REDUCING COSTS IN UNDERGRADUATE CHEMISTRY LABORATORIES

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Chemical analysis is an essential part of the Chemistry curriculum. In teaching laboratories, reagents for qualitative and quantitative analysis are required in bulk quantities.

Cost considerations have made a developing country like Sri Lanka save on chemicals either by cutting down the number of practical classes or by reducing the concentrations of the reagents used.

Presently these reagents are prepared according to the standards laid down in practical text books. We studied the possible dilutions of the reagents to be used in quantitative and qualitative analysis. This work reports the minimum concentrations that could be used without loss of much accuracy. The range of dilutions that can be affected varies from 100% to 800% e.g. 16 gl^{-1} of Silver Nitrate reagent can be diluted to 2 gl^{-1} without loss of sensitivity.

We studied the effect of dilution on the sensitivity of reagents such as Silver nitrate, Tollens, Feblings, Ferric Chloride, Barium chloride, Dimethyl glyoxime, Ammonium molybdate, Magnesium nitrate, Sodium nitroprusside. Optimum concentrations that could be used with no loss of sensitivity will be presented.

The effect of dilution on Iodometric titrations Oxidation-Reduction titrations, complexometric titrations were also studied in order to find the optimum concentrations to be used in laboratories so as to save on chemicals. These findings could be used to reduce the running costs in any chemical laboratory.

References

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