Equilibrium partitioning of organic compounds

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Question 1

What happens to water at -5 °C in vacuum?

- all water will evaporate
- it will freeze
- some water will evaporate and the rest will remain as a liquid

Which is the correct answer? Take some time to think about it, before you proceed.

Answer: This question is somewhat tricky. Ideal vacuum would mean the total absence of any molecules. Obviously, neither liquid water nor ice can exist in equilibrium with a vacuum because if the concentration of water in one phase (vacuum) is zero then the equilibrium concentration in all other phases also has to be zero. The water would completely evaporate.

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