential dangers associated with CCA-treated timber

culminated in a two year review of CCA-preservatives by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This was finalized in 2005. Restrictions, effective from March 2006, will prevent CCA-preservative use in timber destined for manufacture as play, recreational and public-use structures. CCA ‘registrants and the timber-treatment industry strongly opposed prohibiting any uses of CCA’ - this was hardly surprising since after New Zealand and the United States, ‘Australia is the world's third highest per capita user of CCA-treated pine...with approximately 800,000 cubic metres produced locally each year’<sup>42</sup> – arguing that any suggested, “unacceptable risk to public health” ... is not supported by the toxicological findings.<sup>43</sup> The APVMA responded by claiming that CCA registrants and timber treatment industry members ‘did not provide any information to address the unresolved concerns based on a lack of suitable exposure data for Australia.’<sup>44</sup> In other words, by implementing the precautionary measure of restricting some future uses of CCA-preservatives, the APVMA reversed the burden of proof back to the relevant industries. According to Romeo Quijano:

Reverse onus means placing burdens and responsibilities for safety and understanding on producers [the timber and timber preservers industries] and not putting the burden of proof of harm on the potential victims.<sup>45</sup>

However the Australian timber preserver industry appears not to have sought scientific evidence of safety in regards to residual products and no restrictions have been placed on their use.

It should be noted that in the United States and Canada it was CCA-registrants who, under threat of regulation, offered to ‘voluntarily cancel uses of CCA-treated timber in residential and recreational settings’<sup>46</sup> resulting in the signing of an agreement with the U.S. EPA ‘for voluntary cancellation of treated wood for residential use effective December 31, 2003.’<sup>47</sup>

The APVMA has not explicitly defined the recent restrictions for product uses in terms of the precautionary principle. However, introduction of restricted use, despite uncertainty about the product’s safety, strongly suggests the precautionary principle helped inform these decisions. The following APVMA statement is used to justify the decisions and amendments:

It could not determine, for Australian conditions, whether or not exposure to CCA treated timber posed an unacceptable public health risk for some specified uses. Consequently it is not satisfied that there is no undue risk from the continuing use of products containing CCA to treat timber that is used in the manufacture of equipment and structures with which the public, particularly children, are likely to come into frequent and intimate contact.<sup>48</sup>

Although implying uncertainty remains about the product's safety, this statement appears to have been made unnecessarily obtuse by the use of double and triple negatives.<sup>49</sup> Furthermore, the use of the term "Australian conditions" appears to be a form of escape clause to justify the selective use of overseas research and risk assessment models to better suit APVMA regulatory purposes. This selective process includes citing particular research to argue for restriction of future use of CCA-preservatives,<sup>50</sup> whilst citing overseas examples to justify a 'do-nothing, wait-and-see' approach for existing products containing CCA-preservatives.<sup>51</sup>

Due to scientific uncertainty about its safety CCA-treated timber will not be permitted in the future manufacture of playground equipment, outdoor furniture, decking, some handrails and replacement parts. Yet, government regulators have ignored the potentially harmful effects of *existing CCA-treated timber structures*, or residual products that are used for similar purposes, especially the 'potential for exposure to pesticide residues remaining on the surfaces of the existing aged treated wood structures as well as the residues leached into the surrounding soil.'<sup>52</sup>

By neglecting the precautionary principle, young children will face unnecessary, additional exposure to arsenic, chromium and copper leaching from existing CCA-treated timber structures located around homes, in public parks, schools and playgrounds. These structures will remain *in situ* and accessible by the public without benefit of regulatory controls despite evidence of the potential for increased exposure to their dislodgeable

residues.<sup>53</sup> A study into children's consumption of inorganic arsenic states that '[d]ietary exposure to inorganic arsenic occurs naturally and is unavoidable.'<sup>54</sup> However, it is the potentially avoidable, additional exposure to non-naturally occurring arsenic, as well as copper and chromium, leaching from residual treated-timber structures that generate most concern for young children's health.

Recent amendments to regulations for uses of CCA-treated timber highlight inconsistencies in application of the precautionary principle, especially in relation to existing activities and products. In the case of CCA-treated timber new uses will be restricted; but use of residual products will remain uncontrolled. In the responsible literature on the precautionary principle, including its definitions and uses, there is no indication that its application is reserved for new activities, technologies and products. Yet, despite formal recognition of previously flawed application processes,<sup>55</sup> residual products and existing structures were not evaluated from a precautionary perspective.<sup>56</sup> The precautionary principle helped inform decisions and policy regarding future uses of CCA-treated timber, but was neglected for residual products.

Safety of CCA-timber preservative is a current issue that has generated research and some regulatory change. Conversely, CCA-treated residual products, which continue to leach their toxic contents<sup>57</sup> whilst *in situ* and beyond, have been over-looked by international and Australian regulators. CCA-treated timber, however, is only one example of where there is widespread use of regulated toxic chemicals in products easily accessible by

the public and for which few, if any, regulations apply to their residual products. Examples of other products containing harmful chemicals with regulated new uses include some plastic products such as cell phones, computer casings and foam cushions containing the flame retardant polybrominated diphenyl ethers (PBDEs),<sup>58</sup> children's toys containing phthalates<sup>59</sup> as well as cooking utensils coated with Teflon (perfluorooctanoic acid (PFOA)).<sup>60</sup> Such neglect of the precautionary principle with regards to residual products appears to be an under-explored area of research.

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- <sup>5</sup> Ibid.
- <sup>6</sup> 'Fixation is considered to be the state of the chemical components of the preservative and other wood or substrate when all chemical reactions and interactions are completed (Cooper et al. 1993)' in N.S. Kartal and S.T. Lebow, "Effect of Compression Wood on Leaching and Fixation of CCA- C Treated Red Pine," *Wood and Fiber Science* 33, no. 2 (2001). p. 183.
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- <sup>8</sup> Kartal and Lebow, op. cit., p. 184.
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- <sup>13</sup> APVMA, op. cit., p. 34.
- <sup>14</sup> Ibid. p. 58.
- <sup>15</sup> Lansbury Hall and Beder, op. cit., pp. 18–21; E. Kwon, H. Zhang, Z. Wang, G.S. Jhangri, X. Lu, N. Fok, S. Gabos, X. Li, and X.C. Le, "Arsenic on the Hands of Children after Playing in Playgrounds," *Environmental Health Perspectives* 112, no. 14 (2004); D. A. Belluck, S.L. Benjamin, P. Baveye, J. Sampson, and B. Johnson, "Widespread Arsenic Contamination of Soils in Residential Areas and Public Spaces: An Emerging Regulatory or Medical Crisis?," *International Journal of Toxicology* 22, no. 2 (2003).; S. Steingraber (a), *Late Lessons from Pressure-Treated Wood - Part 1* (784).Environmental Research Foundation (ERF), 2004. Retrieved 1 November 2005 from [http://www.rachel.org/bulletin/pdf/Rachels\\_Environment\\_Health\\_News\\_2419.pdf](http://www.rachel.org/bulletin/pdf/Rachels_Environment_Health_News_2419.pdf); BANCCA.ORG (a), *The Health Hazards of CCA Treated Wood Products: A Review of the Toxicological Hazards of CCA., Arsenic and Chromium*.BANCCA, 2005. Retrieved 4 August 2005 from [http://www.bancca.org/Health\\_Hazards/cca\\_hlth\\_hzrds.htm](http://www.bancca.org/Health_Hazards/cca_hlth_hzrds.htm).; E.M. Dube et al., "Assessment of Potential Human Health Risks from Arsenic in CCA-Treated Wood," *Human Ecological Risk Assessment* 10 (2004).; K. Loveridge (a), *CCA Treated Timber Update - July*.Croydon Conservation Society, 2004 . Retrieved 9 January 2006 from <http://home.vicnet.net.au/~croycons/CCA%20timber%20update.htm>.
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- <sup>19</sup> BANCCA.ORG (a), op.cit.; US EPA, *Petition Hp 01-3 Requesting a Ban of Chromated Copper Arsenate (CCA)-Treated Wood in Playground Equipment*, Federal Register Environmental Documents (US Environmental Protection Agency, 2003).
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- <sup>23</sup> Hemond and Solo-Gabriele, 2004, op.cit.
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- <sup>30</sup> Ibid.
- <sup>31</sup> U.S. CPSC (b), *Public Briefing on CCA Pressure-Treated Wood Playground Equipment Scheduled*.Consumer Product Safety Commission, 2003. Retrieved 12 October 2005 from <http://www.cpsc.gov/phth/ccastatement.html>.; U.S. EPA (a), *FY 2003 CPSC Commission Briefing Packages: Consumer Product Safety Commission Documents*.United States Environmental Protection Agency, 2003. Retrieved 25 February 2006 from <http://www.epa.gov/oscpmont/sap/2003/december3/cspc.htm>.
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- <sup>38</sup> C. Cox, "Chromated Copper Arsenate," *Journal Of Pesticide Reform* 11, no. 1 (2000). p. 5.
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- <sup>45</sup> APVMA, op. cit., p. 66.
- <sup>46</sup> Ibid.
- <sup>47</sup> Zartarian, et al. op. cit., p. 8.
- <sup>48</sup> APVMA, op. cit., p. 11.
- <sup>49</sup> The Flexible Learning Centre, University of South Australia, states, 'Beware of double negatives: A double negative in a sentence creates confusion and in many cases is grammatically incorrect. In standard English a double negative usually creates a positive meaning.' Flexible Learning Centre, *Double Negatives: Beware of Double Negatives*. University of South Australia, 1997. Retrieved 9 December 2005 from <http://www-i.roma.unisa.edu.au/07118/language/writing.htm>.
- <sup>50</sup> APVMA, op. cit., p. 34.
- <sup>51</sup> Ibid. p. 57.
- <sup>52</sup> Zartarian et al., op. cit., p. 9.
- <sup>53</sup> Ibid.
- <sup>54</sup> Yost et al., op. cit., p. 10.
- <sup>55</sup> Pre-March 2006, structures were sometimes manufactured from timber preserved under reduced fixation quality controls. Subsequently the APVMA Review Recommendations now require timber treatment facilities be designed and operated within appropriate Australian Standards (AS/NZS 2843.1:2000 and AS/NZS 2843.2:2000), APVMA, op. cit., p. 57.
- <sup>56</sup> Ibid. p. 57.
- <sup>57</sup> Ibid. p. 54.
- <sup>58</sup> Washington State Department of Ecology, *Washington State Polybrominated Diphenyl Ether (PBDE) Chemical Action Plan: Final Plan*, Ecology Publication No. 05-07-048 (Department of Ecology and Department of Health, 2006).
- <sup>59</sup> Innovation and Technology Commission, "Health & Safety Standards Circulars," *Product Standards Information for Export Markets*, (Product Standards Information Bureau: Government of Hong Kong, 2005).; Ministry of Environment and Energy and Danish Environmental Protection Agency, *Statutory Order No. 151 of March 15, 1999: Banning Phthalates in Toys for Children Aged 0 - 3 and in Certain Childcare Articles with Reference to Council Directive 98/34/EEC; Directive 88/378/EEC, and Directive 92/59/EEC*. Ministry of Environment and Energy, 1999. Retrieved 3 March 2006 from <http://www.mst.dk/rules/Ministerial%20Orders%20in%20force/Chemicals%20in%20force/02030700.doc>.
- <sup>60</sup> National Industrial Chemicals Notification and Assessment Scheme NICNAS, "Perfluorooctanoic Acid (Pfoa) and Its Derivatives," in *NICNAS Alert No. 4*,

