

**"In the name of God, the Merciful, the  
Compassionate"**



## الآية الكريمة

آتُونِي زُبَرَ الْحَدِيدِ حَتَّىٰ إِذَا سَاوَىٰ بَيْنَ الصَّدَفَيْنِ قَالَ انْفُخُوا حَتَّىٰ إِذَا  
جَعَلَهُ نَارًا قَالَ آتُونِي أُفْرِغَ عَلَيْهِ قِطْرًا (96).

صدق الله العظيم

سورة الكهف الآية: 96

## **Dedication**

This Thesis is dedicated to firstly to Human coefficient to the first

**Prophet Mohammad peace be upon him.**

From who help me to learn after Allah and helped me to Overcame the  
odds

**To my parents**

Allah prolong your life And enabled me to honor them and their  
satisfaction.

Then

To whom lent to me a helping hand.....

**Brothers and sisters.**

(Tagreed, Tagwa, Fatima, Noraldeen, Mohammad and Monia)

For those who are patient and endured on my actions and lived all of  
Years of studding.....

**My dear friends.**

To all who taught me characters.....

**My teachers honored.**

To who walked to the one trail together.....

**My colleague's eighth installment.**

To all who learn and useful himself and the country

**The students**

All of them gave this Humble work.....

To all Muslims

Dedicate this find humble

## Acknowledgment

Praise be to Allah alone, and prayer and peace be upon the Prophet Mohammad .....after: I thank Almighty God that helped me to complete this work, I may thank you very much on the bounty, and then thanks go to the people of virtue and recognition thanks to them in recognition of their effort and their quest. I am also honored to extend my sincere thanks and gratitude to everyone who was credited after God in the output of this scientific research in its current form Prof. **Dr. / Essam Abkar Ishaq**, Dean of the Faculty industries Sudan University for Science and Technology, the northern part, and the supervisor of this Thesis ,and who found the professor virtuous generous in his knowledge and his creation, effort and gave proper guidance and the public good, which helped me overcome a lot of odds, Parts of God meant all the best and richly rewarded and standing-time health and wellness. I also extend my thanks to the engineer / Muawiya alZaki - Soba industrial area manager, Ministry of Industry and Investment, and Mr. Moshles Mohammed Saleh - analyst Statistical in Ministry of Industry and Investment Colonel Moataz Abbas General Directorate of Civil defense, Colonel Ahmed almatare - Civil defense Department - Safety and Prevention Branch, Our thanks go to:

A / samah Bakri - the Khartoum State Office  
A / Hawwae- local Work Office of the Bahri  
A / Eshraqa Ahmed Osman - director of industrial security management - work Khartoum State's office. And thank all those who gave me a helping hand.

## **Abstract**

In recent decades, the world has seen large developed the industrial and urban and industrial cities especially so was keen researcher to shed light on the problem of fires factories that facing workers and destroy everything around them and to consider factories in support of the national economy field.

It represented the importance of the study to propose a number of solutions to reduce the factories fires in Khartoum, fighting them and educate workers and training them on the importance of knowledge and to control of fire and means and methods, and to contribute to provide sufficient information for this area in to the library.

The study depended on the descriptive analytical method using the questionnaire as study tool , then distributed the questionnaire to a random sample of Khartoum factories (including Industrial Zone in Bahri and industrial area of Omdurman, Khartoum's industrial zone) .and then reached through the analysis of the survey for a number of results the most important: -

The inadequate and shortage laws and stipulations used and the lack of follow-up implementation, Lack of awareness of the concept of safety and fire-fighting at the factory owners and the community in Khartoum state, responsible for fire-fighting is collective responsibility to include all parties, 45% of the factories in Khartoum city applied fire-fighting of the existence of manual systems such as: (a fire extinguisher and hoses and fire and fire hydrant). Weak oversight and coordination between this competent bodies and

factories administrations to put out the fire. Electricity is the major cause of most of fire incidents.

The study came out with recommendations for combating the fire like the need of awareness and education of workers and the owner and the community, and impose deterrent penalties for those who do not abide by laws, and periodic review of electrical connections, the definitive work of each circle and connecting it line ground, attempting to provide the means and firefighting systems by low cost relatively by exempting of companies from customs duties, providing a hand extinguishers by sizes different fit with the type of smoldering material in factory , and the use of intelligent systems to monitor the extinguishing systems in factory.

