
Archive of SID

(11 : 11 :) *

Pb Cd

()

V

V Pb Cd

%

. % %

V Pb Cd

:

Hamidian,)

(1998

.(Abdel-baki *et al.*, 2011)

.(Malik *et al.*, 2010)

Alkarkhi *et al.*,)

Sadeghi)

(2009

(Attar, 2009

.(Schröder *et al.*, 2007)

.(Sadatipour *et al.*, 2004)

.(He *et al.*, 2009 ; Tepe, 2009)

.(Yousefi *et al.*, 1999)

()

()

.(Schröder *et al.*, 2007)

¹ Bioaccumulation
² Biomagnification

Phragmites australis

(2007)

Liu

% / % / % / % / % /
% / % / % / % /
% / % / % / % /
% / % / % / % /
% / % / % / % /
% / % / % / % /
% / % / % / % /
% / % / % / % /

(Kropfelova *et al.*, 2009)

(2009) Khan

Pb Cd Fe Ni Cr Cu

Phragmites australis

Scirpus cypernius *Typha latifolia*
Juncus articulatus *Carex aquatilis*
Lemna gibba, *Ceratophyllum demersum*
Polygonum glabrum *Echornia crassipes*
Pistia stratiotes *Alisma plantago-aquatica*

Fe Ni Cr Cu

/ / / / Pb Cd

(Khan *et al.*, 2009)

(*Phragmites australis*)

Phragmites australis
Scirpus cypernius *Typha latifolia*
Juncus articulatus *Carex aquatilis*
Lemna gibba, *Ceratophyllum demersum*
Polygonum glabrum *Echornia crassipes*
Pistia stratiotes *Alisma plantago-aquatica*

% /

% /

Liu *et al.*,) % / % /
(2007)

(2008)

Nirmal Kumar

Zn Pb Ni Cu Co Cd

Eichhornia crassipes, *Typha angustata*,
Echinochloa colonum, *Hydrilla verticillata*,
Nelumbo nucifera, *Ipomoea aquatica*,
Vallisneria spiralis

Zn > Cu > Pb > Ni > Co > Cd

Co Pb Cd

Cu Zn Ni

(Nirmal Kumar *et al.*, 2008)

(2009) Kropfelova

³Sub-surface flow constructed wetlands

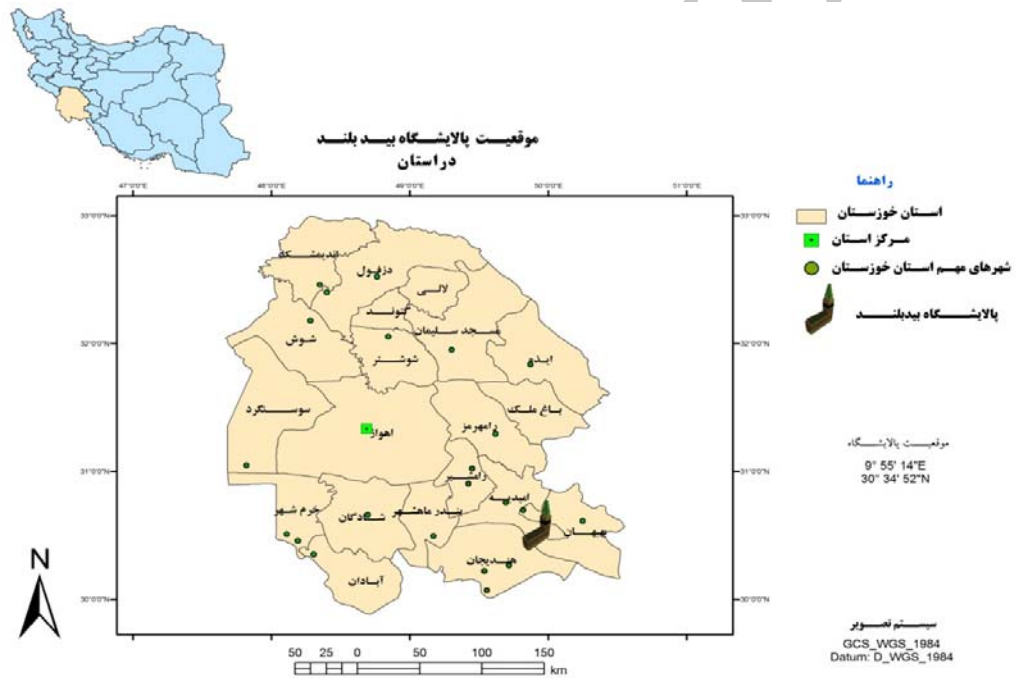
...