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(Australian Department of Health and Ageing, 2004); M. Visscher, *Avoiding Everyday Toxins*. AlterNet Independent Media Institute, 2005. Retrieved 24 February 2006 from <http://www.alternet.org/envirohealth/>.

## **CHAPTER 3**

# **Regulations and Advice for Treated Timber Usage in Australia**

Australian recognition of the toxicity of the timber preservative known as CCA<sup>1</sup> has been demonstrated through the existence of State regulations, industry Standards and the National Code of Practice for the Safe Handling of Timber Preservatives and Treated Timber.<sup>2</sup> The National Occupational Health and Safety Commission (NOHSC) states:

A code of practice declared by the National Commission pursuant to Part VI of the National Occupational Health and Safety Commission Act is a document prepared for the purpose of advising employers and workers of an acceptable preventive action for averting occupational deaths, injuries and diseases in relation to specific workplace hazards.<sup>3</sup>

Regulations, Standards and Codes of Practice are measures put in place to control most aspects of CCA preservative's application to felled timber, and 'to ensure the health and safety of workers handling timber preservatives and timber treated with preservatives.'<sup>4</sup> Consequently the treatment of timber has to comply with Australian Standards and State legislation.

## SAFE HANDLING

The National Occupational Health and Safety Commission is a tripartite body established by the Australian Government to facilitate a national approach to occupational health and safety. It comprises representatives of the peak employee and employer bodies, as well as Commonwealth, State and Territory governments. WorkCover is the New South Wales government authority responsible for implementing these guidelines.<sup>5</sup> In accordance with NOHSC directions timber-preserver industry employers and employees should have access to Material Safety Data Sheets.<sup>6</sup> These provide directions for those working in the timber treatment and treated timber industries<sup>7</sup> on the safe use, disposal and handling, and the consequences for inappropriate use of CCA preservatives and recently treated timber.

There is, however, a lack of safe handling and disposal guidelines for those not employed in these industries. These people include handypersons engaged in do-it-yourself (DIY) projects, using recently purchased or dismantled CCA-treated timber, and those members of the public, especially young children, who come into contact with older structures manufactured from CCA-treated timber during recreational activities. Their exposure to dangerous leachates through this contact is either minimised or ignored as demonstrated by the absence of non-work related Australian safe handling and safe disposal guidelines for members of the public. This neglect is not unique to Australia and is consistent with international responses to residual products.<sup>8</sup>

In Australia the organisation responsible for regulating the CCA timber preservative is the Australian Pesticide and Veterinary Medicines Authority (APVMA), formerly known as the National Registration Authority for Agricultural and Veterinary Chemicals (NRA). Australia's Agvet Codes<sup>9</sup> enable the APVMA to regulate how CCA is used to treat wood. This is done through 'instructions and restraints it places on product labels'<sup>10</sup> attached to the chemical containers. Changes in the use of CCA timber preservatives are made through reviewing and amending the instructions and permitted uses on the labels of CCA preservative containers. In addition to APVMA registration and approved use of the CCA preservative, each Australian State and Territory operates under its own regulatory authorities, enforcing the 'instructions and restraints as law.'<sup>11</sup>

In New South Wales, the authorities responsible for administering industry-related regulations and controls of CCA-timber preservatives and CCA-treated timber include Workcover NSW, State Forests of NSW, the Department of Environment and Conservation (DEC) NSW - the Environmental Protection Authority (NSW), previously responsible for applying the Pesticides Act is now incorporated into the Department of Environment and Conservation (NSW) - and the NSW Department of Local Government. For timber preservatives and recently treated timber, each authority operates under specific legislation:

- Workcover NSW operates and licences operators under
  1. the Boiler and Pressure Vessel Regulations;
  2. the *Occupational Health and Safety Act 2000*;<sup>12</sup>

3. the *Dangerous Goods Act 1975*’ including its supporting regulations, the ‘Dangerous Goods (General) Regulation 1999’<sup>13</sup>
- State Forests of NSW, ‘controls the sale and use of certain timber and registers the operating treatment procedure’<sup>14</sup> whilst operating under the:
    1. *Timber Marketing Act, 1977*.
  - The DEC (NSW) has ‘a role in enforcing any requirements under the:
    1. *Pesticides Act, 1999*; and licenses facilities in the wood preservation industry under the:
      2. *Protection of the Environment( Operations) Act 1997, (POEO)*<sup>15</sup>; and, administers the ‘POEO (Control of Burning) Regulation 2000’ that prohibits the open burning of timber treated with CCA.<sup>16</sup>
  - Local Government operates under the:
    1. *Local Government Act 1993*<sup>17</sup> with licencing responsibility for small treatment facilities not covered by DEC (NSW), and application of the

## 2. *Waste Avoidance and Resource Recovery Act 2001*

directives as administered by the NSW DEC.<sup>18</sup>

The above regulations control where the chemicals can be transported, used and stored; who can use them, and whether or not specialised training is mandatory. They also provide some controls over safe disposal of unused and waste chemicals. The majority of the regulations pertain to safety requirements for those workers:

- handling the chemicals before, during and after their application within the confines of regulated, purpose-built timber- preservation facilities;
- handling CCA-treated timber during
  - i) wholesale and retail operations;
  - ii) building industry use;
  - iii) manufacture of treated-timber end-products.

The APVMA conducts ‘reconsideration of registration’ reviews:

[W]hen there is new information that raises potential concerns about a chemicals ongoing use, suggesting that its registration should be reassessed....Reviews can be triggered by new research or other evidence that has raised concerns.<sup>19</sup>

These triggers can include concerns about safety of use, harmful effects to public health and harmful unintended effects to flora, fauna and the environment. Prior to the 2005 APVMA Review no restrictions or limitations were in place for items manufactured from CCA-treated timber. From March 2006, to reduce exposure to leaching arsenic, CCA-treated timber, will be banned for use in the manufacture of items requiring physical contact by the public and young children.<sup>20</sup> From this date the 'Directions for Use Label' located on the preservative container must state:

DO NOT use this product to treat timber intended for garden furniture, picnic tables, exterior seating, children's play equipment, patio and domestic decking, and handrails.<sup>21</sup>

No such safeguards have been introduced to minimise the public's exposure to existing or residual CCA-treated timber products. This is of particular concern since:

Children may potentially be exposed to the pesticide residues remaining on the surfaces of the treated wood structures as well as residues leached into the surrounding soil.<sup>22</sup>

This exposure 'may occur through touching CCA-treated wood and CCA-contaminated soil near treated wood structures, mouthing hands after touching CCA-treated wood, and eating CCA-contaminated soil.'<sup>23</sup> The lack of precautionary safeguards, such as restrictions or guidelines to enforce

cautious and protective behaviours, exposes young children to a potentially harmful chemical cocktail leaching from residual products.

### WORKING WITH CCA-TREATED TIMBER

Handypersons, without the benefit of formal guidelines, are also liable to unnecessary, potentially harmful exposure when undertaking do-it-yourself (DIY) projects using treated timber. Recommendations for safe handling and disposal have been left to retail outlets selling CCA-treated timber, and DIY information sources suggesting use of CCA-treated timber.

Researcher Lansbury Hall undertook a survey of the information being supplied to consumers 'by hardware retailers, building industry centres and treated timber industry representatives in Sydney' in November 2004. The data raised 'many concerns for the level of information (and misinformation)' that was supplied to potential CCA-treated timber consumers at that time.<sup>24</sup> Her concerns may well still be valid if DIY websites and television shows are representative of information currently available to the public. Recent examples include a 'Bunnings Hardware' website providing instructions for constructing a sand-pit,<sup>25</sup> and a popular<sup>26</sup> 'home-improvement/life-style' television show, *Hot Property*. Three episodes involved dismantling a treated-pine cubby house for re-construction as a shed. Although using power tools and generating wood-dust neither DIY worker wore protective gear or gloves.<sup>27</sup> Precautionary advice on safe handling and disposal was not provided by either information source.

