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Sara L. Caldwell, James R. Laidler, Elizabeth A. Brewer, Jed O. Eberly, Sean C. Sandborgh, and Frederick S. Colwell*: Correction to "Anaerobic Oxidation of Methane: Mechanisms, Bioenergetics, And the Ecology of Associated Microorganisms"

In Caldwell et al. (2008), we reported that the anaerobic oxidation of methane with sulfate yielding aqueous carbon dioxide and hydrogen sulfide as products yields more free energy than the reaction yielding bicarbonate and hydrosulfide ions, and that using the ΔG^0 for aqueous methane ($\text{CH}_{4(\text{aq})}$) would yield different results from those obtained using the ΔG^0 for gaseous methane ($\text{CH}_{4(\text{g})}$). We thank Marc Alperin, Tori Hoehler, and David Valentine for pointing out that the energy yields (ΔG^{xn}) for the oxidation of methane with sulfate is unchanged by these differences since bicarbonate-carbon dioxide, hydrosulfide-hydrogen sulfide and both gaseous and aqueous methane are all in equilibrium. Table 1 (below) has been corrected to reflect this. Also, our statement that the reaction described above "will yield more energy as pressure (or depth) increases", is correct only if the methane concentration or partial pressure increases with total pressure (or depth).

TABLE 1. Standard Free Energy of Reaction of Methane with Several Environmentally Relevant Electron Acceptors

Reaction	ΔG_r^0 (kJ mol ⁻¹ CH ₄)
$\text{CH}_4 + \text{SO}_4^{2-} \rightarrow \text{HCO}_3^- + \text{HS}^- + \text{H}_2\text{O}$	-16.6
$\text{CH}_4 + 2\text{O}_2 \rightarrow \text{HCO}_3^- + \text{H}_2\text{O} + \text{H}^+$	-806.0
$\text{CH}_4 + 4\text{NO}_3^- \rightarrow \text{HCO}_3^- + 4\text{NO}_2^- + \text{H}^+ + \text{H}_2\text{O}$	-467.0
$5\text{CH}_4 + 8\text{MnO}_4^- + 19\text{H}^+ \rightarrow 5\text{HCO}_3^- + 8\text{Mn}^{+2} + 17\text{H}_2\text{O}$	-991.7
$\text{CH}_4 + 8\text{Fe}^{+3} + 3\text{H}_2\text{O} \rightarrow \text{HCO}_3^- + 8\text{Fe}^{+2} + 9\text{H}^+$	-418.3
$\text{CH}_4 + \text{ClO}_4^- \rightarrow \text{HCO}_3^- + \text{Cl}^- + \text{H}^+ + \text{H}_2\text{O}$	-895.9
$\text{CH}_4 + 4\text{HAsO}_4^{2-} + 3\text{H}^+ \rightarrow \text{HCO}_3^- + 4\text{H}_2\text{AsO}_3^- + \text{H}_2\text{O}$	-299.6

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