(Safi 2004)

)

(Porkhabbaz 2007

()



A

)

(

)

(

/

Hotplate

/ ppm Cd

/ /

Pb

ppm /

/ ppm

Hotplate

ppm / / /

/ ppm

V

/ /

ppm /

% Cd

V Cd, Pb

V Pb Cd

% V

% Pb

(Perkin,

.1994)

SPSS 15

(P DSPC, 2010)

Cd, Pb

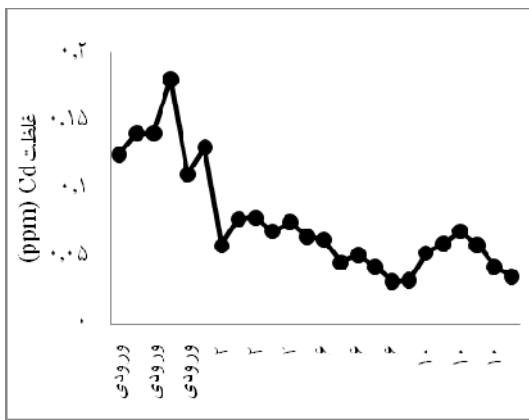
V

V Cd, Pb

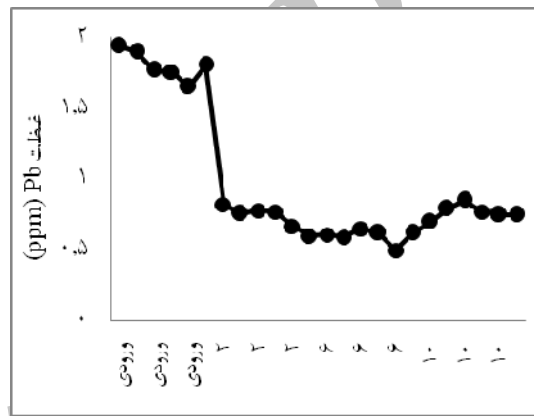
/	/	/	/	/	/	/	/	Cd(ppm)
/	/	/	/	/	/	/	/	Pb(ppm)
/	/	/	/	/	/	/	/	V(ppm)

V Cd, Pb

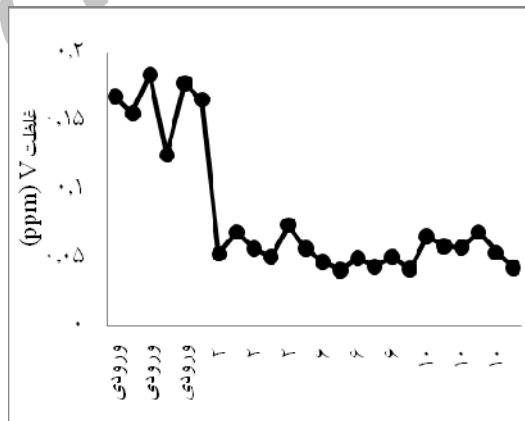
	Cd
	Pb
	V



Pb



Cd



V

	**	*	
/	/	/	Cd(ppm)
			Pb(ppm)
/	/	/	V(ppm)

: *
 : **
 ppm /
 V Pb Cd
 PDSPC,)
 (2010
 (2009) Kropfelova ()
 V Pb Cd
 ppm /
 (/)
 % /
 %
 (2008) Terzakis %
 %
 (2009) Kropfelova
⁴ Rhizofiltration

...

(Divan *et al.*, 2009) (2009) Khan
/ ppm %
/ ppm /
/ ppm %
/ ppm %
(%)
(2009) Kropfelova
% Cd
/ ppm / ppm
(/ ppm) %
(2007) Liu (2009) Chang Wei Liao

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An investigation on the efficiency of heavy metal removal from wastewater of Bidboland gas refinery using common reed

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Abstract

One of the major environmental problems in the world, especially in Iran is deficiency of water resources. This with respect to the entrance of wastewater (especially industrial wastewaters due to their toxic effects) into the water bodies emphasizes the importance of wastewater treatment. Heavy metals such as cadmium, lead and vanadium are part of oil and hence are of the major pollutants produced in oil and gas industry. In this study, the efficiency of Cd, Pb and V removal from Bidboland gas refinery was investigated using a natural wetland system. Wastewater samples and the samples of common reed were collected from the wastewater outflow of the refinery and the surrounding environment, respectively. The concentrations of heavy metals were measured in the collected wastewater samples and the treated samples after two, six and 10 days, after acid digestion. The removal efficiency of V was the highest with 66%, followed by 61% of Pb and 59% of Cd. The highest removal efficiency of heavy metals was observed to be after six days. This treatment method showed to be a proper method in order to release the treated wastewater into surface waters, wells and for agricultural usage. Therefore, this method is suggested for the treatment of the wastewater of Bidboland gas refinery.

Keywords: Heavy metals, wastewater, gas refinery, treatment, common reed, Bidboland

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