## SAFE HANDLING INFORMATION

Uncertainty exists as to whether residual CCA-treated timber can cause harm. This uncertainty has been, and continues to be masked through use of statements claiming product safety that is based upon individuals following ‘expert’ advice about proper care and handling. This places responsibility for use back onto the public, but without benefit of widespread and ongoing safety warnings about its potential for harm. The available advice is divided into two distinct categories. The first is the general application of a paint or stain to reduce the level of leaching. The other is related to individual adoption of precautionary measures.

The interim report of a 2-year U.S. Environment Protection Agency (US EPA) evaluation of the effectiveness of sealants in reducing ‘dislodgeable arsenic, chromium and copper from CCA treated wood’ advised:

Oil or water-based stains that can penetrate wood surfaces are preferable to products such as paint. This is because paints and other film-formers can chip or flake, requiring scraping or sanding for removal which can increase a consumer's exposure to arsenic.<sup>28</sup>

The CSIRO website providing safety advice has a different opinion, claiming:

Oils, stains and clear finishes are often not particularly durable coatings, so that arsenic may dislodge from the coated timbers. The more durable exterior coloured (opaque) paints reduce levels of dislodgeable arsenic more significantly.<sup>29</sup>

This conflicting advice, from two ‘experts in their fields’, is indicative of the mixed messages being provided to the public. Furthermore the ‘experts’ advice will exacerbate identification problems following its disposal to landfills. This harmful aspect of residual CCA-treated timber has been brought to the attention of the ongoing Productivity Commission’s public inquiry into Waste Generation and Resource Efficiency as Submission 21.<sup>30</sup> Identification problems are discussed further in Chapter 5.

The public, on the one hand, is being advised ‘to make their own informed decisions and not necessarily believe alarmist claims’<sup>31</sup> yet, the information being provided by two authoritative agencies not only differs in content but neglects the possible long-term negative impacts brought about by the recommendations. Whilst painting and staining will provide some short-term immediate protection from the dangerous leachates, it will require long-term, ongoing maintenance. Painting and sealing recommendations fail to address the possibility of long-term harm. Instead focus is transferred to temporary, short-term measures that may, or may not reduce levels of risk during human exposure, whilst neglecting any environmental impacts from *in situ* structures.<sup>32</sup>

A further precautionary oversight is that the public are given no clear

directions for its safe disposal other than warnings not to burn residual products due to the toxicity of the smoke and ash. Information concerning the potential harm of smoke and ash tends to be available on most web-sites providing general advice about CCA-treated timber. However this information tends to be restricted to the English language only, thus increasing the potential for harm for non-English speaking citizens.

This precautionary oversight was acknowledged during a telephone conversation with the APVMA Public Affairs Officer. He advised that whilst matched-funding is available for a program to assist in reducing potential problems arising from the diversity of language groups in Australia, the APVMA is unable to initiate such a program. It would seem likely that industry in NSW will gain access to this funding as they have been charged with the responsibility for educating the public on appropriate disposal methods in accordance with Recommendation 34 of the Extended Producer Responsibility Expert Reference Group.<sup>33</sup>

The CSIRO website provides some precautionary advice about handling and using CCA-treated timber. It is provided under separate headings for different situations. Thus for people working with treated timber it states ‘[t]imber sale yards should have brochures available that set out safety precautions which should always be followed.’<sup>34</sup> It neglects the possibility that DIY handypersons might use the remnants of demolished structures and fails to include other sources and outlets that intersect between CCA-treated timber and the uninformed public that are not required to provide ‘safety brochures’. Recommendations are made to take the following precautions

when ‘working’ with treated timber to ‘minimise any perceived risks from leaching’:

- always wearing gloves when working with wood, treated or untreated;
- always wearing a mask and goggles; and
- washing face and hands before eating, drinking or smoking.<sup>35</sup>

It is important to note that the above recommendations, along with easy access to safe handling directions and protective clothing and equipment, are official requirements for those engaged in using treated timber in the workplace.

With regards to existing structures, especially playgrounds, the CSIRO webpage claims:

The credible research to date suggests that arsenic ingestion from handling CCA-treated timber occurs at well below tolerable levels, if the precautions mentioned above are followed.<sup>36</sup>

Tolerable levels in the above statement refer to the thresholds of safety the CSIRO consider as appropriate for all Australians. Upon examination of the web page for the ‘precautions mentioned above’ - other than the general

recommended precautionary measure of painting or staining - there is nothing provided that is applicable to young children's safe use and handling of residual treated timber structures. Consequently the CSIRO advice fails to target some of society's youngest and most vulnerable members who are likely to be exposed to dangerous leachates due to their regular playing on and around existing structures.

Other authorities have provided some 'expert' advice for the safe-handling and disposal of residual CCA-treated timber products. The EnHealth website<sup>37</sup> states:

The following basic hygiene practices, which should be applied during all outdoor activities, are adequate to deal with typical contact with CCA-treated timber products:

- Do not place food directly on any outdoor surface that you are using as a table.
- Always place food on a plate or napkin.
- Always wash your hands after engaging in outdoor activities.

CCA treated timber should never be burnt or used as a fuel because of the toxic fumes which arise.<sup>38</sup>

The Victorian Government Health website further suggests that although 'CCA treated timber can be considered to be a safe product when handled or

used properly, it is important to limit possible exposure to the chemicals’.<sup>39</sup> The NSW Department of Health website’s CCA safety information webpage contains similar information.<sup>40</sup> However, the New Zealand Education Ministry information advises ‘[d]o not let children lick treated timber’, and to ‘follow normal hygiene practices after playing on treated timber.’<sup>41</sup> All of the above statements make precaution the responsibility of the individual whilst neglecting to state why such advice is required. There is no disclosure of the scientific uncertainty that surrounds the claimed safety of residual treated timber.

The above are examples of government inertia and neglect regarding residual CCA-treated timber and public exposure to potential danger. They demonstrate government failure to formally acknowledge residual products’ potential to harm public health and the environment. This has in effect resulted in recommending ‘quick fix’ solutions that may cause further long-term harm to the environment. Individuals must actively seek out and access information about safe handling and use and implement their own short-term precautionary measures whilst being advised by authorities, assumed to be experts in their field, that the products are not dangerous. Other than the painting, and personal hygiene examples given above, there are few formal guidelines available for the general public regarding the safe handling of residual CCA-treated timber.

## RESPONSIBILITY

Whilst residual CCA-treated timber products remain accessible to the public, and especially society's younger members, there is a 'duty of care' responsibility to inform the public about the potential dangers associated with leachates and the need for safe handling. To date no identifiable delegates have been appointed to this role.

There is a general lack of commitment by corporations to inform the general public of a product's potential danger. On top of this, no one government authority exists to oversee, enforce and manage provision of precautionary advice when uncertainty exists about the safety of residual products, in order to provide balance to industry's claims. The public continue to be put at risk of increased exposure to potentially harmful chemicals. Precautionary measures, however, could be achieved through government-sponsored/industry-funded advertising; or by regulating the industry so that provision of warnings about the product's potential to cause harm becomes mandatory. Such a 'warning' precedent has been set by Australian and State Governments with regards to tobacco products. This includes the requirement for warnings on packaging, prohibition on advertising tobacco-related products, and restrictions placed on use: all the while taking place under a mantle of government- initiated health warnings advising the public that the products can be harmful.<sup>42</sup>

The APVMA's reason for excluding existing residual structures in its final recommendations is explained by the lack of regulatory authority to do so.<sup>43</sup> Their authority does not extend to those items found around homes, gardens, schools, public playgrounds and parks that are referred to as 'existing

structures constructed of CCA treated timber.’<sup>44</sup> Despite the APVMA stating they will be ‘consulting with agencies that have responsibility for existing structures’ they can only advise, not direct these agencies.<sup>45</sup> Thus each agency will be responsible for ‘their own risk management decisions’ and education of the general public.<sup>46</sup>

Australia’s six hundred and seventy three Local Government Councils are the ‘agencies’ responsible for managing residual treated timber. Their representative body, the Australian Local Government Association (ALGA) voiced concerns in a Media release, ‘that hundreds of individual agencies are to be left with a decision as to whether or not to remove structures built with CCA treated timber.’<sup>47</sup> ALGA President Councillor Paul Bell declared:

A national approach is needed. It strikes me as unreasonable that hundreds of agencies and authorities are to be left to go through the highly complex task of assessing the scientific research that a national regulator hands on to them.<sup>48</sup>

This claim of ‘unreasonableness’ is especially pertinent since the Commonwealth, State and Territory governments as well as the Australian Local Government Association were signatories to the Inter Governmental Agreement on the Environment (IGAE) in 1992 whereby it was agreed the Precautionary Principle ‘should inform policy making and program implementation.’<sup>49</sup> Yet, responsibility for any invocation of the precautionary principle for residual CCA-treated products has been downgraded to the least-empowered level of government. Due to a general lack of

specialist environmental and public health knowledge, and insufficient financial resources to implement specific precautionary measures, many Shire and Local Councils are ill-equipped for such responsibility.<sup>50</sup>

Industry claims to be confused by the APVMA recommendations regarding future uses of CCA treatments, stating:

[W]hile the APVMA has direct jurisdiction over the sale and use of CCA chemical at the treatment plant, re-sellers and end users of CCA-treated wood are under no direct legal obligation to comply with the rulings.<sup>51</sup>

However, in the United States, where similar restrictions were introduced, there was according to one industry source a ‘seamless transition to other chemicals’ for timber treatment because the ‘treaters geared up to switch to other chemicals (which now comprise about 80% of the market with CCA at 20%).’<sup>52</sup> To date this has not been the Australian experience. As late as mid-February 2006, suppliers of CCA-treated timber were still recommending its use for decking, patios and handrails<sup>53</sup> despite the ban on these uses from March, 2006.

