

Eco Scale: A Tool for Assessing the Greenness of Pharmaceuticals Analysis

Authors : Heba M. Mohamed

Abstract : Owing to scientific and public concern about health and environment and seeking for a better quality of life; "Green", "Environmentally" and "Eco" friendly practices have been presented and implemented in different research areas. Subsequently, researchers' attention is drawn in the direction of greening the analytical methodologies and taking the Green Analytical Chemistry principles (GAC) into consideration. It is of high importance to appraise the environmental impact of each of the implemented green approaches. Compared to the other traditional green metrics (E-factor, Atom economy and the process profile), the eco scale is the optimum choice to assess the environmental impact of the analytical procedures used for pharmaceuticals analysis. For analytical methodologies, Eco-Scale is calculated by allotting penalty points to any factor of the used analytical procedure which disagree and not match with the model green analysis, where the perfect green analysis has its Eco-Scale value of 100. In this work, calculation and comparison of the Eco-Scale for some of the reported green analytical methods was done, to accentuate their greening potentials. Where the different scores can reveal how green the method is, compared to the ideal value. The study emphasizes that greenness measurement is not only about the waste quantity determination but also dictates a holistic scheme, considering all factors.

Keywords : eco scale, green analysis, environmentally friendly, pharmaceuticals analysis

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