

Electronic Supplementary Information

Accumulation risk and sources of heavy metals in supratidal wetlands along the west coast of Bohai Sea

Fude Liu*, Bowen Zheng, Yi Zheng, Xue Mo and Desheng Li

Tianjin Key Laboratory of Hazardous Waste Safety Disposal and Recycling Technology, School of Environmental Science and Safety Engineering, Tianjin University of Technology, Tianjin 300384, China

*Corresponding author

Email: fudeliu2005@163.com

Table S1 Results of total variance and rotated component matrix for heavy metals in the supratidal wetland of site 1 on the west coast of Bohai Sea

| Heavy metals | Rotated component | | Component | Total variance | | |
|--------------|-------------------|--------|-----------|----------------|-----------|--------------|
| | PC1 | PC2 | | Total | Variance% | Cumulative % |
| Al | 0.814 | -0.183 | 1 | 4.392 | 43.925 | 43.925 |
| As | 0.226 | 0.722 | 2 | 1.949 | 19.493 | 63.418 |
| Cd | 0.101 | 0.567 | 3 | 1.141 | 11.409 | 74.827 |
| Cr | 0.924 | 0.264 | 4 | 0.824 | 8.244 | 83.071 |
| Cu | -0.023 | 0.715 | 5 | 0.754 | 7.539 | 90.61 |
| Ni | 0.66 | 0.352 | 6 | 0.579 | 5.79 | 96.4 |
| Pb | 0.278 | -0.63 | 7 | 0.224 | 2.235 | 98.635 |
| Zn | 0.651 | -0.14 | 8 | 0.084 | 0.843 | 99.478 |
| Fe | 0.968 | 0.023 | 9 | 0.027 | 0.269 | 99.747 |
| Mn | 0.94 | 0.09 | 10 | 0.025 | 0.253 | 100 |

Table S2 Results of total variance and rotated component matrix for heavy metals in the supratidal wetland of site 2 on the west coast of Bohai Sea

| Heavy metals | Rotated component | | Component | Total variance | | |
|--------------|-------------------|--------|-----------|----------------|-----------|--------------|
| | PC1 | PC2 | | Total | Variance% | Cumulative % |
| Al | 0.933 | -0.014 | 1 | 4.36 | 43.595 | 43.595 |
| As | -0.025 | -0.456 | 2 | 2.231 | 22.308 | 65.904 |
| Cd | 0.352 | -0.111 | 3 | 1.476 | 14.765 | 80.668 |
| Cr | 0.923 | 0.264 | 4 | 0.953 | 9.534 | 90.202 |
| Cu | 0.204 | 0.723 | 5 | 0.606 | 6.061 | 96.263 |
| Ni | -0.071 | 0.595 | 6 | 0.211 | 2.105 | 98.368 |
| Pb | -0.036 | -0.897 | 7 | 0.086 | 0.856 | 99.224 |
| Zn | -0.781 | 0.453 | 8 | 0.058 | 0.579 | 99.803 |
| Fe | 0.938 | 0.295 | 9 | 0.017 | 0.168 | 99.971 |
| Mn | 0.879 | 0.412 | 10 | 0.003 | 0.029 | 100 |

Table S3 Results of total variance and rotated component matrix for heavy metals in the supratidal wetland of site 3 on the west coast of Bohai Sea

| Heavy metals | Rotated component | | Component | Total variance | | |
|--------------|-------------------|--------|-----------|----------------|-----------|--------------|
| | PC1 | PC2 | | Total | Variance% | Cumulative % |
| Al | 0.781 | -0.095 | 1 | 4.922 | 49.221 | 49.221 |
| As | 0.45 | 0.154 | 2 | 1.995 | 19.951 | 69.172 |
| Cd | 0.218 | 0.831 | 3 | 1.003 | 10.026 | 79.198 |
| Cr | 0.708 | 0.01 | 4 | 0.92 | 9.199 | 88.397 |
| Cu | 0.621 | -0.447 | 5 | 0.532 | 5.324 | 93.721 |
| Ni | 0.928 | 0.058 | 6 | 0.238 | 2.384 | 96.105 |
| Pb | 0.129 | -0.895 | 7 | 0.175 | 1.755 | 97.86 |
| Zn | 0.792 | 0.502 | 8 | 0.135 | 1.351 | 99.211 |
| Fe | 0.929 | 0.125 | 9 | 0.054 | 0.537 | 99.748 |
| Mn | 0.887 | -0.138 | 10 | 0.025 | 0.252 | 100 |

Table S4 Results of total variance and rotated component matrix for heavy metals in the supratidal wetland of site 4 on the west coast of Bohai Sea

| Heavy metals | Rotated component | | Component | Total variance | | |
|--------------|-------------------|--------|-----------|----------------|-----------|--------------|
| | PC1 | PC2 | | Total | Variance% | Cumulative % |
| Al | 0.8 | -0.253 | 1 | 3.748 | 37.476 | 37.476 |
| As | 0.499 | -0.034 | 2 | 1.964 | 19.638 | 57.115 |
| Cd | 0.222 | 0.053 | 3 | 1.288 | 12.883 | 69.998 |
| Cr | 0.691 | 0.308 | 4 | 0.93 | 9.301 | 79.299 |
| Cu | -0.005 | 0.857 | 5 | 0.748 | 7.483 | 86.781 |
| Ni | 0.486 | 0.282 | 6 | 0.448 | 4.479 | 91.26 |
| Pb | 0.094 | 0.732 | 7 | 0.347 | 3.474 | 94.735 |
| Zn | 0.216 | 0.877 | 8 | 0.298 | 2.979 | 97.714 |
| Fe | 0.916 | 0.162 | 9 | 0.172 | 1.717 | 99.43 |
| Mn | 0.899 | 0.217 | 10 | 0.057 | 0.57 | 100 |