Based on information exchanged with a range of citizens during informal conversations as well as through personal communications via email and telephone during the period June 2005 – January 2006 it seems there is confusion amongst some members of the general public about managing existing CCA-treated timber structures for which there are limited,

sometimes confusing safety directions.<sup>54</sup> The source of the confusion is the APVMA recommendation for future uses of CCA-treated wood. From March 2006, *in situ* CCA-treated timber recreational products will remain in place and unregulated. New CCA-treated timber versions or replacements will be banned.

According to the APVMA, amendments can only be initiated within the framework of legislative power available to the Authority. As stated in the Review, ‘there are limitations in how the APVMA can influence uses of wood products that have already been treated by CCA.’<sup>55</sup> As such the APVMA made no recommendations regarding ‘future action for existing structures constructed from CCA treated timber’, due to its lack of ‘regulatory authority’ to do so.<sup>56</sup> This lack of action, however, has neglected the commitment made by all levels of government to the 1992 Inter Governmental Agreement on the Environment (IGAE).

#### INTERGOVERNMENTAL AGREEMENT ON THE PRECAUTIONARY PRINCIPLE

The IGAE states:

The parties agree that the development and implementation of environmental policy and programs by all levels of Government should be guided by the following considerations and principles...(Section 3.1)<sup>57</sup>

Amongst these is the precautionary principle. Section 3.5.1 declares that:

Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

- i. careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- ii. an assessment of the risk-weighted consequences of various options.<sup>58</sup>

The Agreement further states:

This requires the effective integration of economic and environmental considerations in decision-making processes, in order to improve community well-being and to benefit future generations.<sup>59</sup>

It appears, with regards to residual CCA-treated products, that industry and economic considerations have dominated over the need for community well-being and environmental protection in the decision-making process.

The IGAE also commits governments to ‘a proper examination of matters which significantly affect the environment.’<sup>60</sup> However, as Lansbury Hall and Beder point out:

[T]he APVMA only reassesses existing data rather than doing its own original research ..., which then limits the knowledge base on which the APVMA can make recommendations.<sup>61</sup>

The APVMA Review failed to conduct a ‘proper examination’ of Australian conditions and the impacts that existing structures, manufactured from CCA-treated timber, might have on the Australian environment, even though it recognized:

[N]one of the available data (either Australian or overseas) covered the range of timber products from different Australian timber treatment plants, the age of treated timber structures or the environmental conditions to which treated timber structures might be exposed.<sup>62</sup>

Thus the recommendations made were primarily based on data, obtained from overseas research, conducted in overseas conditions, unrelated to Australian climatic, soil and physical conditions: including propensity for bush fires. (See Chapter 4)

Currently there is no clear demarcation of responsibility and liability. An example of this and possible future ramifications can be seen with

purchasing and selling of real estate. Domestic, rural, commercial and industrial real-estate gets sold and purchased with residual CCA-treated structures used in construction, fencing and landscaping of the properties. Sometimes these structures are painted and stained, often concealing the nature of the timber used. (See Chapter 5) There are however, no precautionary measures in place requiring notification that a potentially harmful product has been used and is located on the property. Disclosure of its use is not a current real-estate legal requirement. This, however, may be a future source for concern, especially in light of real-estate law reform recommendations under consideration in Tasmania that include vendor disclosure to the buyer regarding the presence of asbestos in any building or structure on the property.<sup>63</sup>

No responsibility has been taken for regulating or restricting the future quantities of CCA-treated timber being manufactured for use in residential, industrial and commercial construction, rural and farm structures, or for 'fresh and salt water constructions'.<sup>64</sup> These products will be the residual products of future generations, leaching their dangerous chemicals into their surrounding environments without the benefit of precautionary measures in place to minimise potential harm.

The regulators' decisions in Australia and overseas, to ignore existing structures during the review process, have resulted in the loss of opportunity to use re-registration assessments as a precautionary device for reviewing the chemicals *and* the impacts of their manufactured products. The inclusion of residual products' impacts on human health and the environment in re-

registration reviews may provide impetus for the development of safer alternatives for future production in order to minimise potential risks to human health and the environment. The exclusion of residual products from the re-registration assessment not only demonstrates short-sightedness but reveals the patchy, half-hearted application of the PP by Australian authorities.

No authority or agency has been given responsibility for implementing precautionary measures when uncertainty exists about the potential dangers of a residual product containing harmful chemicals.<sup>65</sup> The neglect of public concerns and scientific evidence that residual products containing CCA preservative pose dangers to human health and the environment, suggests that government authorities may consider application of the precautionary principle to be limited to new products or manufacturing processes. This may have implications for all residual products that contain toxic components. Residual CCA-treated timber is an example of broader governmental neglect in application of the precautionary principle to decisions concerning residual products of various kinds. This was not the intent for use of the precautionary principle. Its major concepts should and can be applied to the ‘whole-of-life’ of a product, not only during its initial introduction into society and the environment.

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<sup>1</sup> APVMA (2005). The Reconsideration of Registrations of Arsenic Timber Treatment Products (C.C.A. and arsenic trioxide) and Their Associated Labels:

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- Report of Review Findings and Regulatory Outcomes. Canberra, Australian Pesticides and Veterinary Medicines Authority: 1 - 72. p. 59.
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- <sup>10</sup> APVMA (2005). The Reconsideration of Registrations of Arsenic Timber Treatment Products (C.C.A. and arsenic trioxide) and Their Associated Labels: Report of Review Findings and Regulatory Outcomes. Canberra, Australian Pesticides and Veterinary Medicines Authority: 1 - 72. 2005, op. cit., p. 14.
- <sup>11</sup> Ibid.
- <sup>12</sup> New South Wales Government. (2000). "Occupational Health and Safety Act 2000." Retrieved 5 January, 2006, from [http://www.workcover.nsw.gov.au/NR/rdonlyres/9F13AA85-AD14-4A14-9D39-044ACD147585/0/act\\_ohs\\_2000\\_4054.pdf](http://www.workcover.nsw.gov.au/NR/rdonlyres/9F13AA85-AD14-4A14-9D39-044ACD147585/0/act_ohs_2000_4054.pdf).
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## **CHAPTER 4**

### **Problems with Residual CCA-Treated Timber**

#### **Products**

Regulatory authorities have failed to respond to warnings and concerns about the potential harm associated with existing CCA-treated timber products: especially for young children and the environment. These warnings and concerns appear in research reports into leaching;<sup>1</sup> in submissions to regulatory bodies from worried citizens;<sup>2</sup> and in FAQ pages of websites addressing CCA safety.<sup>3</sup> The actions of overseas and Australian authorities to withdraw approval for new uses of CCA-treated timber in high-contact, domestic and public use areas further suggests some official recognition of future negative effects, at least in relation to new products.<sup>4</sup> However as Gee and Stirling say in their contributory chapter to *The precautionary principle: protecting public health, the environment and the future of our children*:<sup>5</sup>

By their nature, complex, cumulative, synergistic or indirect effects in particular have traditionally been inadequately addressed in regulatory appraisal.<sup>6</sup>

The neglect of residual CCA-treated timber in Australia and overseas demonstrates the veracity of that statement. Any future health problems likely to emerge from leaching poisons may take many years to manifest

themselves, as was the case with asbestos and lead-based paints.<sup>7</sup> Past experiences and recent warnings and concerns, have been ignored; however, they could have provided sufficient impetus for regulatory bodies and industry members to implement precautionary measures. Reductions in any unnecessary exposure to the potentially harmful effects of residual CCA-treated timber and possible future compensation payments would, in effect, have been precautionary measures for government and industry alike.<sup>8</sup>

Industry, however, interprets approval of CCA re-registration as follows:

The report allows CCA treated timber to continue to be used in the vast majority of applications and reinforces its status as a safe, durable and inexpensive way to preserve wood for outdoor uses.<sup>9</sup>

This negates any necessity to curtail its manufacture or provide precautionary advice for ongoing use of residual products.

#### OTHER DANGERS - BUSHFIRES AND SOIL CONTAMINATION

Potential harm from CCA-treated timber is not limited to direct contact exposure, although this appears to be a focus in overseas research. A problem connected to, but frequently unacknowledged by Australian government authorities and the timber-preserver industry is the additional risks residual CCA-treated timber structures generate during a bush fire. CCA chemicals, released when treated-timber burns, can increase the

public's exposure to harm during bushfires. At the Launceston Firewood Conference presenter John Todd cautioned never to burn CCA-treated wood since '[a]rsenic becomes arsenic pentoxide which is extremely toxic and carcinogenic.'<sup>10</sup> The CSIRO website advises that '[p]articular caution is needed if fighting a fire in CCA-treated timber, because of the arsenine gas liberated. Breathing apparatus may be required.'<sup>11</sup>

Despite their name, bush fires are not confined to the natural 'bush' environment. They frequently occur in the built environment where CCA-treated timber has been used without limitations, for balconies, fencing, landscaping and house construction. Responsibility for public education and management of bushfires in New South Wales is spread across three different government agencies, the State Rural Fire Service, NSW Fire Brigades and Federal Emergency Management Australia; each agency operates under its own legislation.<sup>12</sup> According to the McCleod *Inquiry into the Operational Response to the January 2003 Bushfires in the ACT*:

The fires and associated firestorm that reached suburban Canberra resulted in four deaths (plus injuries to civilians), loss of 501 houses (plus damage to over 300 houses), 160,000 hectares of burnt land (almost 70 per cent of the Australian Capital Territory) and major loss of government infrastructure and facilities including the Mount Stromlo Observatory.<sup>13</sup>

A Report emanating from the House of Representatives Select Committee of Inquiry into the 2002/3 Australian bushfires states that:

it is important for us to remember that bushfires will always be a part of life in Australia – we cannot avoid them. At best we can only reduce risk.<sup>14</sup>

The excessive, unregulated use of products containing dangerous chemicals such as CCA-treated timber has been neglected as a source of additional, unnecessary risk to humans,<sup>15</sup> as well as animals and the environment during bushfires. According to Hullinger et al, in the United States in 1998, seven cows developed arsenic toxicosis from ingesting ‘ashes from burned posts treated with an arsenic-containing preservative [CCA].’ Four of the seven cows died within a 48-hour period.<sup>16</sup> Whilst the APVMA Review acknowledges the cattle’s arsenic-induced sickness from ingesting ashes containing CCA, it fails to disclose their deaths.<sup>17</sup> Meanwhile the combination of fire with existing CCA-timber structures has the potential to significantly increase the harmful effects of bushfires far into the future. Recent research by Tame, Dlugogorski and Kennedy into ash residues taken from burnt untreated and CCA-treated pine revealed an increased ‘presence of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans (PCDD/F) in the ash residue of CCA-treated pine.’<sup>18</sup> According to Lansbury Hall and Beder these are ‘well-known atmospheric pollutants’.<sup>19</sup> Yet the evidence of residual treated timber’s potential to cause additional harm during bushfires was ignored in the APVMA’s assessment process.

