| Sampling Point | HI | | | | CR | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Adult Winter | Child Winter | Adult Summer | Child Summer | Adult Winter | Child Winter | Adult Summer | Child Summer |
| Gabtoli Dhalwes | 33.24 | 24.17 | 19.94 | 14.55 | 0.018 | 0.013 | 0.013 | 0.01 |
| Gabtoli Turag | 35.52 | 25.83 | 27.95 | 20.36 | 0.018 | 0.013 | 0.037 | 0.027 |
| Shah Cement | 39.89 | 29.02 | 41.03 | 29.85 | 0.02 | 0.014 | 0.014 | 0.01 |
| Hazaribag | 251.08 | 194.7 | 252.73 | 195.16 | 0.138 | 0.099 | 0.059 | 0.043 |
| Rayerbazar | 15.75 | 11.54 | 31.52 | 22.91 | 0.008 | 0.006 | 0.009 | 0.007 |
| Kholamora | 15.63 | 11.44 | 19.28 | 14.07 | 0.008 | 0.006 | 0.018 | 0.013 |
| Zinzira | 56.9 | 42.06 | 67.09 | 49.43 | 0.056 | 0.04 | 0.074 | 0.053 |
| Sadarghat Terminal | 95.63 | 70.29 | 132.03 | 96.61 | 0.05 | 0.036 | 0.06 | 0.043 |
| Postogola Bri | 56.08 | 41.06 | 74.68 | 54.38 | 0.029 | 0.021 | 0.035 | 0.025 |

| **Health Risk parameters** | **Winter** | | | | | | **Summer** | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Ingestion** | | | **Dermal** | | | **Ingestion** | | | **Dermal** | | |
| **Mean** | **SD** | **Range** | **Mean** | **SD** | **Range** | **Mean** | **SD** | **Range** | **Mean** | **SD** | **Range** |
| **Non- Carcinogenic Risk** | | | | | | | | | | | | |
| Mn HQ Adult | 2.78 | 1.68 | 1.48-5.64 | 0.29 | 0.17 | 0.16-0.589 | 2.52 | 1.52 | 1.298-5.13 | 0.26 | 0.16 | 0.135-0.54 |
| Mn HQ children | 2 | 1.2 | 1.06-4.04 | 0.51 | 0.31 | 0.274-1.043 | 1.81 | 1.09 | 0.93-3.68 | 0.47 | 0.28 | 0.24-0.95 |
| Cr HQ Adult | 4.79 | 6.17 | 0.3-16.94 | 0.01 | 0.01 | 0.00038-0.022 | 4.13 | 5.47 | 0.345-13.56 | 0.1 | 0.01 | 0.00044-0.0174 |
| Cr HQ children | 3.43 | 4.43 | 0.21-12.14 | 0.01 | 0.01 | 0.00068-0.0385 | 2.96 | 3.92 | 0.247-9.72 | 0.1 | 0.01 | 0.000785-0.031 |
| Ni HQ Adult | 0.5 | 0.57 | 0.08-1.79 | 0.002 | 0.002 | 0.00032-0.0069 | 0.47 | 0.44 | 0.0929-1.46 | 0.002 | 0.002 | 0.00036- 0.0057 |
| Ni HQ children | 0.36 | 0.41 | 0.06-1.28 | 0.003 | 0.004 | 0.00057-0.0122 | 0.34 | 0.31 | 0.067-1.05 | 0.003 | 0.003 | 0.00064-0.01 |
| Cu HQ Adult | 0.73 | 0.5 | 0.09-1.64 | 0.003 | 0.002 | 0.00035-0.0068 | 0.86 | 0.63 | 0.102-1.76 | 0.004 | 0.003 | 0.00042-0.0074 |
| Cu HQ children | 0.52 | 0.36 | 0.06-1.17 | 0.01 | 0.003 | 0.00063-0.012 | 0.62 | 0.45 | 0.073-1.26 | 0.01 | 0.004 | 0.00075-0.013 |
| Zn HQ Adult | 0.06 | 0.02 | 0.02-0.09 | 0.0007 | 0.0003 | 0.00026-0.0011 | 0.06 | 0.03 | 0.022-0.09 | 0.001 | 0.0003 | 0.00028-0.001 |
| Zn HQ children | 0.04 | 0.02 | 0.015-0.064 | 0.001 | 0.0005 | 0.00046-0.00199 | 0.04 | 0.02 | 0.016-0.065 | 0.001 | 0.0006 | 0.00049-0.002 |
| As HQ Adult | 12.58 | 5.09 | 7.26-22.74 | 0.05 | 0.02 | 0.030-0.095 | 11.06 | 4 | 6.79-19.17 | 0.05 | 0.02 | 0.028-0.08 |
| As HQ children | 9.02 | 3.65 | 5.2-16.29 | 0.09 | 0.04 | 0.054-0.168 | 7.93 | 2.87 | 4.86-13.74 | 0.08 | 0.03 | 0.05-0.14 |
| Cd HQ Adult | 20.53 | 51.65 | 0.21-157.86 | 1.71 | 4.31 | 0.018-13.18 | 19.9 | 49 | 0.214-150.00 | 1.66 | 4.09 | 0.02-12.53 |
