Accepted Manuscript

Assessment of streambed sediment contamination by heavy metals: The case of the Gabes Catchment, South-eastern Tunisia

Noura Dahri, Abdelfattah Atoui, Manel Ellouze, Habib Abida

PII: S1464-343X(17)30507-1

DOI: 10.1016/j.jafrearsci.2017.12.033

Reference: AES 3114

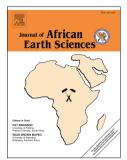
To appear in: Journal of African Earth Sciences

Received Date: 26 May 2017

Revised Date: 21 December 2017 Accepted Date: 29 December 2017

Please cite this article as: Dahri, N., Atoui, A., Ellouze, M., Abida, H., Assessment of streambed sediment contamination by heavy metals: The case of the Gabes Catchment, South-eastern Tunisia, *Journal of African Earth Sciences* (2018), doi: 10.1016/j.jafrearsci.2017.12.033.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



ACCEPTED MANUSCRIPT

Assessment of streambed sediment contamination by heavy metals: The Case of the

Gabes Catchment, South-eastern Tunisia

Noura Dahri^{1,*}, Abdelfattah Atoui², Manel Ellouze¹ and Habib Abida¹

¹GEOMODELE Laboratory, Faculty of Sciences, University of Sfax, BP 1171, 3000 Sfax, Tunisia;
²Ministère de l'équipement, de l'Habitat et de l'Aménagement de Territoire, Direction de l'Hydraulique Urbaine (DHU), Rue de Hadi Chaker Sakiet Ezzit Sfax 3021, Tunisie dahri.noura@gmail.com

dahri.noura@gmail.com abdelfattah.atoui@gmail.com manelellouze79@gmail.com habibabida62@gmail.com

*Correspondence: dahri.noura@gmail.com

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

1

2

Abstract

This study deals with the assessment of the behaviour of seven heavy metals (Cd, Zn, Cu, Pb, Ni, Cr and As) in streambed sediments within the Gabes Catchment, located in South-eastern Tunisia. To understand the effect of intense human activities in the Gabes Basin on the quality of the environment, 22 sediment samples, spread all over the study basin, were taken and analysed for heavy metals. Heavy metal concentrations were shown to vary in the following order: Zn>Pb>Cu>Cr>Ni>Cd>As. Sediment quality was assessed based on the evaluation of various indices. A total of 27 % of the sampling stations are characterised by sediment Enrichment Factors (EF) exceeding 40, reflecting extremely severe pollution. This result was also confirmed by different indices, including Sediment Pollution Index (SPI), Pollution Load Index (PLI) and Geo-accumulation index. The calculation of Mean Effect Range-Median Quotient (M-ERM-Q) indicated that in stream discharge, all metals have a probability of 21 % to be toxic. The ecological toxicity risk of heavy metals increases close to urban (traffic activity) and industrial activities (industrial complex of Gabes). Close to Gabes City, the situation and the degree of contamination that may be transferred into marine ecosystems is worrisome and requires immediate intervention.

Download English Version:

https://daneshyari.com/en/article/8913541

Download Persian Version:

https://daneshyari.com/article/8913541

<u>Daneshyari.com</u>