

HIGHER TECHNICAL INSTITUTE

CIVIL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

AIR POLLUTION CONTROL
— PARTICULATES

C / 891

BY: PAPADOPOULOS THEOPHILOS

& SAYVA NICOLAOS

JUNE 1999

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AIR POLLUTION CONTROL-PARTICULATE

By
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Project Report

Submitted to

The Department of Civil Engineering

Of the Higher Technical Institute

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Diploma Project Number: C/891

Title: Air Pollution Control – Particulates

Objectives:

- To state general air pollution problems , pollutants involved , and control measures.
- To state and analyse particulate production , standards , and impact on the environment and humans.
- To state the use and operation of an “Airborne Particulate Monitor”.
- To investigate and present results and conclusion regarding particulate pollution situation of an assigned area.

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Mr N. Kathijotes

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We would also like to dedicate this project, a result of hard work , to our families for their support through out our attendance to Higher Technical Institute.

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INTRODUCTION

It is becoming clear that air pollution is becoming one of the most serious environmental problems of the planet over the last few years having effects on humans, animals, plants and the environment in general. A distinction of the origins of air pollution must be made between natural and man-made sources, in order to understand the effects of each pollutant and find the suitable control measures.

Natural air pollutants are produced during volcanic eruptions, during forest fires and during processes related to air chemistry in thunder storms and also from plant pollen. The most important anthropogenic source groups of air pollution are industrial furnaces and industrial processes, traffic, small scale businesses and domestic furnaces. This project attempts to analyse this aspects, regarding air pollution in general, and particulate matter in the atmosphere, in a more specific way.

People nowadays are becoming more sensitive in environmental matters, after some air pollution episodes caused sickness and death to humans and had some very harmful effects on the environment. The scientists invented some control devices in order to limit the concentration of air pollutants. The performance of removal devices can characterised by the degree of removal, the fractional degree of removal, and the residual content. These efforts were successful in some cases, with satisfactory results in the decrease of the concentrations of air pollutants in the atmosphere. However, a lot of work is to be done until we reach the wanted standards.

This project is mainly concerned with particulate pollutants because among others they are respirable, and they can have toxic effects in the respiratory system, or they can transport toxic substances into the lungs due to their absorptive properties. They are produced mainly by combustion, evaporation, or condensation processes being separated according to their mode of formation as dust, smoke, fumes, ash, mist or spray.

A lot of devices are used in order to determine the concentration of particles in atmosphere so that the most suitable control measures are chosen for the effective facing of the problem. The AMS 950 IS aerosol monitoring system, used for the execution of this project, is used for measuring the concentration of particles in atmosphere. It uses one of the latest methods of obtaining measurements-infra red light beam being sensitive enough for liable measurements.

The use of such an instrument or any other similar can only help to control air pollution in general with positive effects in quality of life for all humanity.