



C-H-O chemistry of some naturally occurring redox reactions

Redox Reaction	e^- acceptor	Stoichiometry
Aerobic oxidation	O^0 in O_2	$\text{CH}_2\text{O} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
Fermentation to methanol	C^0 in CH_2O	$3\text{CH}_2\text{O} + \text{H}_2\text{O} \rightarrow 2\text{CH}_3\text{OH} + \text{CO}_2$
Fermentation to ethanol	C^0 in CH_2O	$3\text{CH}_2\text{O} \rightarrow \text{CH}_3\text{CH}_2\text{OH} + \text{CO}_2$
Methanogenesis	C^0 in CH_2O	$2\text{CH}_2\text{O} \rightarrow \text{CH}_4 + \text{CO}_2$

This plot follows up on a diagram called "C-H-O chemistry of some naturally occurring organic substances". Reactions are in part from Table 8.8 of Stumm and Morgan's (1996) *Aquatic Chemistry*. For a more complete list of redox reactions, see the page on "Common redox reactions in the oxidation of organic matter".