TITLE

Cytotoxic and Molecular Effects of Soil Extracts from the Agbogbloshie Electronic-Waste Site

on Fish and Human Cell Lines.

Supplementary information

Supplementary Tables

ST1: The IDs used for the e-waste sites in this study and the matching IDs in the chemical

analysis paper, Jingyun et al. https://doi.org/10.1016/j.scitotenv.2024.170219.

ST2: Trimming and filtering parameters used for mapping and alignment of FASTQ reads using

the QIAGEN online RNA Seq analysis portal.

ST3: Metals and plastic-related contaminants concentrations measured in the 35 e-waste site soil

extracts examined in this study (in µg/g).

ST4: Precision and accuracy assessments for quality control of metal concentrations from the

selected e-waste sites.

ST5: External validation of data obtained in this study through comparison with literature results

and regulatory standard values.

ST6: Hazard index of all contaminants based on human reference dose.

ST7: Risk index of all contaminants based on RTgill EC50 and tPOD results.

ST8: Cytotoxicity results of the RTgill-W1 and Caco-2 cell lines exposed to the 35 e-waste site

soil extracts as measured by the Alamar Blue assay.

ST9: No-cell background controls from the Alamar Blue cytotoxicity assays conducted for both cell lines.

ST10: The filtering and trimming parameters used on QIAGEN's online RNA Seq analysis portal for mapping and alignment of raw FASTQ reads.

ST11: Total number of differentially expressed genes (DEGs) in Caco-2 cells exposed to the e-waste soil extracts with a log2FC and adjusted p-value cut-off of 1 and 0.05, respectively.

ST12: The list of KEGG pathways with pathway BMDs and gene ontology (GO) terms that were significantly enriched in Caco-2 cells exposed to e-waste soil extracts. BP – biological process; MF – molecular function; CC – cellular component.