Members of the general public are unlikely to be provided with any warnings of the additional hazards that CCA-treated timber generates for them, their families, animals and environment in the event of a bushfire.

Such information is rarely, if ever, provided by those advertising CCA-treated timber as a multi-purpose, durable, suitable and safe building material.<sup>20</sup> The APVMA Review stated:

The potential for unintended harmful environmental effects can arise from contamination during the treatment process, leaching of arsenic from treated timber into soils and water, and disposal or burning of discarded timber.<sup>21</sup>

Yet the extent of harm generated by the inadvertent burning of residual treated timber during bushfires and house fires in Australia remains unknown. Despite acknowledging some potential dangers, government authorities have failed to address the needs for further research, and for educating the general public about the potential additional hazards. These omissions demonstrate a lack of duty of care to its citizens.

Most research into CCA-treated timber has investigated the likelihood and effects of leaching,<sup>22</sup> with most focus being on leaching of arsenic,<sup>23</sup> although leaching of copper and chromium has been identified.<sup>24</sup> The existence of soil contamination from arsenic in areas of close proximity to *in situ* structures, below, beside and under the treated timber is generally acknowledged.<sup>25</sup> However, due to the restricted nature of the contamination, concerns about potential hazards to young children have generally been dismissed. Yet the presence of additional arsenic in the soil clearly indicates that the poison is not ‘properly fixed’ within the structure. Not only does it increase the background arsenic levels in the soil, with environmental

consequences not yet fully understood,<sup>26</sup> it also poses risks to young children who play in the soil.<sup>27</sup>

Evidence of soil contamination should act as a warning of a potential environmental hazard. A recent research project by Khan et al into the effects of arsenic-leaching cites evidence from previous studies indicating that the presence of in-service CCA-treated timber products increases levels of arsenic in both soil and groundwater.<sup>28</sup> Soil contamination should act an indicator of increased risk of exposure for young children.<sup>29</sup> Young children who play on and around CCA-treated structures are not only put at risk from the dislodgeable residue toxins on the surface of *in situ* structures, they are at risk from the soil surrounding the structures. This is especially relevant given their propensity to try and lick or eat most things they have contact with including CCA-treated timber play equipment and surrounding contaminated soil and sand.<sup>30</sup> Lack of direction by the APVMA concerning existing play equipment has led some parents, as well as authorities responsible for the well-being of their young charges to conduct their own investigations.

### LOCAL STUDY

Prior to the March 2005 report on CCA- treated timber the problem of soil contamination surrounding play equipment was an issue raised in Healesville, Victoria . Parents' concerns for their children's health instigated an investigation by Keith Loveridge of the Croydon Conservation Society into soil content surrounding CCA-treated play equipment at Queens Park

Kindergarten, Haig Street Kinder and Badger Creek Pre-school sited on Yarra Ranges Local Council-owned land.<sup>31</sup> The Croydon Conservation Society has been active in identifying concerns about CCA-treated timber, lodging a submission to the APVMA Review in February 2004 with recommendations that:

CCA treated pine structures to be removed from publicly accessed areas and replaced with acceptable alternatives such as steel or recycled plastic. This includes fencing, children's playground equipment, sheds, cubby houses, bollards etc.<sup>32</sup>

Following Loveridge's findings, of 'elevated levels of arsenic', along with the APVMA's decision to prevent CCA-treated timber from being used to manufacture future playground equipment, the local media responded with substantial coverage of the issues raised. These included Loveridge's claim that despite being elevated, arsenic levels:

were within acceptable Australian guidelines and authorities considered them safe but if similar levels had been found in an American or European playground action would have been taken immediately.<sup>33</sup>

Subsequently, Linda Fabb, a 'concerned-parent-activist',<sup>34</sup> began lobbying the Kindergartens and the Local Council for the removal of CCA-treated playground equipment. Kinderlink management, responsible for Queens Park Kindergarten, responded by claiming removal costs were prohibitive;

that ‘large scale funding will be required to replace existing equipment’; that ‘financial help was required to carry out thorough soil tests...’<sup>35</sup> and by ‘seeking advice from the different bodies involved.’<sup>36</sup> These ‘bodies’ included ‘the shire, the CSIRO and the APVMA.’<sup>37</sup> The CSIRO responded with the services of Ensis,<sup>38</sup> a joint CSIRO and Scion research initiative that is promoted as comprising ‘large expert teams to tackle complex problems and to help the sector to remain globally competitive’,<sup>39</sup> to assist the Healesville and Badgers Creek communities: population 5416 and 1398 respectively.<sup>40</sup>

The appointed researcher was Laurie Cookson. He is a member of the Australasian Wood Preservation Committee, the Timber Preservers Association of Australia technical committee, is Vice Chair of Section 1 (Biology) in the International Research Group on Wood Preservation, and a member of the Australian Standards TM6 (Wood Preservation and Durability)<sup>41</sup> committee.<sup>42</sup> He is also the researcher/writer for CSIRO Forests and Forestry Products, responsible for producing the CSIRO’s web-page fact sheet, ‘Safety of timber treated with CCA preservative’.<sup>43</sup> The CSIRO, itself, has been under increasing pressure over recent years to draw a fraction of its funding from the private sector. Although the CSIRO still retains, at this stage, an outstanding reputation for scientific integrity with the Australian public, this reputation can be expected to erode as commercial goals influence the objectivity of its research.<sup>44</sup>

The Cookson investigation resulted in *Technical Report 151*, published on

the CSIRO website 'with permission from Kinderlink Incorporated.'<sup>45</sup> The report concludes:

There does not appear to be any need to alter the playground equipment at the Healesville preschools on the basis of health risks from arsenic.<sup>46</sup>

Local media<sup>47</sup> cited Kinderlink management as saying '[w]e have complete confidence in the results from the soil testing done by the CSIRO.' However, neither the parents nor the Kindergarten managers were advised about any uncertainties associated with soil samples. W.H. Lock, in his article 'Composite Sampling' states:

There are always uncertainties associated with the collection of samples. Keith (1990) expressed concern about the representativeness of samples in heterogeneous materials such as soils: "uncertainties associated with the representativeness of these types of samples frequently far exceed those inherent in their collection and analysis."<sup>48</sup>

Yet the disclaimer attached to the Ensis report states:

Neither Ensis nor its parent organisations, CSIRO and Scion, or any of its employees, contractors, agents or other persons acting on its behalf or under its control accept any

responsibility or liability in respect of any opinion provided in this Report by Ensis.<sup>49</sup>

Not only is this report written with the assumption that there are safe levels of arsenic exposure for children, it also fails to provide a balanced account of all available research. In the *Annual Review of Public Health* Lave and Ennever claim that:

Low-level exposure is an area of vast uncertainty and ignorance where scientists can rely, at best, on only partial understanding of toxicity. There is no basis for assuring the public that absolute safety has been proven.<sup>50</sup>

The Ensis report neglects any research or assessment methodology that has not been favourable to the ongoing close-contact use of CCA-treated timber. Of greatest significance: it fails to inform readers of current *scientific uncertainty* regarding the dangers of residual CCA-treated timber whilst denying any liability for the information provided.

There was no investigation of the dangers of direct contact with CCA-treated timber. No ‘wipe tests’<sup>51</sup> were undertaken by the researcher. The Ensis report neglects US evidence where:

At least seven studies from [US] state health departments, the wood industry, university researchers, federal agencies and independent consumer test programs show that, on average,

16 times more arsenic rubs off the surface of the wood than [US] EPA allows in a 6-ounce glass of water.<sup>52</sup>

It also ignores the findings of Environmental Working Group (EWG) analysts ,Renee Sharp and Bill Walker, contained in *Poisoned Playgrounds: Arsenic in 'Pressure Treated' Wood*, and included in a petition to the U.S. Consumer Product Safety Commission 'to ban arsenic-treated wood in playground equipment and to review its safety for use in other consumer items.'<sup>53</sup> Their findings revealed that:

In less than two weeks, an average five-year-old playing on an arsenic-treated playset would exceed the lifetime cancer risk considered acceptable under [U.S.] federal pesticide law.<sup>54</sup>

The Ensis report also fails to recognise the cumulative effects of ingesting arsenic through soil as well as from timber-surface contact; or the cumulative effects from frequent playing. Finally, the report failed to acknowledge that:

There are no suitable studies conducted under conditions applicable to Australia that could be used to estimate a child's exposure to the components of CCA leached from CCA-treated wood.<sup>55</sup>

The omission of the researcher's connections to the timber preserver and timber industries demonstrated a lack of ethical responsibility towards all

those who would subsequently use the research findings to inform their decision-making regarding the use of play equipment.<sup>56</sup> As it stands the Ensis report encourages the public, including suppliers of childcare services and facilities, to continue allowing young children to play on and around the equipment, based on an assumption that a ‘value-free expert’ has approved the safety of its on-going use.

