



## MEMORANDUM

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**To:** Henry Ferland (EPA/OSW) and Ken Skog (USDA-FS)  
**From:** Amanda Vemuri, Randy Freed  
**Date:** August 1, 2005  
**Re:** Revised Landfilling Emission Factors based on New WOODCARB Inputs – *Errata to May 6, 2005 Memo*  
**CC:** Dr. Mort Barlaz (NCSU), Anne Choate, Jeremy Scharfenberg

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Our May 6, 2005 memorandum, *Revised Landfilling Emission Factors based on New WOODCARB Inputs*, provided updated landfilling emission factors for paper and organic materials (other than leaves), based on a revised methodology for achieving a perfect (100%) carbon balance for these material types. In the course of incorporating newly completed experimental data from Dr. Morton Barlaz on leaves, we found a calculation error that affected some of the values in the May 6 memo. The revised values in this memo correct those errors.

To summarize, we had developed an approach to adjust the experimental values so that carbon outputs equal carbon inputs. In situations where outputs exceed inputs, we adjusted landfill carbon storage downward; where inputs exceed outputs, we adjusted methane emissions upward.

The error in our earlier memo resulted from an incorrect calculation of the carbon contribution from methane to the mass balance; we used the full molecular weight rather than the proportion that was carbon. This affected our results for the three materials that we had characterized as having inputs exceeding outputs: newspaper, coated paper, and grass.<sup>1</sup> When the correction is applied, we find that newspaper had a perfect mass balance based on experimental results (inputs = outputs), and coated paper and grass still need an adjustment. Exhibit 1 shows the corrected values, as well as the incorrect values from our May 6 memo.

We have made these corrections in the Climate and Waste spreadsheets, but Ken, if you have incorporated the May 6 values into WOODCARB, please change your values for newspaper and coated paper to use the recomputed values shown here. We apologize for the error in our original table. Please feel free to contact us if you would like more information or would like to discuss this.

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<sup>1</sup> It did not affect the other materials because with the correction, inputs still exceeded outputs, and our adjustment – increasing methane emissions above the measured level – has the effect of superseding the incorrect value in our calculation.

Table 1: Corrected Values for Methane Generation and Landfill Carbon Storage

<b>Corrected Values</b>						
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>Carbon Source</b>	<b>Methane released (gm CH<sub>4</sub>/dry gm)</b>	<b>Fraction C released as CH<sub>4</sub></b>	<b>Fraction C released as CO<sub>2</sub></b>	<b>Total fraction released as landfill gas</b>	<b>Fraction of carbon stored</b>	<b>Fraction of dry matter stored</b>
Newspaper	0.050	8%	8%	15%	85%	42%
Coated paper	0.056	12%	12%	25%	75%	26%
Grass	0.096	16%	16%	32%	68%	30%
<b>Values from May 6 memo (for reference)</b>						
Newspaper	0.049	10%	10%	20%	80%	39%
Coated paper	0.055	16%	16%	32%	68%	23%
Grass	0.094	21%	21%	42%	58%	26%