Table S-1: the Experimental values for the disinfectant by-products for Trihalomethanes (THMs)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Source** | **Temp** | **pH** | **UVA254** | **Cl2** | **DOC** | **TCM** | **BDCM** | **DBCM** | **T-THMs** |
| OWP | 29 | 7.24 | 0.032 | 0.06 | 1.83 | 31.21 | 0.45 | 0.31 | 31.97 |
| OWS | 24 | 7.18 | 0.02 | 0.15 | 0.93 | 28.34 | 0.54 | 0.24 | 29.12 |
| OWR | 24 | 7.11 | 0.019 | 0.28 | 0.96 | 18.50 | 0.4 | 0.17 | 19.07 |
| LWP | 26 | 7.05 | 0.016 | 0.24 | 0.88 | 21.92 | 0.54 | 0.16 | 22.62 |
| LWS | 27 | 6.99 | 0.008 | 0.14 | 0.75 | 28.44 | 0.4 | 0.18 | 29.02 |
| LWR | 28 | 7.02 | 0.016 | 0.09 | 0.76 | 24.62 | 0.35 | 0.25 | 25.22 |
| HWP | 26 | 6.92 | 0.007 | 0.14 | 0.53 | 23.03 | 0.42 | 0.25 | 23.70 |
| HWS | 28 | 7.23 | 0.008 | 0.17 | 1.22 | 22.84 | 0.35 | 0.26 | 23.45 |
| HWR | 30 | 7.71 | 0.019 | 0.2 | 1.12 | 24.59 | 0.35 | 0.17 | 25.11 |
| SWP | 24 | 7.31 | 0.013 | 0.28 | 1.07 | 25.57 | 0.56 | 0.18 | 26.31 |
| SWS | 27 | 7 | 0.009 | 0.36 | 0.61 | 23.49 | 0.35 | 0.22 | 24.06 |
| SWR | 25 | 7.07 | 0.013 | 0.28 | 0.5 | 24.79 | 0.65 | 0.2 | 25.64 |
| SWP | 24 | 7.08 | 0.011 | 0.36 | 0.61 | 24.98 | 0.32 | 0.17 | 25.47 |
| SWS | 24 | 7.37 | 0.001 | 0.4 | 0.07 | 21.99 | 0.25 | 0.18 | 22.42 |
| SWR | 24 | 7.16 | 0.002 | 0.43 | 0.03 | 20.90 | 0.25 | 0.18 | 21.33 |
| IWP | 25 | 7.32 | 0.02 | 0.33 | 0.8 | 26.05 | 0.38 | 0.26 | 26.69 |
| IWS | 26 | 7.23 | 0.015 | 0.11 | 0.6 | 24.87 | 0.45 | 0.3 | 25.62 |
| IWR | 27 | 6.99 | 0.017 | 1.04 | 0.59 | 25.05 | 0.35 | 0.25 | 25.65 |
| IWP | 27 | 7.43 | 0.005 | 0.31 | 0.14 | 22.13 | 0.65 | 0.28 | 23.06 |
| AWS | 25 | 7.45 | 0.005 | 0.33 | 0.08 | 22.59 | 0.54 | 0.18 | 23.31 |
| AWR | 25 | 7.13 | 0.005 | 1.51 | 0.2 | 22.59 | 0.45 | 0.17 | 23.21 |
| AWP | 26 | 7.3 | 0.038 | 0.4 | 2.02 | 27.54 | 0.15 | 0.16 | 27.85 |
| AWS | 24 | 7.26 | 0.035 | 0.05 | 1.54 | 27.90 | 0.18 | 0.28 | 28.36 |
| AWR | 26 | 7.18 | 0.022 | 0.24 | 1.1 | 26.00 | 0.25 | 0.3 | 26.55 |

