

*

/// :

/// :

١

٣

()

GIS

GIS

AHP

Neil, et al.,)

(2004

()

(AHP)

(TORAP)

TORAP

.(Khan & Abbasi, 2000)

.()

)

HSE³

(Theler, et al.,)

.(2006

.(Chen, et al., 2000)

.(Mathews, et al., 1997)

ArcGIS

SPSS

:()

•
•
•

(AHP)

(AHP)

()

()

()

()

n×n

AHP

$$W = \lim_{k \rightarrow \infty} d^k \cdot e / e^t \cdot D^k \cdot e$$

$$e = \begin{bmatrix} 1 \\ 1 \\ \dots \\ 1 \end{bmatrix}$$

$$w_i = \frac{\sum_{j=1}^n a_{ij} \cdot w_j}{\lambda_{\max}}$$

W

W

$$D = \begin{bmatrix} 1 & 4 & 2 & 2 \\ 0.25 & 1 & 2 & 5 \\ 0.5 & 0.5 & 1 & 5 \\ 0.5 & 0.2 & 0.2 & 1 \end{bmatrix}$$

$$D^2 = D \times D$$

$$D^2 \cdot e = \begin{bmatrix} 7.61 \\ 11.12 \\ 2.936 \\ 1.15 \end{bmatrix}$$

$$e^t \cdot D^2 \cdot e = (1 \ 1 \ 1 \ 1) \begin{bmatrix} 7.61 \\ 11.12 \\ 2.936 \\ 1.15 \end{bmatrix} = 191.216$$

$$D^2 = \begin{bmatrix} 4 & 9.2 & 24.6 & 41 \\ 5.21 & 4 & 15.75 & 25.75 \\ 2.196 & 1.99 & 4 & 11.715 \\ 1.12 & 2.22 & 2.2 & 4 \end{bmatrix}$$

$$A_{ij} = \sqrt[n]{\prod_{k=1}^n a_{ik} a_{kj}}$$

$$n = \sum_{k=1}^l w_k$$

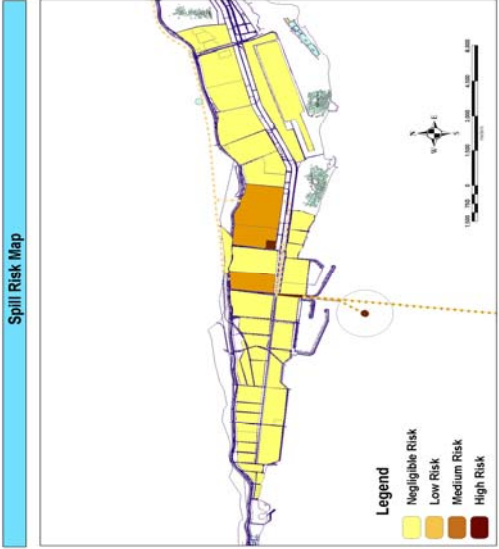
AHP

()

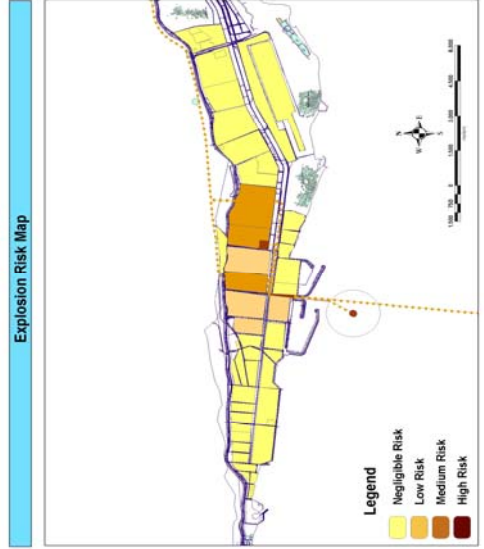
AHP

()

	A ₁₁ =1	A ₁₂ =4	A ₁₃ =3	A ₁₄ =3
	A ₂₁ =0.25	A ₂₂ =1	A ₂₃ =7	A ₂₄ =5
	A ₃₁ =0.33	A ₃₂ =0.14	A ₃₃ =1	A ₃₄ =5
	A ₄₁ =0.5	A ₄₂ =0.2	A ₄₃ =0.2	A ₄₄ =1



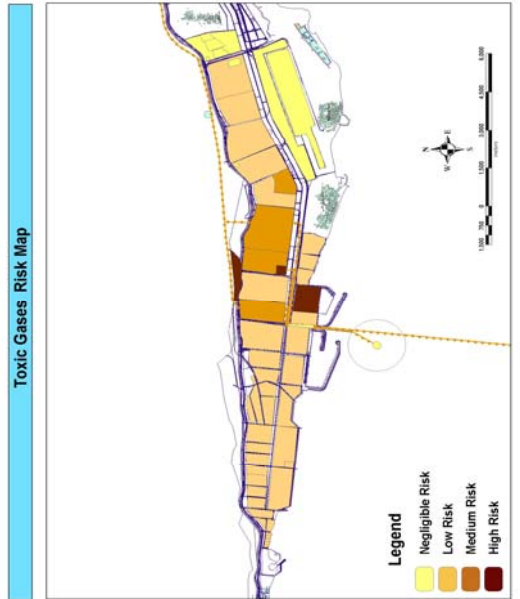
:()



:()



:()



:()

AHP

()
()

()

- 1-Analytical Hierarchical Process
- 2-Tool for Rapid risk Assessment in Petroleum refinery
- 3-Health Safety and Environment

« (AHP)

AHP

Applegate, J.S. 2004. Environmental Risk, -Valhi, England, Dartmouth Publishing Company.

Chen, Z., G.H., Huang, A., Chakma. 2000. Risk assessment of a petroleum-contaminated site through a multi-phase and multi-component modeling approach, *Journal of Petroleum Science & Engineering*, 26(1), 273-282.

Commoner, B. 1997. Comparing apples to oranges: Risk of cost/benefit analysis from Contemporary moral controversies in technology, A. P. Ian None, ed., pp. 64-65.

Khan, I. and S.A., Abbasi. 2000. *Applied Energy* 65(2000) 187-210

www.elsevier.com/locate/apenergy

Mathews, M., D.M., Karydas, M.A., Delichatsios. 1997. A performance-based approach for fire safety engineering: A comprehensive engineering risk analysis methodology, a computer model, and a case study, *Proceedings of the first international symposium on fire safety science*, International association for fire safety science, pp. 595-606.

Neil, E. & A., Eldrandaly. 2004. 1st ASCAAD International Conference-Design in Architecture Dhahran, Saudi Arabia.

O'Brien, M. 2000. *Making better environmental decisions: an alternative to risk assessment*, MIT Press, Cambridge, MA, 286 pp.

Theler D., R., Emmanuel & B., Eric. 2006. *From Geomorphologic Mapping to Risk Assessment: A Project of Integrated GIS Application in the Western*

Swiss Alps. www.mountaincartography.org/publications/papers/papers_bohini_06/23_Theler.pdf