## Abstract in Arabic

### المستخلص

شهد العالم فى العقود الأخيرة تطورا فى المجال الصناعى والعمرانى وبخاصة المدن الصناعية لذا حرص الباحث على إلقاء الضوء على مشكلة حرائق المصانع التى تواجه العاملين وتدمر كل ما حولها ولإعتبار المصانع دعما للإقتصاد الوطنى. تمثلت أهمية الدراسة فى إقتراح عدد من الحلول للحد من مكافحة الحرائق بالمصانع بمدينة الخرطوم و توعية العاملين بالمصانع وأهمية تدريبهم على معرفة وسائل المكافحة وطرقها و المساهمة فى تزويد المكتبة بالمعلومات الكافية عن هذا المجال. إعتمدت الدراسة على المنهج الوصفى التحليلى بإستخدام أداه الإستبيان وتوزيعها على عينة عشوائية من مصانع مدينة الخرطوم (شملت المنطقة الصناعية بحرى والمنطقة الصناعية أم درمان والمنطقة الصناعية الخرطوم). وتم التوصل من خلال تحليل الإستبيان لعدة نتائج أهمها: -

قصور القوانين و الإشتراطات المستخدمة وعدم متابعة تنفيذها و قلة الوعى بمفهوم السلامة ومكافحة الحريق لدى أصحاب المصانع و المجتمع بولاية الخرطوم . يعتبر بعد مراكز الدفاع المدنى وقلتها خاصة بالمناطق الصناعية من أكبر المعوقات التى تحد من مكافحة الحريق. سلوك العمال ومدى وعيهم له دور كبير فى مكافحة الحريق وعدم نشوبه. مسؤولية مكافحة الحريق جماعية تشمل كل الأطراف. تعتبر الكهرباء هى السبب الرئيسى فى معظم حوادث الحرائق ( زيادة الأحمال على الكابلات والتوصيلات الكهربائية). أغلب الطفايات اليدوية الموزعة بالمصانع ذات سعة محدودة و لا تخضع للصيانة والإستبدال. عدم تعاون المؤسسات الخدمية مثل: إدارة الكهرباء وغيرها.... للقيام بفصل التيار عند حدوث حريق. نسبة 45% من مصانع مدينة الخرطوم تطبق مكافحة الحريق من وجود أنظمة يدوية مثل: (طفاية الحريق والخرطوم و وقاف الحريق). التكلفة العالية لأنظمة و وسائل مكافحة الحريق مثل (نظام الرشاشات). ضعف الرقابة والتنسيق بين الجهات ذات الإختصاص وإدارات المصانع مما يعيق المكافحة . عدم وجود مواكبة و إعتبرات للتوسع المستقبلى بالمصنع وزيادة أجهزة الوقاية والمكافحة. عدم فرض عقوبات رادعة لمن لا يلتزم بتوجيهات الوقاية والسلامة.

وخرج البحث بتوصيات خاصة بمكافحة الحريق تتمثل فى ضرورة التوعية والتنقيف للعمال والمالك والمجتمع، و فرض عقوبات رادعة لمن لايلتزم بالقوانين، والمراجعة الدورية للتوصيلات الكهربائية وعمل قاطع لكل دائرة وتوصيلها بخط أرضى،محاولة توفير وسائل و أنظمة مكافحة برسوم مخفضة نسبيا وذلك بإعفاء الشركات من الرسوم الجمركية ، توفير طفايات يدوية بأحجام مختلفة وذات مادة إطفاء تتناسب مع نوع المواد المشتعلة بالمصنع، واستخدام الأنظمة الذكية لمراقبة أنظمة الإطفاء بالمصنع.



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## List of Symbols /Abbreviations

| <b>Symbols</b> | <b>Significance</b>                            |
|----------------|--|
| BS             | British standard.                              |
| ENC            | European National code.                        |
| FEMA           | The Federal US administration fire.            |
| NFPA           | The National fire Protection Authority         |
| LPC            | Loss prevention code.                          |
| UFC            | Unified Fire Code.                             |
| FSE            | Fire Safety Engineering.                       |
| OSHA           | Occupational Safety and Health Administration. |
| SPSS           | Statistical package for social sciences.       |

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