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INTEROFFICE MEMORANDUM
OUR REF: EMRC-75471

TO	Department of Climate Change
CC	
FROM	Adam Johnson, Executive Manager Waste Management Services EMRC
DATE	19 February 2007
SUBJECT	**COMMENTS ON TECHNICAL GUIDELINES**

The above document has been reviewed, particularly in the context of waste management. Whilst it is noted that the calculation methodology is essentially transposed from the IPCC *Guidelines for National Greenhouse Inventories Volume 5* and thus the methodology unlikely to be open for significant amendment, the following comments are offered nevertheless:

- The question of boundaries needs to be more carefully defined. In particular, where would the greenhouse gas emissions arising from waste collection be attributed to? If attributed to generators, and specifically their fleet, then those corporations with a large fleet servicing a number of municipalities will be "visible" whilst smaller services would be below the reporting threshold. This might create misleading inventories.
- The existing structure would suggest that embedded energy within waste is only to be accounted for at its manufacture. This runs contrary to most of the arguments for recycling, where the recovery of embedded energy is one of the primary benefits of recycling. Indeed, the formulae as structured provide no benefit to those who undertake waste processing independently from a landfill operation. The primary benefit from the proposed formulae would appear to be landfill operators (of whom the EMRC is one), as their diversion of cardboard (for instance) would enable them to reduce their overall GHG emissions. A third party undertaking the same service cannot report any climate benefit, and is only able to gain financial benefit where the diverted materials save in emissions during remanufacture AND the third party can negotiate higher prices on account of these reduced emissions.
- The focus of the guideline exclusively upon landfill is misleading, and sure to be out of date within a relatively short period of time as more waste processing facilities are developed. The Australian technical guidelines should incorporate the IPCC guidelines for "Biological Treatment of Solid Waste" (Volume 5 Chapter 4), obviously modified to suit Australian conditions. Importantly, this guideline states that a waste composting facility may be assumed to generate 0.3 g/kg (wet weight basis) of N_2O. Thus, a 100,000 tonne per year plant would be assumed to produce 30 tonnes of N_2O, or 9,300 tonnes of CO_2e. Under Australian conditions, this may be higher or lower and should be ascertained.
- In terms of specific comment on landfill:
    - Wood within landfill needs a thorough reconsideration. Wood is reported within the literature to be minimally degraded under anaerobic conditions, and requires pre-treatment (such as size reduction) to obtain the sorts of degradation rates cited. A lump of wood can be considered all but totally sequestered. This should be taken into account by modifying the DOC_f for wood to a much lower number than 0.5. Alternatively, and as a minimum, the number used for a dry temperate environment such as WA should be at the lower bound in the IPCC report. This is a 70 year half-life rather than 35 years.

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- Another waste stream that might need consideration is waste that has been digested or composted. This waste presumably has substantially less DOC, and so would contribute to lower overall greenhouse gas emissions. This is understood to be the primary benefit sought from EU laws requiring the pre-treatment of waste disposed of to landfill.
- The oxidation of methane within the landfill cap is listed at 0.1 (10%). This is an area of substantial research internationally, with the actual oxidation dependant upon the cap design and construction. Oxidation percentages in the landfill cap are reported to range from about 10% to 100%, with many in the order of 75%, thus suggesting that the reported value is low.
- Without wanting to unnecessarily complicate the formula, the time over which the landfill is open and not capturing gas is critical to methane generation overall. It might be worthwhile to incorporate some modifications to the formulae that allow for zero gas capture and cap oxidation for the 1-3 years that a typical landfill cell is open.
- A further refinement that might be considered is the operation of a landfill as a bioreactor landfill. This is where specific operational practices are introduced (such as moisture addition) to speed up the waste degradation. This in turn increases gas production, but reduces the length of time over which gas is produced. The bioreactor landfill might be taken into account by adjusting the degradation half-life.
- The data provided suggests that a Western Australian municipal waste landfill with gas capture would be required to report if it ran for 20 years at a little over 100,000 tonnes per year. This would affect every major Perth landfill, however our discussions suggest that most landfill operators are unaware of these impending requirements.
  Where there is no gas capture and flaring, a single site without gas capture and flaring would be reporting at tonnages of about 35,000 tonnes per year. Assuming that the average person generates one tonne of waste per year, this threshold would mean that a number of country areas would also need to be reporting greenhouse emissions.
  Given the shorter default half-lives for moist and wet tropical climates, the threshold is likely to be much lower for landfills in Queensland and the Northern Territory.
- It is understood that the establishment of one part of a facility as exceeding the threshold means that all other emissions sources need to be accounted for. This should be made explicit in the document, as plant used on a landfill would then contribute to the overall site emissions, and these emissions would not be insignificant.

I would be happy to discuss this further if required, and appreciate the extension in time offered for these comments to be provided. I can be contacted on (08) 9424 2223.

Regards,

Adam Johnson
Executive Manager, Waste Management Services