The CSIRO has used the study to support its claim that CCA is safe. Under the heading ‘Existing structures’ on its CCA ‘safety tips’ web page it states, ‘[o]ne study by Ensis in some local kindergartens suggested that playground equipment would not pose a health risk due to arsenic.’<sup>57</sup> Nevertheless, the Yarra Ranges Local Council - following media coverage, extensive lobbying by unconvinced parents, and a submission to Council on 9 August 2005, (See Appendix 3) - agreed, in principle, to the gradual removal and replacement of CCA-treated structures from 29 pre-schools and 17 maternal and child health clinics on Council land.<sup>58</sup> However, Council has claimed that the estimated financial costs, \$375,000 for removal and replacement, are too prohibitive to move quickly.<sup>59</sup> Healesville parents, in order to fast-track removal, have been forced to develop voluntary ‘working bees’ to help dismantle the structures themselves.<sup>60</sup>

It is likely, that in order to protect the well-being of very young children and future generations, this parental pressure will have to be replicated around Australia. In other words, concerned citizen groups from each Local Council area will be required to respond separately to the problem of existing CCA-treated timber structures. The opportunity to lobby at an

Australia-wide collective level for implementation of the precautionary principle, to encourage removal of existing CCA-treated timber structures, has been effectively curtailed by the dispersal of residual product responsibility to Local Councils.

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## **CHAPTER 5**

### **Waste Disposal**

The uncontrolled, unregulated use of CCA-treated timber for a range of building activities and manufacturing purposes means that when these products are no longer in service they will then become a large source of waste. Due to their dangerous chemical contents they can not be safely managed through burning, recycling or re-use. When painted or stained their harmful origins can be hidden, increasing the likelihood of unintentional, but dangerous use of inappropriate waste management methods. The ongoing production of treated wood, coupled with an artificially-induced long 'working life', suggests that the disposal of residual CCA-treated will continue to generate waste management problems long after the product's original usefulness is over.

#### **PRODUCT STEWARDSHIP**

The Organization for Economic Co-operation and Development (OECD) stated that globally:

Producers have a responsibility to promote the safe management of substances they produce from their design through production and use to their final disposal or elimination (including hazardous wastes), consistent with the principle of "product stewardship".<sup>1</sup>

The concept of producer responsibility from ‘cradle-to-grave’ has huge precautionary potential. The term ‘cradle-to-grave’ is used for Life-Cycle Assessments whereby ‘all the components and environmental impacts associated with a product, process or activity during its lifetime’ are included.<sup>2</sup> Its successful application, however, is dependent upon several factors. These include the integration of producers of chemicals and manufacturers of chemical-containing end-products *within* the same product stewardship scheme; and government commitment to adopt leadership roles and assume responsibility for producers’ participation in product stewardship schemes.

The APVMA Review, despite acknowledging the absence of adequate technology for safe management of potentially harmful residual CCA-timber waste only made recommendations for improving disposal of CCA-preservatives and their containers.<sup>3</sup> By maintaining a separation of the residual product, treated timber, from its contents, CCA-preservative, the APVMA effectively negated any necessity for application of the precautionary principle to residual products and their disposal. The inclusion of the precautionary principle in decision-making should, however, ensure that government approval is contingent upon those manufacturers - included in the whole life cycle of a product - demonstrating the availability and accessibility of safe disposal options for the ‘treated’ residual products. Such precautionary measures would ensure some protection for the environment following disposal, as well as encouraging industries to develop either safer products or suitable disposal technology.

The timber industry claims that CCA-preservative ‘remains one of the outstanding advances in wood protection science in the 20th century’<sup>4</sup> and, that recent APVMA amendments will present few consequences for the industry since ‘[t]he restricted applications comprise a small portion of the treated timber segment of the industry (about 15%).’<sup>5</sup> But the consequences of this continued large-scale use of CCA preservative will result in massive waste disposal problems. According to a 2004 U.K. report on treated timber:

Biological detoxification of timber and subsequent wood deterioration would return the treated wood to the carbon cycle but the heavy metals applied for preservation must be considered as a permanent fixture in the environment unless removed and/or captured by another process.<sup>6</sup>

No such process or commercial facility is available to recover the toxic heavy metals. As it stands now the consequences emanating from the leakage of copper, chromium and arsenic will be felt long into the 21<sup>st</sup> century, and possibly beyond.<sup>7</sup>

The Australian Environment Protection and Heritage Council claims that product stewardship, or ‘cradle-to-grave’<sup>8</sup> product management, is ‘aimed at minimizing waste, reducing toxicity and improving resource efficiency.’<sup>9</sup> In New South Wales, the disposal component of product stewardship is managed within the NSW Department of Environment and Conservation (DEC) under the Environment Protection Authority’s (EPA) program of Extended Producer Responsibility (EPR). The EPR policy was introduced

and implemented in accordance with Part 4 of the NSW *Waste Avoidance and Resource Recovery Act 2001* with:

[T]he guiding principle that Government will not intervene where nominated industry sectors are making clear progress towards implementing programs to reduce problem wastes, but can act decisively when they are not.<sup>10</sup>

The EPA has stated that due to their toxic nature some industrial and hazardous wastes, such as asbestos and polychlorinated biphenyls (PCBs), or by-products from industrial processes, such as hydrochloric and sulfuric acids, are unsuitable for EPR schemes.<sup>11</sup> Direct regulatory mechanisms such as the *Protection of the Environment Operations Act 1997* and chemical control orders under the *Environmentally Hazardous Chemicals Act 1995* are the methods used for their control. However, despite their known toxicity<sup>12</sup> CCA-preservatives and CCA-treated timber are *not* regulated waste.

CCA preservative products, as agricultural/veterinary (Agvet) chemicals,<sup>13</sup> are deemed priority waste.<sup>14</sup> An EPR scheme is in place for AgVet chemicals, providing access to ‘industry-funded’ ChemClear and the non-reusable container collection service DrumMUSTER for improved waste management and environmental protection.<sup>15</sup>

Residual CCA-treated timber products, however, are classified as ‘lower priority wastes of concern’.<sup>16</sup> Although containing pesticides, disposal

restrictions for pesticides, or AgVet chemicals, do not apply to treated timber.<sup>17</sup> This regulatory separation of the chemicals - CCA-preservative, from the manufactured product CCA-treated timber - generates some negative disposal consequences. Despite mounting evidence that CCA-treated timber has the potential to pose a threat to national human health and the environment,<sup>18</sup> in Australia, direct management of its disposal remains the responsibility of Local Governments.

In New South Wales, many EPR schemes are still in the early stages of policy development; this is especially true for managing disposal of CCA-treated timber. In accordance with the *Waste Avoidance and Resource Recovery Act 2001* these remain voluntary, non-regulated schemes since :

NSW and other State governments have expressed strong support for voluntary national product stewardship in recognition that this provides flexibility and fosters innovation by industry and this is an incentive for them to participate.<sup>19</sup>

There is little evidence of Australian industry participation in reducing the amount of CCA preservative being produced to treat timber; nor of concerted efforts to reduce the amounts of CCA-treated timber being manufactured. This is despite the availability of alternative preservative products for treating timber. These treatment products include Alkaline Copper Quaternary (ACQ), Light Organic Solvent Preservatives (LOSP) and Copper Azole (CA).<sup>20</sup> The lack of reduction in CCA preservative being produced, and an apparent resistance to encourage use of other timber

treatments both impact upon the quantity of CCA-treated timber eventually destined for landfill sites. Despite discussions in December 2004 with industry representatives - including the Timber Preservers Association of Australia (TPAA), the Australasian Treated Timber Coordination Group (ATTTCG), and the Australian Timber Importers Federation - there remains 'no product stewardship scheme in place' for existing CCA-treated timber.<sup>21</sup>

### IDENTIFICATION PROBLEMS

According to the EPR Expert Reference Group (ERG):

It is estimated that up to 350,000 tonnes of wood waste is disposed of to landfills in the Sydney Metropolitan Area annually. The quantities of CCA treated timber being landfilled are unknown, but it is expected to grow significantly over the coming years as structures built with CCA treated timber are demolished. It is, however, difficult to identify treated timber at the end of its life (e.g., it may have been painted). This makes it difficult to separate and recover non-treated timber from mixed timber wastes.<sup>22</sup>

Currently treated and untreated timbers are stockpiled together at local landfills since they are often indistinguishable from one another when aged, painted or stained. There is limited public information available regarding safe disposal. As a low-priority waste of concern, residual treated-timber 'will be in the waste stream for many years.'<sup>23</sup> Any unsuitable disposal, by

inadequately trained landfill workers and an uninformed public, ‘can cause localised air emissions’ during inappropriate incineration,<sup>24</sup> leachate problems in unlined landfills; or low-level contamination if applied as mulch.<sup>25</sup> Without precautionary measures, such as educating the public and training landfill personnel, additional contamination at landfills will continue.

