

Ministry of Higher Education  
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University of AlMuthanna  
College of Science



# **Study the effect of Cement dust on some Physiological and Biochemical Blood parameters for Workers of AL Muthanna Cement Factory**

A thesis

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by

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## Summary

The study was conducted on workers of AL- Muthanna Cement Factory, a subsidiary for the company's General Southern Cement to know the effect of cement dust on some Blood parameters physiological and biochemical ,as well as the Relationship of correlation for the factor of smoking and years of service on these parameters for the period from June until October of 2011, the study involved taking seventy-five blood samples from workers were working in sections of mills of raw materials, ovens and mobilization of cement on the basis of Twenty five workers from each section, and twenty five donors outside plant as the control group for comparison, and showed study the following results:

- 1- significant increase ( $P < 0.05$ ) in the number rate of the total white blood cells, number rate of lymphocyte cells, Serum Total Bilirubin Concentration, Serum unconjugated Bilirubin Concentration & Triglycerides Concentration in studied sections when compared with the control group.
- 2- significant decrease ( $P < 0.05$ ) in the number rate of Neutrophil cells & number rate of the platelet count in studied sections when compared with the control group.
- 3- There is no significant difference in the Monocyte cells & Mean Cell Hemoglobin(MCH ), in the workers of sections , comparing with the control group and with each other, but Was observed decrease did not reach the level of significant in Mean Cell Hemoglobin .
- 4- significant decrease ( $P < 0.05$ ) in the number rate of the Red Blood Cells (RBCs), Hemoglobin (Hb) & Packed Cell Volume (PCV) in studied sections when compared with the control group, but significant increase (  $P < 0.05$ ) in the workers of cement mobilization, comparing with the rest of the other sections.
- 5- significant increase ( $P < 0.05$ ) in the number rate of Eosinophil cells ,Mean Cell Volume (MCV) & Mean Cell Hemoglobin Concentration (MCHC) in the workers of mills of raw materials and ovens ,comparing with the control group.
- 6- significant increase ( $P < 0.05$ ) in the number rate of Basophile cells & Concentration of Glutamic Pyruvate Transaminase (GPT) for workers of cement mobilization, comparing with the control group.
- 7- significant increase ( $P < 0.05$ ) in Erythrocyte Sedimentation Rate (ESR) & Serum conjugated Bilirubin Concentration for workers of mills of raw materials and mobilization of cement , comparing with the control group ,

didn't observe significant difference in workers of ovens ,comparing with the control group, but a significant decrease ( $P < 0.05$ ) in workers of ovens with comparing with the rest of the other sections.

- 8- significant increase ( $P < 0.05$ ) in the Concentration of total serum cholesterol & Concentration of Glutamic Oxaloacetate Transaminase ( GOT) in the workers of ovens and mobilization of cement, comparing with the control group.
- 9- significant increase ( $P < 0.05$ ) in the Concentration of Alkaline Phosphatase (ALP) for workers of mills of raw materials and insignificant in the workers of ovens and mobilization of cement, comparing with the control group, also significant increase ( $P < 0.05$ ) in ALP for workers of mills of raw materials compared with the rest of the other sections.

The study also pointed to the relationship of correlation between two factors, the smoking and years of service on the physiological and biochemical Blood parameters and the study showed the following results:

1. Relationship of the correlation is weak positive, for the total number of white blood cells , the rate of lymphocytes & Mean Cell Hemoglobin Concentration (MCHC) with smoking and years of service.
2. Relationship of the correlation is weak positive, for Eosinophil cells, Erythrocyte Sedimentation Rate (ESR), Mean Cell Volume (MCV), Serum conjugated Bilirubin Concentration, Serum unconjugated Bilirubin Concentration & Concentration of Alkaline Phosphatase (ALP) with years of service.
3. Relationship of the correlation is Medium positive, for the Concentration of total serum Bilirubin & Concentration of Triglycerides with years of service.
4. Relationship of the correlation is weak negative, for the number of the red blood cells (RBCs) & number rate of the platelet count(PLC) just with years of service & the Neutrophil cells with smoking and years of service .