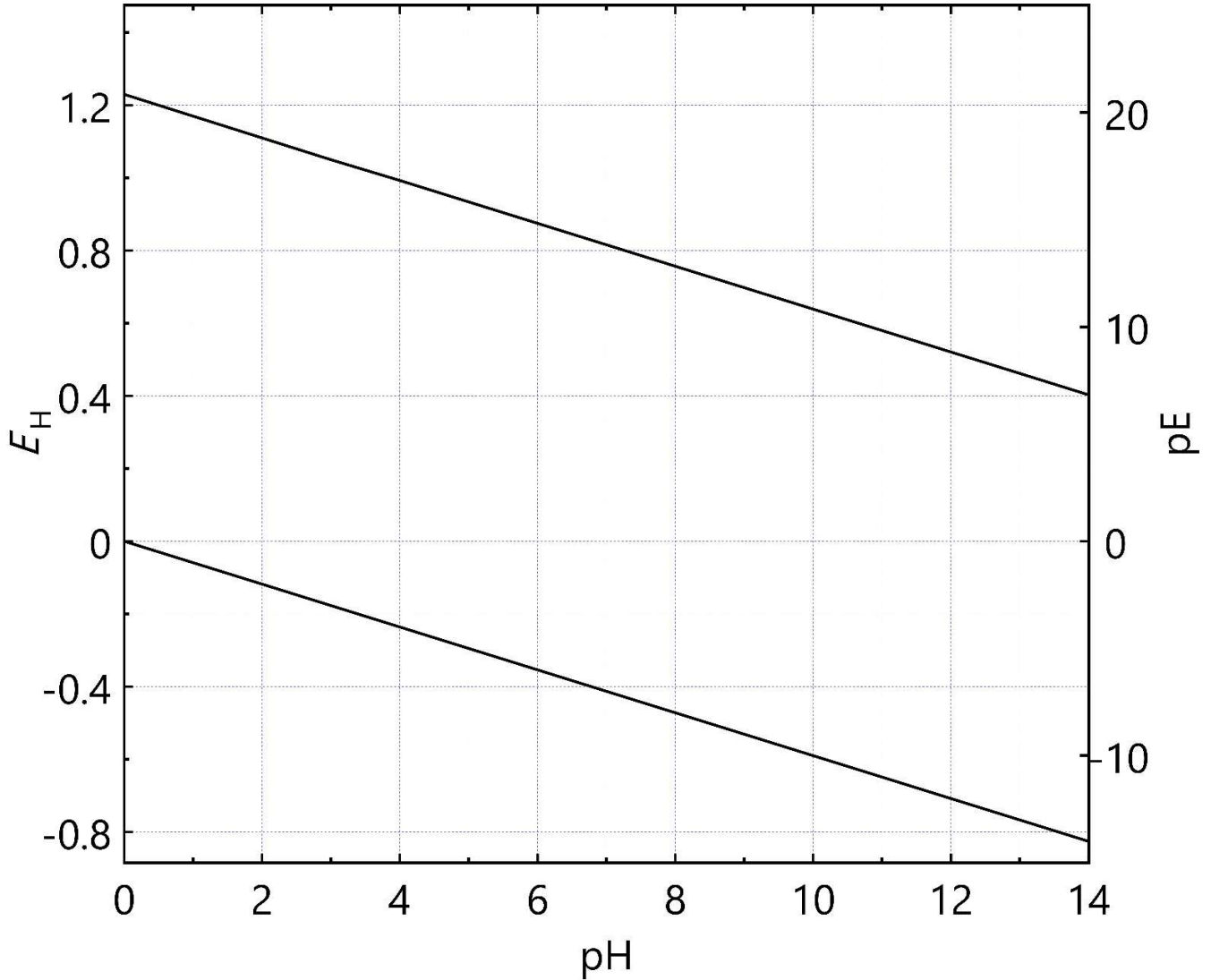


## ENV 200 – Redox Chemistry II

pe-pH diagrams:



**Reactions for determining stability window of water:**

1.  $\text{O}_{2(\text{g})} + 4\text{H}^+ + 4\text{e}^- = 2\text{H}_2\text{O}$   $\log(K) = 83.120$  (water oxidation limit)
2.  $2\text{H}^+ + 2\text{e}^- = \text{H}_{2(\text{g})}$   $\log(K) = 0.000$  (proton reduction limit)

**Relevant reactions for N redox cycles in the environment:**

1.  $2\text{NO}_3^- + 12\text{H}^+ + 10\text{e}^- = \text{N}_{2(\text{g})} + 6\text{H}_2\text{O}$   $\log(K) = 207.080$
2.  $\text{N}_{2(\text{g})} + 8\text{H}^+ + 6\text{e}^- = 2\text{NH}_4^+$   $\log(K) = 31.074$
3.  $\text{NH}_4^+ = \text{NH}_3 + \text{H}^+$   $\log(K) = -9.252$