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| Supplementary table 1-1. Results of F-test two samples for variances of As concentrations after stabilization at 5% significance level |
| Sample pair | F | P | F Critical | Variance relationship |
| Case 1- and case 2-anoxic | 1.35 | 0.28 | 2.46 | equal |
| Case 2- and case 3-anoxic | 0.71 | 0.22 | 0.48 | equal |
| Case 1- and case 3-anoxic | 0.95 | 0.51 | 0.35 | equal |

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| Supplementary table1- 2. Results of two sample T-test assuming equal variances for comparing As concentrations after stabilization in cases 1- and 2-anoxic at 5% significance level  |
|  | *Case 1-anoxic* | *Case 2-anoxic* |
| Mean | 57 | 54.4 |
| Variance | 50.46888889 | 37.38916667 |
| Observations | 10 | 19 |
| Pooled Variance | 41.74907407 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 27 |  |
| t Stat | 1.029977471 |  |
| P(T<=t) one-tail | 0.156079705 |  |
| t Critical one-tail | 1.703288423 |  |
| P(T<=t) two-tail | 0.312159411 |  |
| t Critical two-tail | 2.051830493 |   |

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| Supplementary table 1-3. Results of two sample T-test assuming equal variances for comparing As concentrations after stabilization in cases 2- and 3-anoxic at 5% significance level  |
|  | *Case 2-anoxic* | *Case 3-anoxic* |
| Mean | 54.4 | 36.845 |
| Variance | 37.38916667 | 52.90253846 |
| Observations | 19 | 40 |
| Pooled Variance | 48.00357895 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 57 |  |
| t Stat | 9.093787786 |  |
| P(T<=t) one-tail | 5.42728E-13 |  |
| t Critical one-tail | 1.672028889 |  |
| P(T<=t) two-tail | 1.08546E-12 |  |
| t Critical two-tail | 2.002465444 |   |

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| Supplementary table 1-4. Results of two sample T-test assuming equal variances for comparing As concentrations after stabilization in cases 1- and 3-anoxic at 5% significance level  |
|  | *Case 1-anoxic* | *Case 3-anoxic* |
| Mean | 57 | 36.845 |
| Variance | 50.46888889 | 52.90253846 |
| Observations | 10 | 40 |
| Pooled Variance | 52.44622917 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 48 |  |
| t Stat | 7.871738563 |  |
| P(T<=t) one-tail | 1.72123E-10 |  |
| t Critical one-tail | 1.677224197 |  |
| P(T<=t) two-tail | 3.44246E-10 |  |
| t Critical two-tail | 2.010634722 |   |

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| Supplementary table 2-1. Results of F-test two samples for variances of As[III] and As[V] concentrations at 5% significance level |
| As[III] and As[V] | F | P | F Critical | Variance relationship |
| Case 2-anoxic (early stage) | 1.5 x 10-4 | 3.4 x 10-11 | 0.23 | not equal |
| Case 2-anoxic (middle stage) | 25.7 | 0.01 | 9.28 | not equal |
| Case 2-anoxic (final stage) | 0.44 | 0.26 | 0.11 | equal |
| Case 3-anoxic (early stage) | 5 x 10-5 | 1.3 x 10-12 | 0.23 | not equal |
| Case 3-anoxic (middle stage) | 6.61 | 0.13 | 19 |  equal |

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| Supplementary table 2-2. Results of two sample T-test assuming unequal variances for comparing the concentrations of As[III] and As[V] in case 2-anoxic (early stage) at 5% significance level  |
|  | *As[III]* | *As[V]* |
| Mean | 1.209929 | 341.5044 |
| Variance | 1.943692 | 12865.61 |
| Observations | 7 | 7 |
| Hypothesized Mean Difference | 0 |  |
| df | 6 |  |
| t Stat | -7.93699 |  |
| P(T<=t) one-tail | 0.000106 |  |
| t Critical one-tail | 1.94318 |  |
| P(T<=t) two-tail | 0.000213 |  |
| t Critical two-tail | 2.446912 |   |

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| Supplementary table 2-3. Results of two sample T-test assuming unequal variances for comparing the concentrations of As[III] and As[V] in case 2-anoxic (middle stage) at 5% significance level  |
|  | *As[III]* | *As[V]* |
| Mean | 69.085 | 18.8275 |
| Variance | 831.9948 | 32.32696 |
| Observations | 4 | 4 |
| Hypothesized Mean Difference | 0 |  |
| df | 3 |  |
| t Stat | 3.418953 |  |
| P(T<=t) one-tail | 0.020938 |  |
| t Critical one-tail | 2.353363 |  |
| P(T<=t) two-tail | 0.041875 |  |
| t Critical two-tail | 3.182446 |   |

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| Supplementary table 2-4. Results of two sample T-test assuming equal variances for comparing the concentrations of As[III] and As[V] in case 2-anoxic (final stage) at 5% significance level  |
|  | *Variable 1* | *Variable 2* |
| Mean | 4.84675 | 47.15325 |
| Variance | 19.88592 | 44.83469 |
| Observations | 4 | 4 |
| Pooled Variance | 32.36031 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 6 |  |
| t Stat | -10.5176 |  |
| P(T<=t) one-tail | 2.17E-05 |  |
| t Critical one-tail | 1.94318 |  |
| P(T<=t) two-tail | 4.34E-05 |  |
| t Critical two-tail | 2.446912 |   |

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| Supplementary table 2-5. Results of two sample T-test assuming unequal variances for comparing the concentrations of As[III] and As[V] in case 3-anoxic (early stage) at 5% significance level  |
|  | *As[III]* | *As[V]* |
| Mean | 3.141428571 | 348.9442857 |
| Variance | 1.961214286 | 39110.88026 |
| Observations | 7 | 7 |
| Hypothesized Mean Difference | 0 |  |
| df | 6 |  |
| t Stat | -4.626130858 |  |
| P(T<=t) one-tail | 0.001796107 |  |
| t Critical one-tail | 1.943180274 |  |
| P(T<=t) two-tail | 0.003592215 |  |
| t Critical two-tail | 2.446911846 |   |

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| Supplementary table 2-6. Results of two sample T-test assuming equal variances for comparing the concentrations of As[III] and As[V] in case 3-anoxic (middle stage) at 5% significance level  |
|  | *As[III]* | *As[V]* |
| Mean | 26.51666667 | 10.8 |
| Variance | 76.43583333 | 11.5675 |
| Observations | 3 | 3 |
| Pooled Variance | 44.00166667 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 4 |  |
| t Stat | 2.901826942 |  |
| P(T<=t) one-tail | 0.022018609 |  |
| t Critical one-tail | 2.131846782 |  |
| P(T<=t) two-tail | 0.044037218 |  |
| t Critical two-tail | 2.776445105 |   |