# TODAY IN CHEMISTRY HISTORY

## 7TH AUGUST – GERMAIN HESS'S BIRTHDAY

### GERMAIN HENRI HESS

**BORN**

7 August 1802

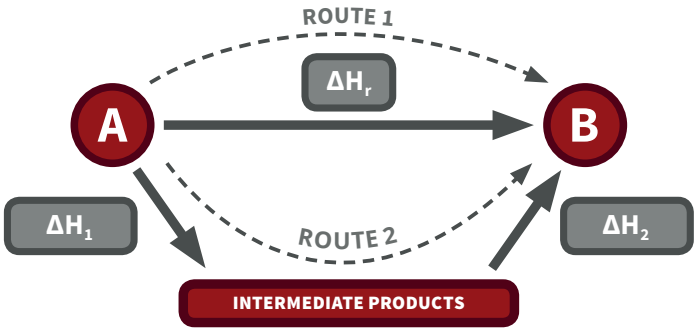
**DIED**

30 November 1850

$$\Delta H^{\ominus}_{r} = \Delta H^{\ominus}_{f\,(products)} - \Delta H^{\ominus}_{f\,(reactants)}$$

Germain Hess was born in Switzerland, but his family moved to Russia early in his life, and his chemistry work took place there. He is known for 'Hess's Law', published in 1840, which relates to enthalpy changes of reactions and allows calculation of unknown enthalpy changes.

## HESS'S LAW AND ENTHALPY CHANGES




$$\Delta H_{reaction} = \Delta H_1 + \Delta H_2$$

*The enthalpy change for the reaction ($\Delta H_r$) is equal to the sum of the enthalpy changes for the alternative route for the reaction ($\Delta H_1$ and $\Delta H_2$).*

Hess's law states that the enthalpy change of a chemical reaction (ΔH, the heat evolved or absorbed) is independent of the path taken by the reaction. In other words, even if it is possible for a reaction to take place via multiple routes, the overall enthalpy change will be the same.

Hess's law is useful because we can't always measure the enthalpy change of a reaction directly. However, known enthalpies of formation ($\Delta H_f$, the enthalpy change when a chemical substance is formed from its component elements) can be used to calculate the unknown enthalpy change of the reaction.

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