STUDIES ON ACID SLUDGE OF USED LUBRICATING OILS AND THEIR BIOLOGICAL IMPACTS ON THE LIVER OF WHITE RAT

A THESIS
SUBMITTED
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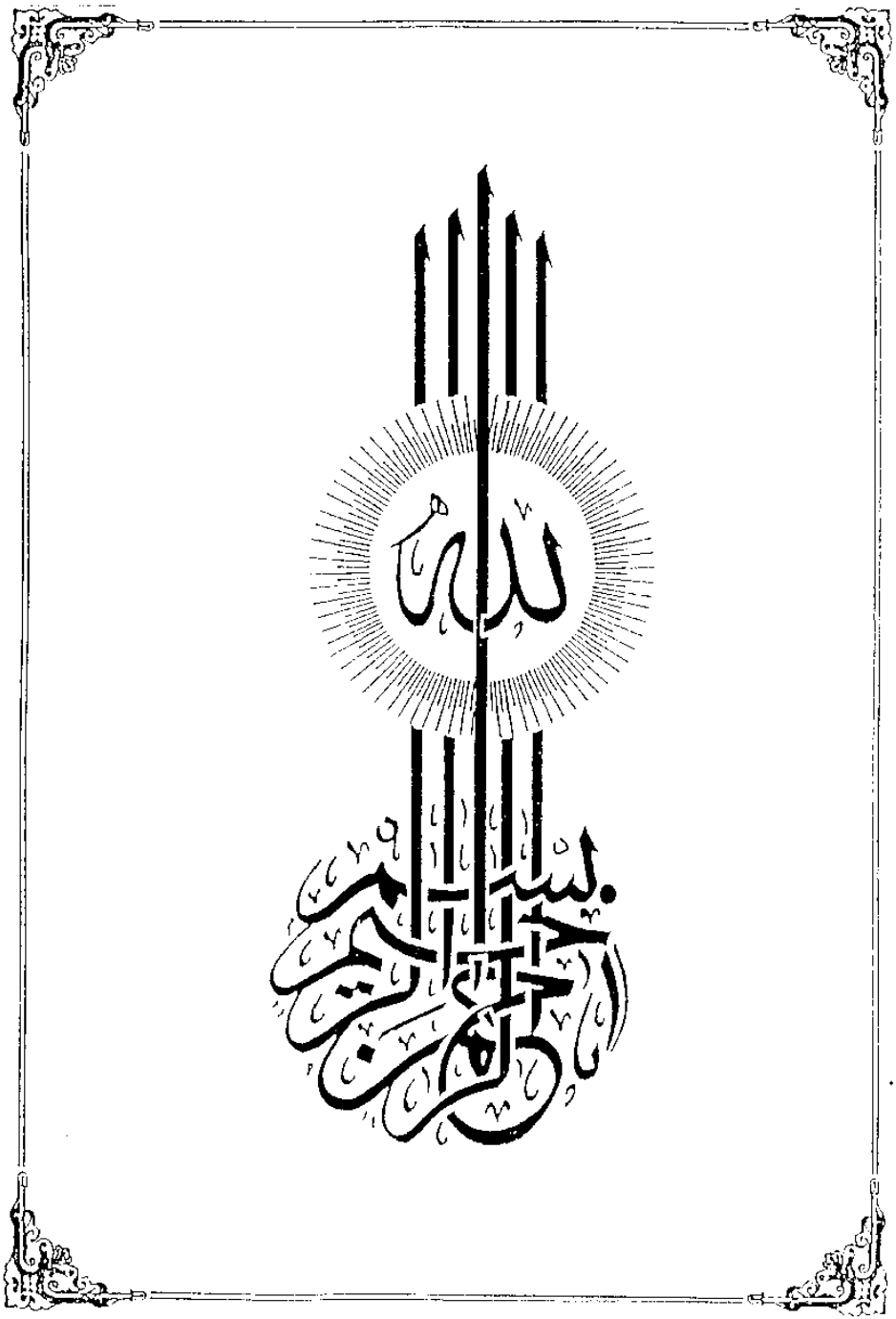

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INTRODUCTION

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With the rapid development in different fields of life, the impacts of environmental pollution problems have been progessively increasing whether this pollution is direct or indirect .

