

THEME 1 : Ressources minérales : législation et applications

Soil quality and soil fertility status in major soil groups at the Tombel area, South-West Cameroon.....	208
Spatial-temporal changes and variations of soil organic carbon content in Tombel, Cameroon (1985-2017).....	209
Utilisation de l'analyse multivariee (ACM) pour la compartimentation de la couverture pedologique du bassin versant elementaire de Nsimi	210
Variation of soils erodibility in Mbe agropastoral area in relation with land utilization, Central Cameroon	211

THEME 8 : GEOSCIENCES, GEO-ENVIRONNEMENT ET GEOTOURISME ET PATRIMOINE

GEOLOGIQUE..... 212

A Preliminary Evaluation of Human Health Risk of Potentially Toxic Elements in Playground Soils from Selected Public Primary Schools in Minna, North-Central Nigeria	213
Characterisation and risk assessment of mass movement in magha, Wabane Sub Division (SWR, Cameroon) .	214
Characterisation of Geohazards and risk assessment along the Bamenda escarpment (Nw Region-Cameroon) ..	215
Geoethics: a New Paradigm in the Practice of Geosciences	216
Impacts physique et metallique de l'exploitation de l'etain sur les sols et les sediments de la localite de Mayo-Darlé (Adamaoua- Cameroun).....	217
Lateritic regolith and landform evolution on the Adamaoua plateau (Cameroon): Morphogenetic and lithologic constraints	218
Sécurisation des sites miniers dans la région de l'Est : enjeux et défis de la préservation de l'environnement.....	219
Social and environmental impact of artisanal gold mining in Abiete-Yenjock South Cameroon.....	220
Valorization and environmental impact of mine waste from gold exploitation in Bétaré-Oya, Central Africa	221

THEME 9 : PETROLOGIE ET GEOLOGIE STRUCTURALE 222

Amphibole-plagioclase bearing wehrlite peridotites from Hosséré Do Guessa volcano (Adamawa plateau, Cameroon).....	223
Analyse morphotectonique de la region de Kaele-Waza (Extreme-Nord Cameroun)	224
Analyse structurale des formations métamorphiques et plutoniques du secteur Est de Pitoa : Implication géodynamique de la Chaîne Panafricaine au nord Cameroun	225
Anisotropie de Susceptibilité Magnétique (ASM) et fabriques du pluton granitique panafricain de Ngaoundéré (Centre-Nord Cameroun)	226
Aperçu structurale de la minéralisation aurifère de Gounté (Est Cameroun).....	227
Assessment of relative active tectonics in Edea – Eseka Region (SW Cameroon, Central Africa).....	228
Caractérisation du métamorphisme dans la série de Bafia : évidence d'un métamorphisme polyphasé dans la chaîne panafricaine d'Afrique centrale (Centre Cameroun).....	229
Caractérisation pétrographique et géochimique des formations ferrifères de Gouap (Sud-Cameroun).....	230
Caractérisation Pétrographique et structurale des formations géologiques d'Echioc santchou (Ouest Cameroun).....	231
Caractérisation pétro-structurale des sillons ferrifères de Kopongo au Nord d'Edéa (Sud-Ouest Cameroun): Mécanisme de mise en place et évolution géodynamique.....	232
Caracteristiques des laves basaltiques de Fotouni et ses environs	233
Caracteristiques Petrographiques des laves du Nyiragongo en Republique Democratique Du Congo.....	234
Chronostratigraphy of Pan-African ophiolitic rocks of Mapan area: the Pan-African nappes and the Congo craton contact.....	235
Controverse sur le Pan-Africain au Cameroun: qu'est-ce-qui ne marche pas, pourquoi et que faut-il envisager?.	236
Délimitation spatiale des anomalies de rayonnements ionisants issus des radionucléides primordiaux (K, U, Th) par aéro-spectrométrie gamma dans le corridor Lolodorf-Olama (Centre et Sud Cameroun) : Evaluation du taux d'exposition public.....	237

A Preliminary Evaluation of Human Health Risk of Potentially Toxic Elements in Playground Soils from Selected Public Primary Schools in Minna, North-Central Nigeria

*Nuhu Musa Waziri¹; Usman M.¹; Isa Aliyu Goro¹; Idris-Nda A.¹, Agbor Ako T.¹, Ahmed Aliyu Sidi²

¹*Department of Geology, Federal University of Technology, Minna, Nigeria.*

²*Department of Geology and Mining, Ibrahim Badamasi Babangida University, Lapai, Nigeria.*

*Corresponding author: nuhuwaziri@futminna.edu.ng

The grain size distribution and concentration of some potentially toxic elements in playground soils in selected public primary schools in Minna metropolis, Nigeria has been investigated. This was aimed at assessing the risk of exposure of young, vulnerable children in the schools to toxic elements through hand-to-mouth habits and inhalation of soils and dusts. The schools selected for this study are located within the inner city area of the metropolis and is underlain mainly by Older Granites of the central Nigeria Basement Complex. Grain size analysis was conducted on soil samples from eight primary schools and a handheld X-ray fluorescence spectrometer (X-MET5100) was used to measure the concentration of some potentially toxic metals. The results show that these soils are predominantly composed of fine sand (40 to 66 %, with mean of 53.25 %), followed by medium sand (20 to 46 %, with mean of 35.63 %). The silt/clay fraction accounts for 3 to 14 % of soils, with an average of about 7.88 %. The abundance of the three fractions therefore is in the order Fine sand > Medium sand > Silt/clay respectively. The concentration of Zn, Cu, Pb, Cd and Mn in the surface soils was used to evaluate the health risks posed to children in the schools through the ingestion pathway. The Average daily dose (ADD_i) for the elements are 6.61×10^{-4} , 2.78×10^{-4} , 4.32×10^{-4} , 1.53×10^{-3} and 5.55×10^{-3} respectively. Their corresponding Hazard Quotient (HQ_i) were found to be 2.20×10^{-3} for Zn, 6.95×10^{-3} for Cu, 1.23×10^{-1} for Pb, 1.53 for Cd and 3.96×10^{-1} for Mn. The computed Hazard Index (HI) of 2.06 is greater than the threshold value of 1 and indicates the potential for adverse health effects to the children in those schools. A more detailed study, including larger sample size and the fractionation of potentially toxic elements in different grain sizes and mineralogical phases will be useful in further assessing the level of risk.

Key words: Potentially toxic elements, soil, human health risk, hand-to-mouth habits, grain size