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SURVEY INTO INDUSTRIAL NOISE
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SURVEY INTO INDUSTRIAL NOISE IN CYPRUS

by

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SUMMARY

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Title: Survey into industrial noise in Cyprus

The purpose of this report is to give the degree in which the problem of noise pollution exists in the Cyprus industry and how it affects the hearing of the workers. It also indicates the numerous effects of noise upon human in order to sensitize the people so that they all fight noise pollution with their own means.

For the project to be performed noise measurements were taken in 9 industries. The acoustic energy received (which can be expressed by the percentage of dose) by the 28 workers in the industry was measured and the findings were statistically analysed.

Then five out of the twenty-eight workers had their hearing examined by an otolaryngologist. The results were also analysed statistically. The results of the examination of other eight workers who are working in industries (not included in the nine industries mentioned above) were also analysed.

The main conclusion is that the great majority of workers had received an average dose less than 100% and that there is a huge problem of noise in industry because as it was found almost 30% of workers had received a noise of above 100% dose. Also it was found out (from the thirteen workers examined) that more than half of them are suffering from tinnitus and have a high threshold shift in the high frequencies. Finally a very small percentage of workers employs hearing protection and the great majority is not aware of the effects of noise upon human.

INTRODUCTION

What is noise? Noise is usually defined as an unwanted sound, a stress that injures human being. This definition implies that some criteria exist for a sound to become noise. Some criteria are: annoyance, damage to hearing, reduction in efficiency of work performance etc.

In the century that we live, technology and consequently industry has been highly developed. One of the human punishments (for the continuous harm to our planet) is noise. The levels of this human enemy called noise have been rising steadily in our mechanised society, to a point where noise is a hazard to the public health. According to a survey in various cities of the world noise levels are rising at a rate of one decibel (unit for measuring sound level) per year [4,1]. Therefore noise is an undesirable consequence of our industrial advance. Noise is 'generated' mostly by industrial machinery, airports and vehicles.

Cyprus is now facing the problem of industrial noise, surely in a lower degree than other developed European countries like Germany and France, even though the Cyprus industry is light. The degree that this problem exists in the Cyprus industry will be examined in this project.

Factories have been known for a lot of years to produce high levels of noise. There are many cases of workers who end up with problems of reduced hearing. But reduced hearing is not the only effect upon human by excessive noise (see relevant chapter). Considering the above there is indisputably a need for obtaining an acceptable noise environment which can be achieved by the process of noise control.

It is good to refer to some historical data of how humanity was dealing with the problem of noise and how noise control was implemented in the past. In the decades of 1940 and 1950 acoustical engineers controlled noise by trial and error and in some cases, they were using their common sense to overcome this problem. Ten to fifteen years later, noise reduction became an engineering science. Firstly there was a collection of known information for example the bulletins on sound absorption coefficients which were first issued in 1934 by the Acoustical Materials Association (AMA) and the reports on sound insulation which were first published in 1939 by the National Bureau of Standards (NBS). Soon later, noise control was developed to a science after scientists had been able to analyse acoustical phenomena, to predict future situations quantitatively and also because instrumentation was highly developed. Much of the support necessary to the development of noise control or reduction as a science has come from the transportation industry and the military[1].

After the World War 2 a new concept (or idea) to the solution of noise control problems was introduced: the systems concept. When there was a noise control problem it was thought and faced as it was a system with three components: the source the path and the receiver. During World War 2, it was the Europeans who published an important series of paper on sound absorption in acoustical materials. In the decade of 1950 there was a growing knowledge of industry that quiet products had sales appeal [1].

The scare of the damage to hearing was thought to be more important and this is justified by many successful trials by workmen against industry (trials in New York, Wisconsin, USA). After 1953 organisations (management, industrial hygiene, engineering) held special symposiums on damage to hearing, industrial audio-metric programs, and noise control in factories.

In the last four decades there are great technological improvements in noise control. In the field again of military, US Army has produced the inaudible motor for front-line use, US Navy produced the almost silent submarine and the Air Force the almost silent plane. Another example is in the construction industry which has available new acoustic insulation materials that can reduce sound in thin-walled apartment houses and offices [4].

Many manufacturing companies today which produce machinery that produce high levels of noise try to reduce the level to the minimum degree that is possible. In that way industrial noise is considerably reduced. Satisfactory reduction of the noise levels strengthens the marketing of their products (see Appendices fig.1). Quieter machinery can enhance productivity and raising productivity is the source of competitive advantage, the lever of growth, the fuel for prosperity.

Cyprus industry is an industry with a low productivity. Will excessive noise be one reason for that? To what degree are the noise levels in industry, will be examined later in this project. The approach followed was the following: by taking measurements of the noise doses received by workers during their 8-hour shift, and elaborating statistically the results. Some of the workers exposed to noise, had their ears examined by an otolaryngologist and the results were also analysed statistically.

Noise : " The most widespread factor of danger to which the highest percentage of labour is exposed to".
(Alberti and Blur 1982)