Among such problems are those related to industrial and petroleum products that have been evidenced to cause tremendous serious and dramatic consequences which must be faced with suitable effective scientific and technological solutions .

In a report issued by Harold [1973], he marked that in the refinery operations ,certain polluting materials are commonly released into the environment producing considerable pollution hazards . In the same puplication , the author postulated that the wastes of crude oil as well as the crude oil processes, produce high chemical oxygen demonde [COD] and biological oxygen demonde [BOD] which are responsible for plentiful environmental pollution problems involving air ,water and land .

Among the emissions which contribute to air pollution are several harmful substances, including sluphur oxides, nitrogen ,carbon oxides , hydrofluoride, chlorines, ammonia and ozone which are prevailing in the aerosols [W.H.O.,1972 ;U.S.E.P.A.,1974 ; N.A.S.,1978 ; Fishelson,1978 ; Waldbatt,1978 and Ferrus,1978]. According to these reports,such serious materials were mentioned by several authers to cause several body impairments comprised mainly of system plugging, catalysis , poisoning and disturbed respiration, consequent to their enterance into the body by means of ingestion ,absorption ,or even skin punctures. Table [1] shows types of air pollutants and their general effects on body organs [Envir. sci.,1983].

In a rather simelar direction ,many authors have marked that the industrial wastes, containing chemical pollutants, commonly contain a variety of toxic inorganic metallic and organic compounds which provoke

TABLE(1): TYPES OF AIR POLLUTANTS AND THEIR EFFECTS ON BODY ORGANS (Envir. Sci. , 1983)

Air Pollutants Groups	Principally Affected Organs
Sulphur oxides,nitrogen oxides ozones,chlorine and ammonia	Lining of respiratory tract
Quartz,silica,carbon,asbestos, cobalt and iron oxides	Pulmonary interstitial tissue
Berylium,hair sprays and talcum powder	Lungs
Zinc,manganese,herip and cotton	Allvolic
Carbon monxide and hydrogen sulphide	Hemoglobin respiratory centre
Lead,mercury,fluoride,cadmium, chlorinated hydrocarbon and organophosphate	Nerve tissue,brain,bones,teeth ,blood vessels,kidney,fat tissue,liver and nervemus-cles synapses
Epoxy resins,thiocyanate,form-aldehyde,pollen,fungi and house dust	Skin,respiratory tract and lungs
Strontium-90,iodine-121, nickel,carbonyl,chromium, asbestos,selenium,arsenic, polyvinyl and benzo-alfa-pyrene	Bones, thyroid ,lungs, sinuses,nose,plura,skin and testicular tissue

severe water problems, in which case some of soil and sediment organisms act to convert the inorganic and metallic material into organic compounds, which were found-in many cases- to develop kidney and bladder cancer [Craun,1975 and Kusma,1977]. However,tables (2 and 3) indicate allowable maximum contaminant levels for metals in either the inorganic or organic chemicals in water .

The above postulation was later strengthened by a report issued by C.E.Q. [1980] indicating that many of the organic compouds -found in ground water - have obvious carcinogenic consequences.

However, in the present time , the chemical and physical changes occurring in marine environment - due to oil discharge - had represented a cruciol point for many investigators since many of these products were noteced to cause significant toxicity to the aquatic fauna including algae, bacteria , invertebrates , fishes ...etc [Jacaze,1976 and Falk - peterson,1984].

In this respect,Markela [1972], C.E.Q.[1978] and U.S.E.P.A.[1978] reported that soild wastes might occur as actual solids,semisolids or as suspended materials. The same reports have conferred that these wastes are increasing at the level of 3 percent a year and most of this increase is attributed to air and water control improvements that produce more residues . These wastes are considered to be toxic if the extract exceeds the levels listed in table [4].

In a publication presented by Marshall[1974], he marked that toxicty to living organisms represents a critical fiction in evaluating the hazards of chemical and refinery wastes.

Landfill was supposed to be the most appropriate method of disposal , and was primarily used for separator and tank bottoms sludges , sewer cleanings and water treatment plant sludges [Harold,1973]. However, table [5] illustrates the types of wastes and their disposal methods.