Table 20.25 Order of introduction of element changes in evolution

Element change	Time (ago) years
$H_2O/H_2 \rightarrow O_2$ ($O_2^{\cdot-}$, H_2O_2)	3 to 1×10^9
$CH_4 \rightarrow CO_2$	3 to 2×10^9
$WS_4^{2-} \rightarrow WO_4^{2-}$	3×10^9
$MoS_4^{2-} \rightarrow MoO_4^{2-}$	3×10^9
$H_2Se \rightarrow SeO_4^{2-}$	3×10^9
$NH_3 \rightarrow NO(NO_3^-)$	3×10^9
$Fe^{2+} \rightarrow Fe^{3+}\downarrow$, $H_2S \rightarrow SO_4^{2-}$	3 to 2×10^9
$ZnS \rightarrow Zn^{2+}$, $FeS \rightarrow Fe_2O_3$	3 to 2×10^9
$Cu^+ \downarrow \rightarrow Cu^{2+}$	2 to 1×10^9

In niches the primitive anaerobic composition of chemicals is virtually undisturbed.