| Cd HQ children | 14.72 | 37.02 | 0.15-113.15 | 3.04 | 7.64 | 0.032-23.34 | 14.27 | 35.12 | 0.154-107.52 | 2.94 | 7.24 | 0.03-22.18 |
| Hg HQ Adult | 14.93 | 11.69 | 0.45-30.58 | 0.06 | 0.05 | 0.0019-0.128 | 24.11 | 19.26 | 2.01-56.92 | 0.1 | 0.08 | 0.008-0.24 |
| Hg HQ children | 10.7 | 8.38 | 0.32-21.92 | 0.11 | 0.09 | 0.0033-0.226 | 17.28 | 13.81 | 1.44-40.80 | 0.18 | 0.14 | 0.015-0.42 |
| Pb HQ Adult | 7.61 | 5.98 | 3-20.2 | 0.0002 | 0.0002 | 0.00010-0.00070 | 8.83 | 5.73 | 1.21-21.88 | 0.0003 | 0.0003 | 0.00004-0.00076 |
| Pb HQ children | 5.45 | 4.29 | 2.15-14.48 | 0.0004 | 0.0004 | 0.00019-0.00124 | 6.33 | 0.0003 | 0.87-15.68 | 0.0005 | 0.0005 | 0.000075-0.0013 |
| **HI Adult** | 64.50 | 69.02 | 15.40- 237.11 | 2.13 | 4.47 | 0.228  - 13.973 | 71.94 | 72.12 | 19.04  - 239.427 | 2.08 | 4.24 | 0.24-  13.29 |
| **HI children** | 46.23 | 49.47 | 11.04  - 169.96 | 3.77 | 7.91 | 0.40-  24.73 | 51.57 | 51.69 | 13.65  - 171.62 | 3.69 | 7.51 | 0.42-  23.54 |
| **Carcinogenic Risk** | | | | | | | | | | | | |
| Cd ILCR Adult | 0.0039 | 0.009 | 0.000041-0.029 | 1.63E-05 | 4.10E-05 | 1.7e-07  - 1.25e-04 | 0.00378 | 0.0093 | 0.000041- 0.0285 | 1.58E-05 | 3.89E-05 | 1.70e-07- 1.19e-04 |
| Cd ILCR Children | 0.0028 | 0.007 | 0.000029-0.021 | 2.88E-05 | 7.25E-05 | 3.01e-07 - 2.22e-04 | 0.00271 | 0.0067 | 0.000029- 0.0204 | 2.80E-05 | 6.88E-05 | 3.01e-07 - 2.11e-04 |
| Cr ILCR Adult | 0.0072 | 0.009 | 0.00044-0.025 | 6.00E-05 | 7.74E-05 | 3.73e-06- 2.12e-04 | 0.00619 | 0.0082 | 0.00051  -  0.020 | 5.18E-05 | 6.86E-05 | 4.33e-06- 1.69e-04 |
| Cr ILCR Children | 0.0052 | 0.006 | 0.00032-0.018 | 0.000106216 | 0.000136929 | 6.60e-06- 3.76e-04 | 0.00444 | 0.0059 | 0.0004  -  0.015 | 9.16E-05 | 0.000121406 | 7.66e-06- 3.01e-04 |
| As ILCR Adult | 0.0057 | 0.002 | 0.0033-0.010 | 2.36E-05 | 9.56E-06 | 1.37e-05- 4.27-05 | 0.00497 | 0.0018 | 0.003  - 0.0086 | 2.08E-05 | 7.51E-06 | 1.28e-05- 3.60e-05 |
| As ILCR Children | 0.0041 | 0.002 | 0.0023-0.0073 | 4.18E-05 | 1.69E-05 | 2.42e-05- 7.56e-05 | 0.00356 | 0.0013 | 0.0022  - 0.0062 | 3.68E-05 | 1.33E-05 | 2.26e-05- 6.38e-05 |
| Pb ILCR Adult | 0.0002 | 0.0002 | 0.000089-0.00060 | 9.45E-08 | 7.43E-08 | 3.73e-08-  2.51e-07 | 0.00026 | 0.00024 | 0.000036- 0.000651 | 1.10E-07 | 9.93E-08 | 1.51e-08- 2.72e-07 |
| Pb ILCR Children | 0.0002 | 0.00012 | 0.000064-0.00043 | 1.67E-07 | 1.32E-07 | 6.59e-08-  4.44e-07 | 0.00018 | 0.00017 | 0.000026- 0.00046 | 1.94E-07 | 1.76E-07 | 2.67e-08-  4.81e-07 |
| Ni ILCR Adult | 0.021 | 0.024 | 0.0035- 0.076 | 1.77E-05 | 2.01E-05 | 2.94e-06- 6.35e-05 | 0.020 | 0.019 | 0.0039- 0.062 | 2.19E-05 | 1.99E-05 | 3.02e-06- 5.44e-05 |
| Ni ILCR Children | 0.015 | 0.017 | 0.0025  -  0.054 | 3.13E-05 | 3.56E-05 | 5.21e-06- 1.12e-04 | 0.014 | 0.013 | 0.0028- 0.045 | 2.97E-05 | 2.75E-05 | 5.83e-06- 9.18e-05 |
| CR Adult | 0.038 | 0.041 | 0.0077- 0.137 | 0.000118 | 0.000130 | 0.000022- 0.000424 | 0.035 | 0.024 | 0.0091- 0.074 | 0.00011 | 0.000121 | 0.000020- 0.000358 |
| CR Children | 0.027 | 0.029 | 0.0055- 0.098 | 0.000208 | 0.000229 | 0.000038- 0.000750 | 0.025 | 0.017 | 0.0065- 0.053 | 0.000186 | 0.000183 | 0.000039- 0.000556 |