Table 6.1 shows the results for the calibration curve which are plotted in Graph 6.1. in each case the 0 point is the absorbance due to a water sample (with no reagent).

|  |  |  |  |
| --- | --- | --- | --- |
| Sample Concentration (ppb) | Absorbance | Sample Concentration (ppb) | Absorbance |
| 0 | 0.077 | 25 | 0.108 |
| 0 | 0.077 | 35 | 0.119 |
| 0 | 0.079 | 40 | 0.123 |
| 1 | 0.081 | 50 | 0.118 |
| 2 | 0.083 | 100 | 0.155 |
| 3 | 0.082 | 250 | 0.252 |
| 5 | 0.085 | 500 | 0.351 |
| 7.5 | 0.085 | 750 | 0.419 |
| 10 | 0.091 | 1000 | 0.463 |
| 15 | 0.098 |  |  |

Table 6.1 Absorbencies for different standard sample concentrations. Several zero measurements were made as the experimental data was at this end of the range so it was important to determine it accurately.



Graph 6.1 The calibration curve. This shows the calibration data with error bars, the primary error being due to accuracy in measurements in the analysis process. The Chi squared/Degrees of Freedom value for the fit to the data is 0.66. The best fit is a logarithmic function: f(x)= 0.217632 ln(0.006329x-1.28043) + 0.024353

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | Absorbance | Sample | Absorbance (standard error is 0.04) |
| M 0 (from water source) | 0.079 | N X | 0.073 |
| M 0 (simulation of five hour test without UV) | 0.075 | M X | 0.087  0.076 |
| M I | 0.076 | O X | 0.071 |
| M V 1.40 | 0.076 | M V | 0.085  0.075 |
| MV 0.72 | 0.078 | M V 3.22 | 0.087  0.077 |

Table 6.2 Absorbancies for the experimental samples. In this table the first letter refers to the gases used M = 20% Oxygen, 80% Nitrogen, O= Oxgen, N=Nitrogen, the second letter/number refers to the exposure length to UV using the roman numerical system or zero as appropriate, the third piece of information refers to the flow rate in litres/minute and is only used where the flow rate is not the standard 6.5 litres/minute. used other information is included in parenthesis. The MX, M V and M V 3.22 samples were retested as they initially displayed significantly higher readings than the/ These three samples were tested in the same batch and all displayed a slightly higher than background result so a second test was conducted on the most likely sample. For each of these measurements the error on the value is 0.002.