Supplementary Figures

SF1: Map of sampling locations in and around the Agbogbloshie e-waste site in Ghana. Green – upstream sites; Yellow – trade sites; Blue – dump sites; Red – burn sites; Black – community sites; Orange – downstream sites.
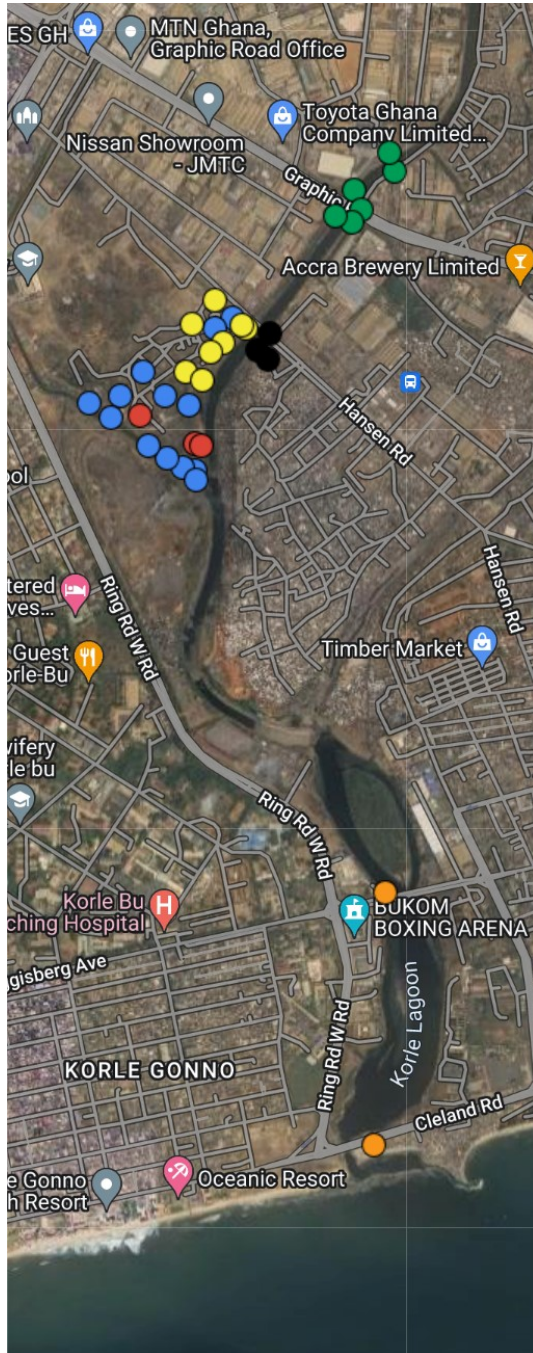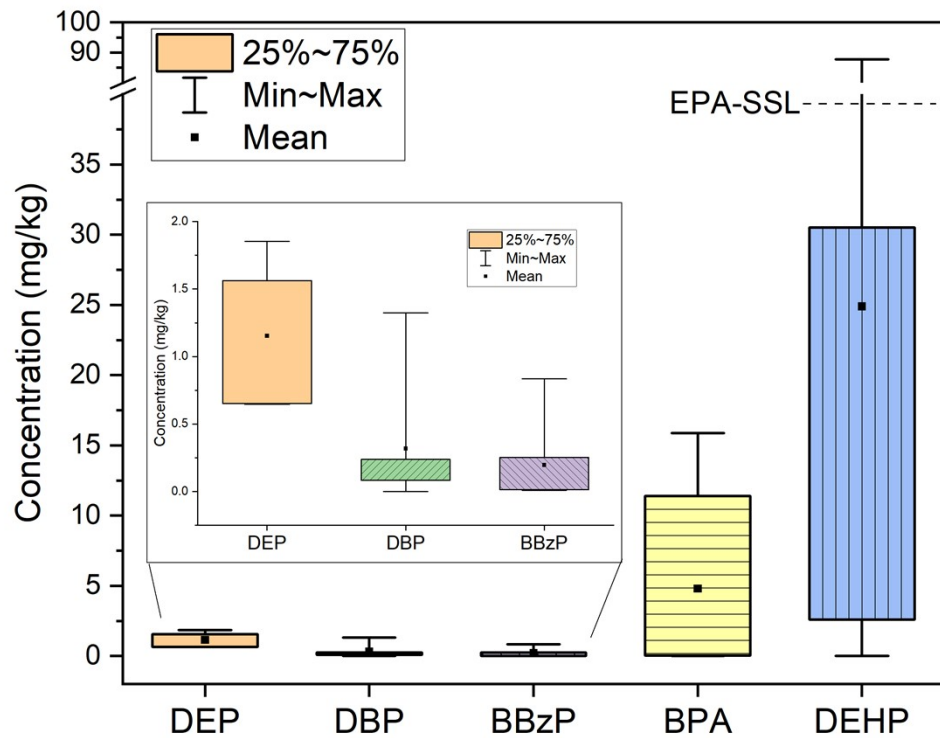
SF2: Scree plot for PCA analysis of the targeted plastic related chemicals.
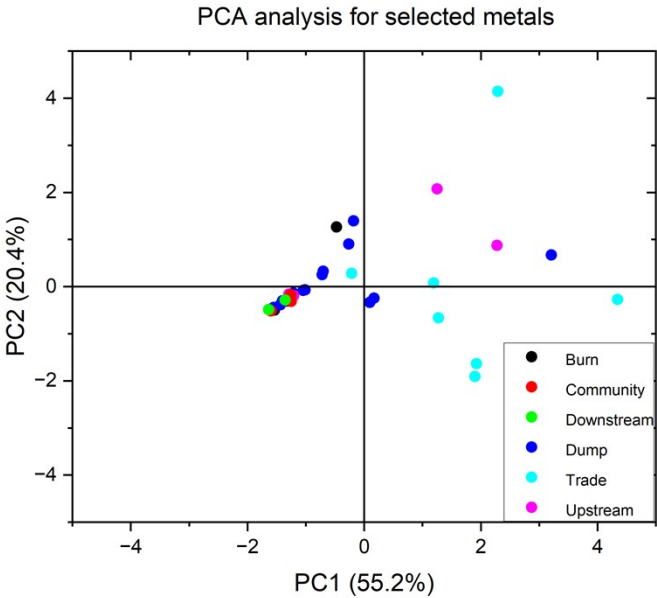