Table S-2: Experimental values and ANFIS predicted values

|  |  |
| --- | --- |
| **Experimental values (μg/L)** | **ANFIS predicted values (μg/L)** |
| **TCM** | **BDCM** | **DBCM** | **T-THMs** | **TCM** | **BDCM** | **DBCM** | **T-THMs** |
| 31.210 | 0.450 | 0.310 | 31.970 | 31.210 | 0.450 | 0.310 | 32.635 |
| 28.340 | 0.540 | 0.240 | 29.120 | 28.340 | 0.540 | 0.240 | 30.190 |
| 18.500 | 0.400 | 0.170 | 19.070 | 18.500 | 0.455 | 0.170 | 20.500 |
| 21.920 | 0.540 | 0.160 | 22.620 | 21.920 | 0.421 | 0.160 | 24.420 |
| 28.440 | 0.400 | 0.180 | 29.020 | 28.440 | 0.400 | 0.180 | 29.940 |
| 24.624 | 0.350 | 0.250 | 25.224 | 24.620 | 0.350 | 0.250 | 27.120 |
| 23.026 | 0.420 | 0.250 | 23.696 | 23.030 | 0.420 | 0.250 | 27.030 |
| 22.839 | 0.350 | 0.260 | 23.449 | 22.840 | 0.383 | 0.260 | 25.340 |
| 24.594 | 0.350 | 0.170 | 25.114 | 24.356 | 0.350 | 0.170 | 27.090 |
| 25.569 | 0.560 | 0.180 | 26.309 | 25.570 | 0.547 | 0.180 | 28.070 |
| 23.487 | 0.350 | 0.220 | 24.057 | 23.490 | 0.350 | 0.220 | 27.490 |
| 24.795 | 0.650 | 0.200 | 25.645 | 24.790 | 0.650 | 0.179 | 26.937 |
| 24.981 | 0.320 | 0.170 | 25.471 | 24.980 | 0.320 | 0.170 | 26.980 |
| 21.987 | 0.250 | 0.180 | 22.417 | 21.990 | 0.250 | 0.180 | 24.990 |
| 20.898 | 0.250 | 0.180 | 21.328 | 20.900 | 0.250 | 0.179 | 23.900 |
| 26.051 | 0.380 | 0.260 | 26.691 | 26.050 | 0.380 | 0.260 | 29.987 |
| 24.869 | 0.450 | 0.300 | 25.619 | 26.255 | 0.450 | 0.300 | 27.370 |
| 25.045 | 0.350 | 0.250 | 25.645 | 25.050 | 0.350 | 0.250 | 28.050 |
| 22.133 | 0.650 | 0.280 | 23.063 | 22.130 | 0.650 | 0.304 | 25.130 |
| 22.593 | 0.540 | 0.180 | 23.313 | 22.833 | 0.540 | 0.187 | 25.090 |
| 22.593 | 0.450 | 0.170 | 23.213 | 22.590 | 0.450 | 0.170 | 25.090 |
| 27.536 | 0.150 | 0.160 | 27.846 | 27.762 | 0.150 | 0.160 | 29.540 |
| 27.903 | 0.180 | 0.280 | 28.363 | 27.900 | 0.180 | 0.280 | 30.400 |
| 25.997 | 0.250 | 0.300 | 26.547 | 26.000 | 0.250 | 0.300 | 29.787 |

Table S-3: Experimental values and RSRM predicted values

|  |  |
| --- | --- |
| **Experimental values (μg/L)** | **RSRM predicted values (μg/L)** |
| **TCM** | **BDCM** | **DBCM** | **T-THMs** | **TCM** | **BDCM** | **DBCM** | **T-THMs** |
| 31.210 | 0.450 | 0.310 | 31.970 | 31.260 | 0.423 | 0.310 | 31.990 |
| 28.340 | 0.540 | 0.240 | 29.120 | 27.180 | 0.553 | 0.248 | 27.990 |
| 18.500 | 0.400 | 0.170 | 19.070 | 22.220 | 0.426 | 0.143 | 22.790 |
| 21.920 | 0.540 | 0.160 | 22.620 | 22.990 | 0.485 | 0.213 | 23.680 |
| 28.440 | 0.400 | 0.180 | 29.020 | 26.150 | 0.327 | 0.196 | 26.670 |
| 24.624 | 0.350 | 0.250 | 25.224 | 24.520 | 0.392 | 0.249 | 25.160 |
| 23.026 | 0.420 | 0.250 | 23.696 | 24.930 | 0.479 | 0.228 | 25.640 |
| 22.839 | 0.350 | 0.260 | 23.449 | 23.230 | 0.372 | 0.257 | 23.860 |
| 24.594 | 0.350 | 0.170 | 25.114 | 24.570 | 0.353 | 0.171 | 25.100 |
| 25.569 | 0.560 | 0.180 | 26.309 | 25.360 | 0.544 | 0.182 | 26.090 |
| 23.487 | 0.350 | 0.220 | 24.057 | 24.150 | 0.353 | 0.208 | 24.710 |
| 24.795 | 0.650 | 0.200 | 25.645 | 21.740 | 0.513 | 0.210 | 22.470 |
| 24.981 | 0.320 | 0.170 | 25.471 | 22.090 | 0.313 | 0.178 | 22.580 |
| 21.987 | 0.250 | 0.180 | 22.417 | 22.150 | 0.201 | 0.183 | 22.530 |
| 20.898 | 0.250 | 0.180 | 21.328 | 22.280 | 0.328 | 0.179 | 22.790 |
| 26.051 | 0.380 | 0.260 | 26.691 | 26.970 | 0.348 | 0.269 | 27.590 |
| 24.869 | 0.450 | 0.300 | 25.619 | 26.280 | 0.439 | 0.299 | 27.020 |
| 25.045 | 0.350 | 0.250 | 25.645 | 25.120 | 0.353 | 0.250 | 25.720 |
| 22.133 | 0.650 | 0.280 | 23.063 | 21.960 | 0.621 | 0.283 | 22.860 |
| 22.593 | 0.540 | 0.180 | 23.313 | 22.040 | 0.591 | 0.172 | 22.800 |
| 22.593 | 0.450 | 0.170 | 23.213 | 22.550 | 0.448 | 0.170 | 23.170 |
| 27.536 | 0.150 | 0.160 | 27.846 | 27.290 | 0.144 | 0.164 | 27.590 |
| 27.903 | 0.180 | 0.280 | 28.363 | 27.700 | 0.174 | 0.283 | 28.160 |
| 25.997 | 0.250 | 0.300 | 26.547 | 25.210 | 0.398 | 0.256 | 25.860 |