*3.4 Geo-accumulation index (Igeo)*

The criterion to evaluate the metal pollution in sediments is the *Igeo* that has been widely used since the late 1960s which is calculated by Eq (X) shown in Table X. In the present study, Igeo for the elements Cr, Ni, Cu, As, Cd and Pb is measured and presented in Table 3. Calculated Igeo values for both seasons showed that Cd and Pb have the maximum geo-accumulation index having positive values in all five rivers. In Shitalakshya and Buriganga the Igeo values of Cd were strongly to extremely polluted having the values of 4.74 and 4.16 in winter season and in rainy season the Igeo values were 4.39 and 3.88 respectively which indicate strongly to extremly polluted to strongly pollution. In Turag, Dhaleshwari and Balu the Igeo values of Cd in winter season were 3.08, 2.43 and 2.06 indicating strongly to moderately strong pollution and in rainy it was 2.63, 1.88 and 1.74 ranging in moderate to strong pollution to moderate pollution. The Igeo values of Pb in Buriganga, Turag and Shitalakshya were 3.21, 2.96, 2.39 in winter season ranging in strongly polluted to moderate to strong polluted and in rainy season Igeo were 2.47, 2.02 and 1.58 respectively indicating moderate to strong pollution to moderate pollution. In Dhaleswari and Balu the Igeo values of Pb in winter were 1.34 and

Table 3: Geoaccumulation index (*Igeo*) of HMs for sediments of Balu, Buriganga, Dhaleshwari, Shitalakshya and Turag River, Bangladesh

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Season | River | Cr | Ni | Cu | As | Cd | Pb |
| Winter | Balu | -3.18 | -1.68 | 0.2 | -1.29 | 2.06 | 1.05 |
| Buriganga | -0.36 | -0.44 | 1.67 | -0.84 | 4.16 | 3.21 |
| Dhaleshwari | -0.52 | -1.52 | 0.5 | -0.08 | 2.43 | 1.34 |
| Shitalakshya | -1.02 | -0.98 | 0.91 | 0.09 | 4.74 | 2.39 |
| Turag | -3.06 | -0.47 | 0.59 | -0.35 | 3.08 | 2.96 |
| Rainy | Balu | -3.77 | -2 | -0.29 | -1.52 | 1.74 | 0.17 |
| Buriganga | -0.75 | -0.95 | 1.1 | -1.13 | 3.88 | 2.47 |
| Dhaleshwari | -0.95 | -2.29 | -0.1 | -0.49 | 1.88 | 0.45 |
| Shitalakshya | -1.57 | -1.59 | 0.29 | -0.37 | 4.39 | 1.58 |
| Turag | -3.37 | -1.27 | 0.25 | -0.56 | 2.63 | 2.02 |
| Maximum  (*Mmax*) |  | -0.36 | -0.44 | 1.67 | 0.09 | 4.74 | 3.21 |
| Minimum  (*Mmin*) |  | -3.77 | -2.29 | -0.29 | -1.52 | 1.74 | 0.17 |
| Mean (N=10) |  | -1.86 | -1.32 | 0.51 | -0.65 | 3.1 | 1.76 |