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APPENDIX A

1. Percent of relative standard deviation (% RSD)

Percent of relative standard deviation can be calculated from the following equation.[48]

$$\% RSD = (SD / \overline{X}) * 100$$

Where

% RSD = percent of relative standard deviation

SD = standard deviation

$\overline{X}$ = mean measured value

SD can be calculated from the following equation :

$$SD = \sqrt{\sum_{i=1}^{n} \frac{(x_i - \overline{x})}{n-1}}$$

Where

x_i = individual measured

n = number of measurements

APPENDIX B

A definition of limit of detection (LOD) is based on the concentration, which gives a signal equals to the blank signal plus three standard deviation of the blank.[49-50] LOD is calculated from the calibration curve by means of the blank signal, which can be used as an estimation of the calculated intercept, plus three standard deviations of the blank. It can be used as an estimation of the calculated value from the regression line.

The limit of detection is calculated from the linear regression line of the calibration curve as :

$$y = bx + a \qquad (1)$$

where

y = instrument signals

x = concentrations

a = intercept

b = slope of the straight line

$$Y_L = Y_B + kS_B \qquad (2)$$

where

Y_L = lowest detectable instrument signals

Y_B = Blank signal

$Y_B \cong$ intercept, a