Unlike most other ‘lower-priority-wastes’ - such as household hazardous and chemical wastes, polyvinyl chloride (PVC), end-of-life vehicle residuals, cigarette litter, and office paper - residual treated timber is *not* easily identifiable. The EPR ERG’s report states that the ‘tell-tale green tinge fades over time’ and a structure’s CCA-treated timber origins can be masked through painting or staining.<sup>26</sup> There is no technology available ‘to identify treated timber in mixed timber wastes in order to separate it from recoverable non-treated timber waste.’<sup>27</sup> It contaminates similar, but untreated, wood products that could otherwise be recycled. Its highly toxic chemical contents limit safe disposal options. The consequences are an increasing, unnecessary quantity of non-reusable, non-recyclable, non-burnable timber waste clogging-up inappropriate disposal sites. This lack of precautionary foresight into potential long-term consequences stemming from residual treated timber can be found in recent recommendations for short-term interventions coming out of Australia and overseas.

Current advice for handling CCA-treated timber - provided by the timber and timber preserver industries, the APVMA, the CSIRO, some international advisory bodies, as well as several Australian government

health and environment websites - suggests that, as an '*added precaution*' to 'hand washing after contact', the treated timber can be sealed or painted.<sup>28</sup> An interim report on the US Environmental Protection Agency's research-in-progress into the effectiveness of sealants in reducing leachates from CCA-treated timber currently suggests that annual application of sealants will reduce (but not prevent) dislodgeable arsenic from the timber.<sup>29</sup> This advice, whilst likely to provide some level of protection to young children as long as paint or sealants are regularly re-applied and maintained, is likely to contribute to future identification problems during disposal.

The short-term human health benefits would indicate that painting or staining is an appropriate precautionary measure, however, this recommendation is likely to generate unnecessary long-term environmental effects. Thus the recommendation to paint or stain CCA-treated timber conflicts with the IGAE's interpretation of the precautionary principle whereby it should be applied for the improvement of community well-being *as well as* environmental protection in order to 'benefit future generations.'<sup>30</sup> Alternative solutions for reducing the potential, but unproven, harmful effects of products should not generate similar or additional possible harmful outcomes.<sup>31</sup> As discussed in Chapter 3, painting and sealing recommendations place focus on temporary, short term measures. This, in effect, draws attention away from the potential for long-term damage to the environment posed by *in situ* structures. The potential for negative environmental impacts was identified in the APVMA Review. Under sub-heading 'Risks to the environment from CCA-treated timber in service' the APVMA Review acknowledges that leaching occurs and that

some arsenic, copper and chromium leachates may directly enter drains and reach aquatic areas.<sup>32</sup> The dilemma arising from seeking solutions that attempt to minimise risk of harm from existing structures suggests that there are few short-term precautionary measures available to manage the dangers inherent in residual chemical-containing products that address both the health of the public and the environment.

#### NEGLECT OF WASTE MINIMISATION

Despite their contributions to waste management problems, and delays in finding solutions, industry members were recently given a further extension,<sup>33</sup> until October 2006, to present a report on implementation of the following to the NSW Environment Minister:

- Development of processes to identify and separate treated timber from mixed timber wastes.
- Programs to educate consumers on proper disposal of treated timber.
- Assessment of options for the use of more benign alternatives to treat and preserve timber.
- Action to develop end-market uses for recovered treated timber.<sup>34</sup>

It should be noted that implementation of the above by the due date is not mandatory. Also, the timber treatment industry has, so far, been exempted

from paying for damage that will continue long after the product's usefulness. The Polluter Pays Principle has not been included in the EPR or Product Stewardship requirements for action, despite having 'been agreed to by all OECD countries including Australia.'<sup>35</sup>

Despite earlier government acknowledgement that general waste minimization initiatives were necessary,<sup>36</sup> disposal is considered the appropriate management tool for CCA-treated timber waste. The disposal option means that potentially hazardous products will still be manufactured whereas the minimization option would be more in accordance with the precautionary principle. If the production of CCA-treated timber is continued then heavy metals extraction is necessary for conversion of treated timber back to a reusable state.

Overseas research is underway seeking technology appropriate for managing CCA-treated timber waste. This includes seeking processes to recover and reuse the copper, chromium and arsenate from used CCA-treated timber.<sup>37</sup> It is of concern, however, that, without the benefit of precautionary measures in place to reduce harm for the 'whole-of-life' of CCA-treated timber, safer disposal technology will, in effect, encourage its ongoing manufacture and use. Yet, even development of new technologies may not rid the environment of the toxic presence of residual CCA-treated timber waste. As Manny C. Calonzo, spokesperson for The Global Alliance for Incinerator Alternatives (GAIA) claims: No magic technology will make waste disappear.<sup>38</sup>

Governments are well aware of the need for precautionary intervention. For instance, in 2002 the Australian Bureau of Statistics advised that land degradation may occur without implementation of measures to prevent potentially dangerous substances from contaminating landfill sites and surrounding areas.<sup>39</sup> This advice has generally been overlooked by governments. For instance the formal segregation of industries responsible for residual products containing toxins is not compatible with established Australian product stewardship and extended producer responsibility schemes. Recommendations for safer production methods for goods containing toxic components ignore their long-term effects. Furthermore, current 'cradle-to-grave' management partnerships between government and industry transfer accountability and responsibility for precautionary measures back to industry, which poses additional risks to the public.

In the case of CCA-treated timber, industry has been permitted to formulate, in its own time,<sup>40</sup> at environmental and public health expense, its own product stewardship and disposal management plans for residual products. Time-frames for production of industry management plans continue to be extended with no apparent penalties imposed for non-compliance.

According to the EPR report:

Industry sectors vary in the degree to which they are currently addressing the end of life management of their products...

Other sectors [including the timber preserver industry] have relatively underdeveloped approaches at this stage.<sup>41</sup>

In this respect all levels of Australian government have failed to apply the precautionary principle to toxin-containing residual products. Consequently the residual products of ongoing CCA-treated timber production will continue to accumulate and contaminate the environment long into the future.

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## CONCLUSION

In the New South Wales Parliament on Tuesday 14 October 2003, approximately eighteen months prior to release of the APVMA Review of CCA timber treatment products, Member of the Legislative Council, Ms Lee Rhiannon raised concerns about existing structures treated with CCA preservatives. She stated:

The use of CCA as a treating agent needs to be banned immediately to protect workers, the environment and the general public, and urgent measures must be put in place to replace existing CCA timbers, particularly in high-risk locations such as children's playgrounds.<sup>1</sup>

This call for banning CCA preservatives has been ignored. They continue to be pressure-pumped, or 'fixed' into timber to increase the service life of the wood. Despite ongoing, plausible concerns about the dangers of leaching residual products, no precautionary measures have been put in place to reduce the likelihood of such harm.

The failure of government authorities to apply the precautionary principle to residual products has ensured that potential long-term risks to human health and the environment remain. Consequently young children continue to be exposed to poisons that leach onto the surface of residual CCA-treated structures and the contaminated soil surrounding these structures. The environment, its soil, water, flora and fauna remain exposed to potential

negative effects emanating from additional arsenic, copper and chromium accumulating in, under and around residual *in situ* CCA-treated structures as well as those disposed as waste. Humans, animals and the environment will continue to experience additional, unnecessary risk during bushfires due to the presence of residual CCA-treated timber.

On the one hand, for the timber preserver industry and its workers, CCA is a dangerous product, which somehow becomes less-dangerous when pressure-packed into timber, although harmful enough to still require Codes of Practice and Guidelines for its safe handling in work-related settings. On the other hand, the general public are led to believe that harm disappears when it is their turn to use the treated timber.<sup>2</sup> This is despite increasing evidence that chemicals continue to leach from the timber immediately following ‘fixation’, during use, when *in situ* and after disposal to landfill sites.<sup>3</sup>

In the past industry and government authorities appear to have encouraged a public understanding that between manufacture and public use any harmful effects become insignificant. Their claims of safety have, however, been challenged by the Australian Pesticides and Veterinary Medicine Authority’s precautionary decision to restrict future uses of CCA-treated timber in products requiring human contact. This challenge, however, has been a half-hearted attempt to reduce risks associated with exposure to CCA-treated timber’s dangerous chemicals. Government failure to investigate, assess or even consider the dangers attributed to residual

products demonstrates a lack of commitment to the precautionary principle and sustainable development.

Ignoring the impacts already being experienced in disposal of residual products effectively ensures ongoing, future manufacture of the source products. Failure by government to hold producers responsible for the 'whole-of-life' of their products reduces Product Stewardship and Extended Producer Responsibility Schemes to token measures, applied as a last resort, according to industry's willingness to co-operate.

The absence of instituted responsibility and liability for residual products containing toxins has contributed to neglect of the dangers they pose to human health and the environment. An all-encompassing government institution, empowered to balance human, environmental and economic needs within a framework of precaution and protection for a nation's environment and people,<sup>4</sup> is necessary to capture the existing diverse and fragmented range of regulation and legislation that is currently used. This current fragmentation works against the concepts of life-cycle producer responsibility and sustainable development. Industry is empowered to dictate the terms of their own support. Lack of instituted responsibility, when combined with corporate legal requirements to make profits for shareholders has enabled governments to ignore residual products and their negative effects on the environment and public health.<sup>5</sup>

Governments have failed their communities by not demanding that industry provides evidence that their products are safe. The burden remains with

communities to prove they are dangerous. In this case neglect of the precautionary principle relegates a nation's citizens to uncertain futures as potential victims. They remain vulnerable to unregulated, harmful exposure; uninformed or misinformed about the potential for harm that in turn limits their opportunity to make safer choices for themselves, their children and their environment. As such all levels of government are failing their citizens by not demanding that industry makes every attempt to either:

- demonstrate their products, including residual products, are safe; or
- inform the general public of their potential to harm.

