# Supplementary Material

Table S1 Ecological characteristics and morphometric records of collected fish and crustaceans

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | **Species name** | **Vernacular name** | **Habitat** | **n** | **Length (cm)** | **Weight (g)** |
| Fish | *Miichthys miiuy* | Brown croaker | Sub-benthic | 9 | 36.24±6.84 | 792.76±70.46 |
|  | *Cynoglossus joyneri* | Joyner's tongue fish | Demersal | 9 | 10.98±2.68 | 29.08±13.22 |
|  | *Collichthys lucidus* | Big head croaker | Sub-benthic | 9 | 10.02±2.95 | 21.24±12.26 |
|  | *Coilia nasus* | Japanese grenadier anchovy | Demersa | 9 | 6.52±1.01 | 3.78±1.99 |
| Crustaceans | *Charybdis japonica* | Reddish brown | Demersal | 3 | 5.74±1.22 | 43.77±19.99 |

Table S2. Relationships between evaluations and pollution levels.

|  |  |  |
| --- | --- | --- |
| **Index** | **Range** | **Degree** |
| BSAF | BSAF<1 | no significant accumulating effect |
| BSAF≥1 | significant accumulating effect |
| BAF | BAF<100 | no significant accumulating effect |
| BAF≥100 | significant accumulating effect |

Table S3 Parameters for ecological risk assessment of heavy metals in seawater

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Heavy metal** | **Cu** | **Pb** | **Zn** | **Cd** | **Hg** | **As** | **Cr** |
| HC5(μg/L) | 0.870 | 9.530 | 29.090 | 2.570 | 1.080 | 9.330 | 1.160 |
| PNEC(μg/L) | 0.174 | 1.906 | 5.818 | 0.514 | 0.216 | 1.866 | 0.232 |
| RQ | 0.0072 | 0.0007 | 0.0002 | 0.0024 | 0.0058 | 0.0007 | 0.0054 |

Table S4 Criteria for degrees of pollution status and ecological risk of heavy metals in sediments.

|  |  |  |
| --- | --- | --- |
| **Index** | **Range** | **Degree** |
| Igeo | Igeo ≤ 0 | Almost unpolluted |
| 0 < Igeo ≤ 1 | Unpolluted to moderately polluted |
| 1 < Igeo ≤ 2 | Moderately polluted |
| 2 < Igeo ≤ 3 | Moderately to severely polluted |
| 3 < Igeo ≤ 4 | Severely polluted |
| 4 < Igeo ≤ 5 | Severely to extremely polluted |
| Igeo > 5 | Extremely polluted |
| PERI | $$E\_{r}^{i}$$ | $E\_{r}^{i}$ < 40 | Low risk |
| 40 ≤ $E\_{r}^{i}$ < 80 | Moderate risk |
| 80 ≤ $E\_{r}^{i}$ < 160 | Considerable risk |
| 160 ≤ $E\_{r}^{i}$ < 320 | High risk |
| $E\_{r}^{i}$ >320 | Very high risk |
| RI | RI < 150 | Low risk |
| 150 ≤ RI < 300 | Moderate risk |
| 300 ≤ RI < 600 | Considerable risk |
| RI ≥ 600 | High risk |

Table S5. Relationships between evaluations and pollution levels.

|  |  |  |  |
| --- | --- | --- | --- |
| **Index** | **Range** | **Degree** | **Level** |
| HQ/HI | 1≤HQ/HI<1.5 | Low health risk/ |  |
| 1.5≤HQ/HI<2 | Moderate -low health risk | III |
| 2≤HQ/HI<2.5 | Moderate health risk | IV |
| 2.5≤HQ/HI<3 | Moderate-high health risk | V |
| HQ/HI≥3 | High risk | VI |
| CR | CR≤1E-6 | No risk |  |
| 1E-6<CR≤1E-4 | low risk | II |
| 1E-4<CR≤1E-3 | Moderate risk |  |
| 1E-3<CR≤0.1 | high risk | IV |
| CR>0.1 | extremely high risk | V |

Table S6. Exposure factor parameters in risk assessment model.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameters | Unit | Distribution Models |  Value | References |
|  |  |  | Adults | Child |  |
| IR | g/day/person | lognormal | 10.7 | 1.9 | (Tong *et al.*, 2023) |
| ED | Year | homogeneous | 26 | 6 | (Pursiainen *et al.*, 2021) |
| EF | Days/year | triangular | 350 | 350 | (Pursiainen *et al.*, 2021) |
| BW | kg | lognormal | 60 | 15 | (Yu *et al.*, 2022) |
| AT | day | point | CR25500 | CR25500 | (Pursiainen *et al.*, 2021) |
| HQ9490 | HQ2190 |  |
| RfD |  μg/（kg×day） | - | Contaminant-specific | Contaminant-specific | (Özkaynak *et al.*, 2022; Guan *et al.*, 2024) |
| SF | (kg×day)/ μg | - | Pb(0.0085),Cd(6.3),Cr(0.5),As(1.5) | (Özkaynak *et al.*, 2022; Guan *et al.*, 2024) |

Table S7 Principal component analysis of heavy metals in sediments

|  |  |  |
| --- | --- | --- |
| **Variables** | **F1** | **F2** |
| Cu | 0.916 | -0.111 |
| Pb | 0.959 | -0.178 |
| Zn | 0.942 | 0.010 |
| Cd | 0.811 | 0.538 |
| Hg | 0.914 | 0.328 |
| As | -0.723 | -0.031 |
| Cr | 0.917 | -0.185 |
| TOC | -0.355 | 0.915 |
| Eigenvalue | 5.629 | 1.313 |
| Contribution rate % | 70.356 | 16.417 |
| Cumulative contribution rate % | 70.356 | 86.773 |

**References：**

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