PCA analysis for plastic related chemicals
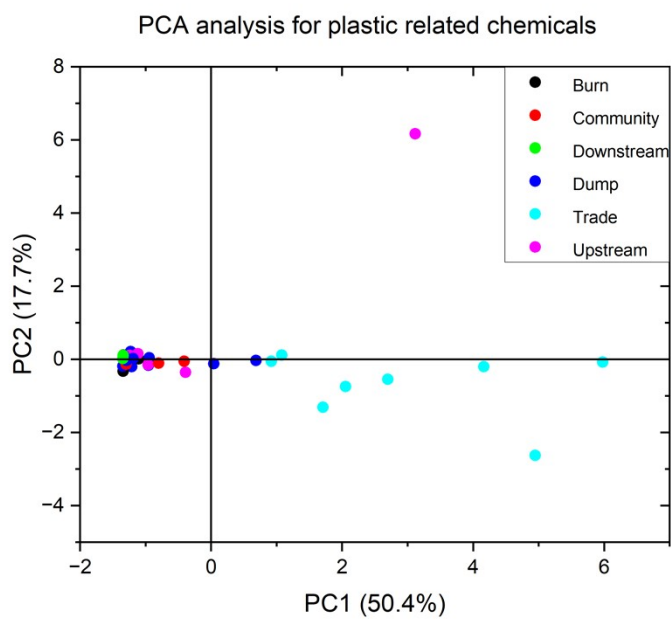
SF3: Biplot for the PCA analysis of all comtanimants.
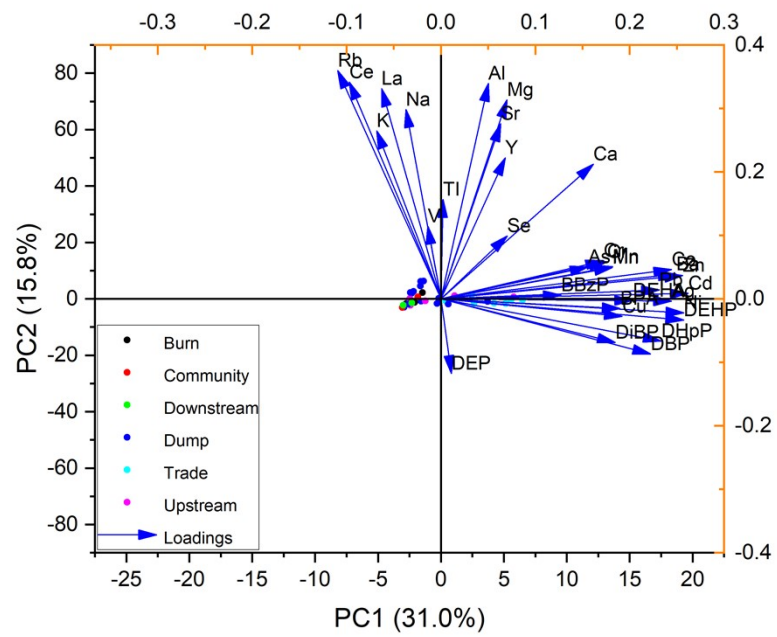
SF4: Plastic concentrations measured in this study for selected sites compared to the EPA regional screening level for residential soil.
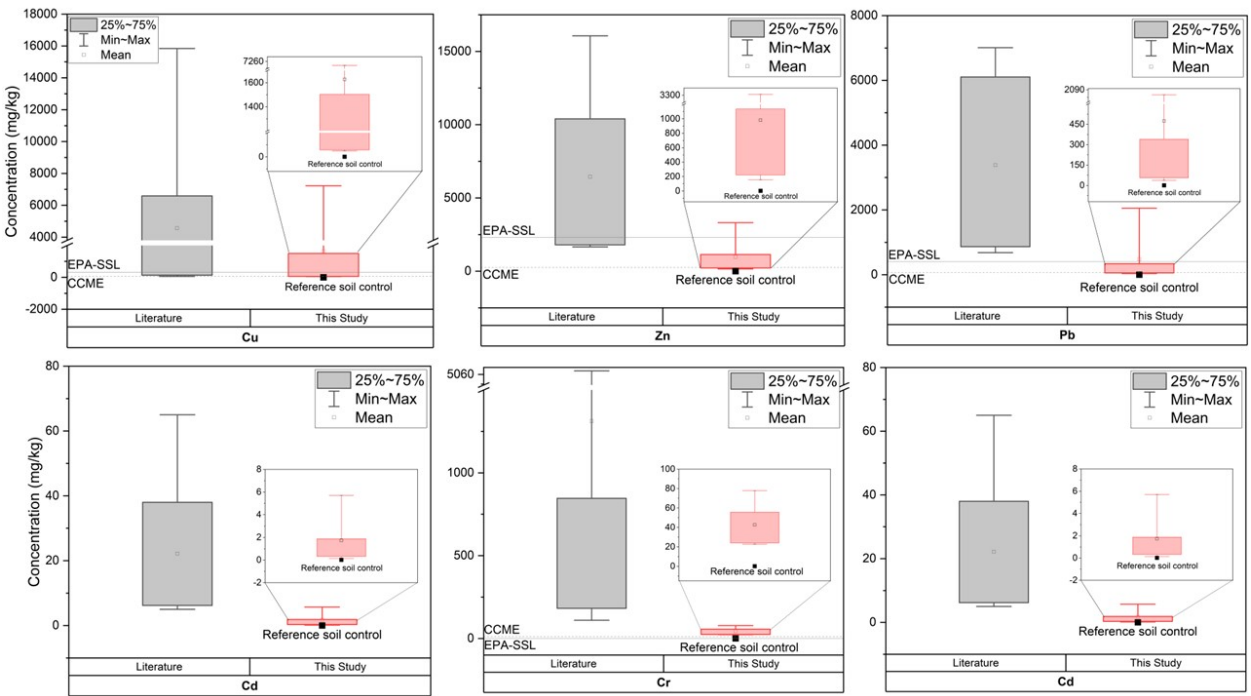
SF5: Scree plot for PCA analysis of the detected metals.
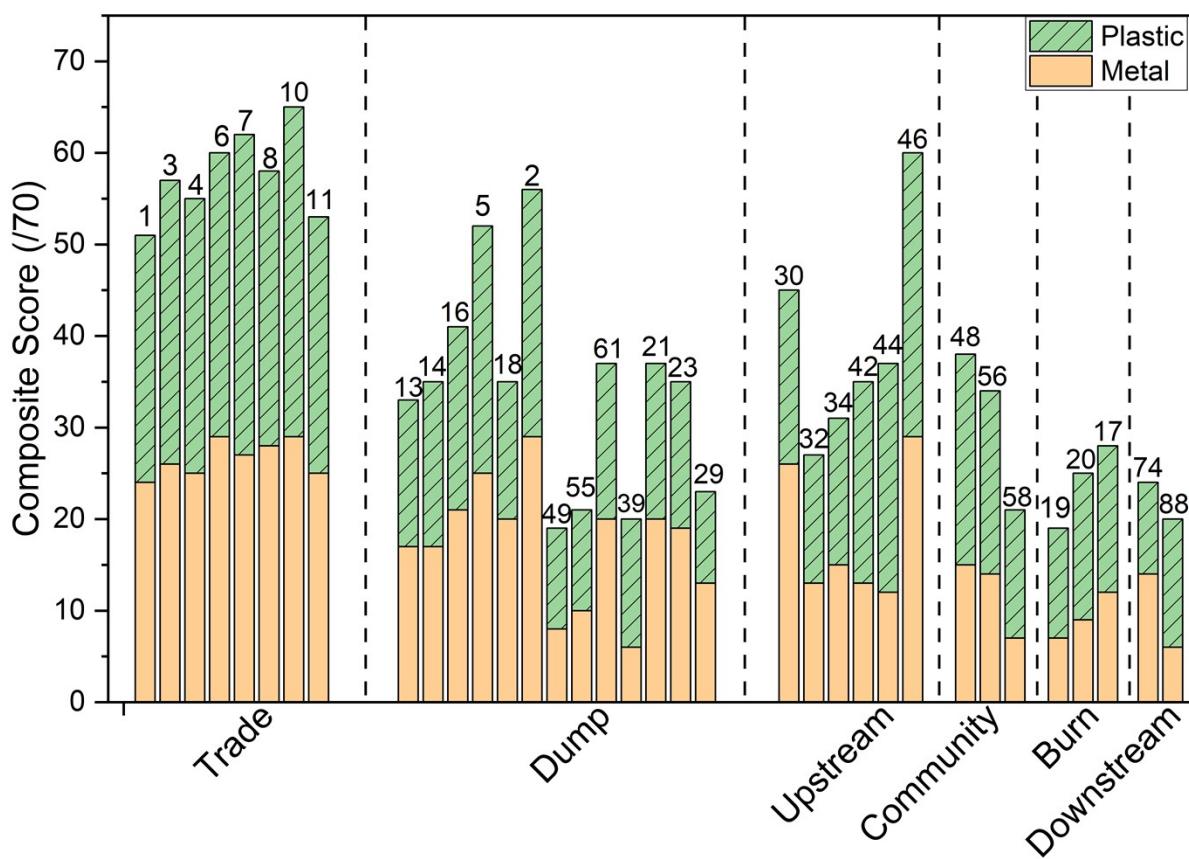

PCA analysis for selected metals

SF6: Metal concentrations measured in this study compared to literature detection values studying the Agbogbloshie region and reference standards including the Canadian (CCME) and EPA regional screening level for residential soil.

SF7: Composite scores of all sites.

SF8: Linear regression and non-parametric correlations (Spearman correlation) between the composite scores and (a) tPOD of RTgill cells, (b) EC50 of RTgill cells and (c) tPOD of Caco-2 cells.