The problems and consequences stemming from residual products and their potential to harm the public and the environment whilst in use and following disposal, should serve as a significant example to regulatory authorities of the necessity to view *all* aspects of a product's lifecycle from a precautionary perspective. This includes:

- formal acknowledgement of chemical producers' contributions to end-products containing the toxins;
- evaluation of possible short-term and long-term consequences;
- obtaining and acting upon advice from a variety of sources, including scientific findings and human experiences;

- investigation into previously unforeseen, potentially harmful outcomes of the technology;
- community engagement, through provision of sound advice acknowledging potential dangers.

Lack of an integrated product management scheme for producers of the chemicals, the treated timber and the end products restricts opportunities to implement precautionary measures for residual products; measures that would deal with the ‘whole-of-life’ aspects. This includes national research into the safety and possible short-term and long-term consequences stemming from residual products, the technology, and the chemicals.

Neglect by government to provide precautionary intervention on behalf of the public and the environment has effectively enabled the timber-preservative and timber-preserver industries to continue to profit from the production and marketing of CCA-treated timber at the expense of the public and the environment. All levels of Australian government have reneged on their commitment to the InterGovernment Agreement on the Environment (IGAE) to include the precautionary principle in their decision-making when an activity raises threats of harm to human health and the environment. This is also a violation of international commitments towards promoting sustainable development.

It is clear that the precautionary principle is supposed to be applied to existing products and their disposal, as well as new products. Although use and management of the chemicals may be reviewed and amended, neglect in

applying the precautionary principle to residual products and their disposal will ensure the toxic components will continue to threaten harm to human health and the environment, long after they have outlived their original usefulness and purpose.

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## APPENDIX 1

### The Precautionary Principle: A Working Definition

When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm.

*Morally unacceptable harm* refers to harm to humans or the environment that is

- threatening to human life or health, or
- serious and effectively irreversible, or
- inequitable to present or future generations, or
- imposed without adequate consideration of the human rights of those affected.

The judgement of *plausibility* should be grounded in scientific analysis. Analysis should be ongoing so that chosen actions are subject to review.

*Uncertainty* may apply to, but need not be limited to, causality or the bounds of the possible harm.

*Actions* are interventions that are undertaken before harm occurs that seek to avoid or diminish the harm. Actions should be chosen that are proportional to the seriousness of the potential harm, with consideration of their positive and negative consequences, and with an assessment of the moral implications of both action and inaction. The choice of action should be the result of a participatory process.’

COMEST: World Commission on the Ethics of Science and Technology (2005). The Precautionary Principle. Paris, United Nations Educational, Scientific and Cultural Organization: p. 14.

## APPENDIX 2

### The Wingspread Statement on the Precautionary Principle

This statement was drafted and finalized at a conference at the Wingspread Conference Center, Racine, Wisconsin, USA, which took place 23-25 January 1998. The 32 authors are listed beneath their following statement:

The release and use of toxic substances, resource exploitation, and physical alterations of the environment have had substantial unintended consequences on human health and the environment. Some of these concerns are high rates of learning deficiencies, asthma, cancer, birth defects and species extinctions; along with global climate change, stratospheric ozone depletion; and worldwide contamination with toxic substances and nuclear materials.

We believe existing environmental regulations and other decisions, particularly those based on risk assessment, have failed to adequately protect human health and the environment, as well as the larger system of which humans are but a part.

We believe there is compelling evidence that damage to humans and the worldwide environment, is of such magnitude and seriousness that new principles for conducting human activities are necessary.

While we realize that human activities may involve hazards, people must proceed more carefully than has been the case in recent history. Corporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to all human endeavors.

Therefore it is necessary to implement the Precautionary Principle: Where an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.

In this context the proponent of an activity, rather than the public bears the burden of proof.

The process of applying the Precautionary Principle must be open, informed and democratic, and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.<sup>1</sup>

Wingspread conference participants:  
(Affiliations noted for identification purposes only.)

- Dr. Nicholas Ashford, Massachusetts Institute of Technology
- Katherine Barrett, Univ. of British Columbia
- Anita Bernstein, Chicago-Kent College of Law
- Dr. Robert Costanza, University of Maryland
- Pat Costner, Greenpeace
- Dr. Carl Cranor, Univ. of California, Riverside
- Dr. Peter deFur, Virginia Commonwealth Univ. Gordon Durnil, attorney
- Dr. Kenneth Geiser, Toxics Use Reduction Institute, Univ. of Mass., Lowell
- Dr. Andrew Jordan, Centre for Social and Economic Research on the Global Environment, Univ. Of East Anglia, United Kingdom
- Andrew King, United Steelworkers of America, Canadian Office, Toronto, Canada
- Dr. Frederick Kirschenmann, farmer
- Stephen Lester, Center for Health, Environment and Justice
- Sue Maret, Union Institute
- Dr. Michael M'Gonigle, University of Victoria, British Columbia, Canada
- Dr. Peter Montague, Environmental Research Foundation
- Dr. John Peterson Myers, W. Alton Jones Foundation
- Dr. Mary O'Brien, environmental consultant
- Dr. David Ozonoff, Boston University
- Carolyn Raffensperger, Science and Environmental Health Network
- Dr. Philip Regal, University of Minnesota
- Hon. Pamela Resor, Massachusetts House of Representatives
- Florence Robinson, Louisiana Environmental Network
- Dr. Ted Schettler, Physicians for Social Responsibility
- Ted Smith, Silicon Valley Toxics Coalition
- Dr. Klaus-Richard Sperling, Alfred-Wegener- Institut, Hamburg, Germany
- Dr. Sandra Steingraber, author
- Diane Takvorian, Environmental Health Coalition
- Joel Tickner, University of Mass., Lowell
- Dr. Konrad von Moltke, Dartmouth College
- Dr. Bo Wahlstrom, KEMI (National Chemical Inspectorate), Sweden
- Jackie Warledo, Indigenous Environmental Network

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<sup>1</sup> (1998). Wingspread Statement on the Precautionary Principle. Wingspread Conference, Racine, Wisconsin, U.S.A., Global Development Research Center.

## APPENDIX 3

### **Submission to Shire of Yarra Ranges Council by Linda Fabb**

#### **Meeting 09/08/05**

#### **Copper Chrome Arsenate (CCA) Treated Playground Equipment**

Good evening Lord Mayor, Councillors

My name is Linda Fabb and I address this meeting on behalf of Kim Wandin and myself, as parents concerned about our children's exposure to arsenic, leached from CCA treated timber in Kindergartens and playgrounds.

From extensive research in this area we have come to the firm belief that this product presents a significant risk to our children's health, and should be removed.

We are delighted to see this on the agenda and encourage you all to do what ever it takes to get it out of the SYR.

Arsenic is a well-known carcinogen resulting in lung liver and skin cancer.

The toxicity of Arsenic in humans is unquestionable.

After researching this issue there is one thing that become glaringly obvious.

There is a "lack of certainty or knowledge" about the long-term effects of leaching arsenic and possible dose related outcomes.

This level of uncertainty exists for a number of reasons

- **1<sup>st</sup> - There is very little scientific consensus about how to analysis the risks posed to our children from playing on CCA treated timber equipment.**

There is great variation in the research methodology used and consequently there is great variation in the end results. For example equations used to assess risk make different assumptions about children's hand to mouth behaviour (Some research says a child putting their hand in their mouth 60 times an hour while other scientists base equations on them doing this once) And it goes on

- **2<sup>nd</sup> - There is very little scientific consensus about risk estimates.**

Standards about risk are different all around the world. Australia has a very high standard of 100mg/kg as an acceptable level of arsenic in soil.

- Sweden – 15mg/kg,
- Florida – 3.8mg kg,
- UK – 10 mg/kg,
- New York – 7.5 mg/kg,
- Washington - 20 mg/kg,
- NZ – 30 mg/kg.

Are we really that sure we have got it right in Australia?

Are our children that different that they can tolerate higher levels of exposure than children in other parts of the world?

- **3<sup>rd</sup> - Much research lacks complete data for analysis, which is important for decision making.**

For example, the testing conducted for KinderLink Inc by the CSIRO only use soil testing rather than timber residue testing to assess the risk.

Soil tests can only provide information on the risk posed when our children play in that soil and little more.

They can not give us information about risk from direct contact with the CCA treated timber it's self.

Despite this, from these seemingly incomplete pieces of Research, we are told the playground does not pose a hazard to our children, even when we know that the same levels would warrant closure in many parts of the developed world.

The DHS fact sheet attached to the agenda continues this lack of certainty by misrepresenting APVMA recommendations. To clarify some points

- The APVMA states they “ *has no regulatory authority over existing structures constructed of CCA treated timber and so has made no recommendation with respect to future action for existing structures.*”
- In relation to painting structures *the APVMA did not provide any definitive advice on whether there are benefits from painting*”.

Industry and Health authorities use this “lack of certainty” as they state “ there is no known or recorded cases of adverse health effects in children from playing on CCA treated timber”.

This is true but only because there has been NO studies done into the long term health effects... Neither are there any studies into the cocktail of copper, chromium and arsenic.

This lack of certainty and consensus is far from reassuring to us as parents.

After all, exactly what is a safe level of exposure to arsenic for our children?

How much is too much in the short term and the long term?

Directive 2002/31/EC from the Commission of the European communities states “that it may be appropriate to consider that **no** threshold exists for carcinogenic effects.” of arsenic

There are no studies that can demonstrate that our children are safe.

We are requesting that council be guided by the precautionary principle in this issue, that is,

Unless, or until.... we know it is safe – don't use it or remove it.

You need to be guided by this principle to ensure that any long term health effects are reduced as much as possible or until evidence is provided that the product is safe.

After all, if it is not safe for future use them **nobody** can tell us it is safe for current use.

As parents we do everything we possibly can to keep our children safe.

On this issue that power lies with you.

Our children are our future, please help us to protect them.