Timber Development Association of NSW

Submission on the Discussion Paper - Technical Guidelines for the Estimation of Greenhouse Emissions and Energy at the Facility-Level

A3P and Timber Development Association of NSW (TDA) welcomes the opportunity to comment on the *Discussion Paper - Technical Guidelines for the Estimation of Greenhouse Emissions and Energy at the Facility-Level.*

We wish to make two points about the Guidelines:

1. Category names of wood/wood waste need to be updated to reflect industry practice and prevent confusion1211221`1`11111
2. Emissions factors for wood in landfill are significantly overestimated

Point 1: Category names of wood/wood waste need to be updated

A number of tables in the Guidelines include the category wood/wood waste in various combinations, sometimes with additional descriptors such as 'dry', 'non-residential uses' or 'residential users'. A listing of the terms used in the Guidelines is included in a table below.

Table	Term
Table 7	Wood/wood waste
Table 16	Wood/wood waste
Table 18	Wood/wood waste (dry) – non-residential uses
Table 18	Wood/wood waste (dry) – residential uses
Table 19	Wood/wood waste (dry)
Table 21	Wood and wood waste
Table 23	Wood and wood waste
Table 61	Wood
Table 62	Wood
Table 63	Wood
Table 65	Wood and wood waste
Table 79	Wood and straw
Table 86	Wood

The terms and combinations are inconsistent and in some cases not-defined. Confusion and 'category shopping' for more favorable emissions factors may result.

The term wood waste is no longer an appropriate term. Wood is no longer a waste if it is utilized as a fuel. Other categories are not defined by the term 'waste' - the most obvious example being *Municipal materials recycled for energy (biomass).*

There is no definition of the term 'dry'. The moisture content of wood is the most critical factor determining the amount of heat that can be obtained through combustion and hence, the emissions factors. Fortunately the timber industry has some terms that may assist in

clarification. We suggest that the term dry be defined as percentage mass calculated on a wet basis in accordance with the Australian Standard AS/NZS 1080.1:1997.

Wood is available in many forms. Harvested trees, forest residues from the harvesting of trees, bark and other green wood residues produced at the sawmill (wood with a high moisture content); sawdust and off-cuts generated after the timber is air-dried (wood with a lower moisture content); residues produced after the wood is kiln-dried, wood from secondary processing (eg., joineries) and seasoned wood from demolition and waste pallet and packaging waste (dry wood); domestic firewood, pellets and briquettes (residential firewood).

As moisture content is such a critical factor, we recommend that the following consistent categories be adopted with the following definitions:

- Wood (green)
- Wood (air-dried)
- Wood (dry)
- Wood (residential uses)

Wood (green) - Wood with a moisture content >30% (calculated on a wet basis) combusted directly for energy. (NB. Includes forest residues and green sawmill residue)

Wood (air-dried) - Wood with a moisture content between 20% and 30% (calculated on a wet basis) combusted directly for energy.

Wood (dry) - Wood with a moisture content ≤ 20% (calculated on a wet basis) combusted directly for energy. (NB. Includes kiln-dry sawmill residue and post-consumer timber and wood products).

Wood (residential uses) - Wood with a moisture content ≤ 20% (calculated on a wet basis) combusted directly for energy on residential premises. (NB. includes domestic firewood, pellets and briquettes)

At this stage, default emissions factors for wood (green), wood (air-dried) and wood (dry) should remain as stated in Table 7 for wood waste – nonresidential uses.

Point 1: Emissions factors for wood in landfill

The emissions factors for wood in landfill in the discussion paper in Table 79 are an overestimate. Recent published and peer reviewed research (Ximenes et al (In Press)) at landfills in Sydney has found:

> *'No significant loss of dry mass was measured in wood products buried for 19 and 29 years, but where refuse had been buried for 46 years, the measured loss of carbon (as a percentage of dry biomass) was 8.7% for hardwoods and 9.1% for softwoods, equating to 18% and 17% of their original carbon content, respectively. The results indicate that published decomposition factors based on laboratory research significantly overestimate the decomposition of wood products in landfill.'*

The researchers found that the mean moisture content of the wood samples ranged from 41.6% to 66.8% - conditions not conducive to further deterioration. There is no reason to suggest that conditions would change radically from that found during the research and hence, no further deterioration or degradation should be expected.[1]

[1] If for some unforeseeable circumstance the landfill conditions were to become aerobic, deterioration could be expected to recommence. However, aerobic decomposition will result in emissions of carbon dioxide which are, as wood is a biogenic material, treated as greenhouse neutral.

The researchers conservatively suggest that the most extreme deterioration found should be adopted as the DOC default value for wood disposed at landfills. That is, 0.18 instead of the current value of 0.43 listed in Tables 62 and 79.

Furthermore, the half-lives estimate of wood in landfills in Table 63. From our understanding these half-lives in the different states are based on adjustments of IPCC guidelines based on Australian cities temperature and precipitation data. We submit that the *Ximenes et al* research is a much more reliable method of estimating the life of timber in landfills in Australia. Based on their findings we submit that the life of wood in landfills is >100 years and table 63 should be adjusted accordingly.

A3P and TDA NSW are aware that the IPCC advises that factors supplied in their guidelines are generic and reporting countries should use their own research and data where they have it. There is clearly a case in this situation for the Department of Climate Change to replace the generic IPCC emission factors for wood in landfill with the conservative emission factors and >100 year life as found by the Australian researchers.

As we realize that these are quite specialised research and concepts, TDA NSW and A3P are happy to arrange a meeting between the relevant staff within the Department of Climate Change and researchers to facilitate changes to the Technical Guidelines.

For more information about this submission, please contact Miles Prosser on 02 6273 8111 or Stephen Mitchell on 02 9279 2366.

References

F.A. Ximenes, W.D. Gardner and A.L. Cowie (In Press) *The decomposition of wood products in landfills in Sydney, Australia*, Waste Management. Available at http://www.sciencedirect.com/science?_ob=PublicationURL&_tockey=%23TOC%236017%239999%23999999999%2399999%23FLA%23&_cdi=6017&_pubType=J&_auth=y&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=9bfc53c2e9c5a6954539fc63c6886b1b

Australian Standard *AS/NZS 1080.1:1997 : Timber - Methods of test - Moisture content*