INVESIGATION STUDY ON EFFECT OF INDUSTRIAL EFFLUENT ON SOIL PROPERTIES AROUND ARIYALUR DISTRICT

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Abstract: *This paper deals with the effect of industrial waste disposal.It is one of the major issuedue to high environmental risks caused by improper waste disposal. The industrial waste disposal is highly affect water, air through its various chemical as well as physical reaction .The project has been done for the effect of industrial waste effulent on soil properties around cement factory in Ariyalur district.This factory is located at Govindhapuram in Ariyalur district .For determining the soil quality near that industry ten areas has been selected around Ariyalur district for collecting soil sample. By conducting various soil test with collected soil sample physical as well as chemical properties of soil has been determined and conclusion was made with comparing the changes of soil property due to the disposal of effulent from earlier data's.*

Keywords: PHvalue, Chemical properties, Cement Factory,

1. INTRODUCTION

1.1 GENERAL

Pollutants released from industries are one of the major sources of environmental pollution. The cement dust, produced by cement manufacturing units is considered one of the most hazardous pollutants which effect the surroundingenvironment. Water and soil is one of the important and valuable resources of the nature. All living things are directly and indirectly dependent on

soil for day to day needs and 95 % of the human food is derived from the earth. Making plan for

having healthy and productive water soil is essential to human survival. The environmental pollution as a result of cement industry could be defined as an undesirable process that is responsible to pollute water, air and land through its various activities, right from the mining activity of the raw material (limestone, dolomite etc.) to its crushing, grinding and other associated processes in cement plant. Air

pollution has become a serious problem in recent times due to rapid growth of thermal power stations, cement factories, steel and coal industries. In which, the cement dust contains different particulate pollutants which affects vegetation, soil microbial population and other soil properties (Iqbal and Shafig 2001). Cement industry is a continuous source of Cement dust and their constituent gases such as SO_2, CO_2, CO,and SiO_2 adversely affect the drinking water resources like wells, ponds and mine pits.

1.2. Adverse effect of cement dust on human health

Thickening and cracking of skin, severe akin damage from chemical burns can observe in contact with the dust. Silica exposure can lead to lung injuries . Cement dust causes chronic lung diseases and carcinoma of the lungs, stomach and colon . Both organic and inorganic contaminants are important in soil. The most prominent organic chemical groups are fuel hydrocarbon, poly nuclear aromatic hydrocarbons (PAHS), polychlorinated biphenyls (PCBs), chlorinated aromatic compounds, detergents, and pesticides. Inorganic species include nitrates, phosphates and heavy metals like cadmium, chromium and lead, inorganic acids and radionuclide. The sources of these contaminants are industrial waste materials, agricultural runoffs, acidic precipitates and radioactive fallout. The major sources of environmental pollution are pollutants released from different industries. The dust, produced during the manufacture of cement is considered one of the most hazardous pollutants which adversely affect the surrounding environment. One of the primary producers of carbon dioxide (a major Greenhouse gas) is the cement industry. Excessive use of concrete causes damage to the most fertile layer of the earth. There are so many broken cement structures left behind unattended all over Asia, which are unsuitable for the environment. Concrete is used to create hard surfaces contributing surface runoff thatcan cause soil erosion, pollution of water and flooding

2. STUDY AREA

Soil samples were collected from 10 areas situated at 5km,10 km, 15km,etc.,away from the factory.thelocalitiesareottakovil,pottaveli,govinthapuram,ariyalurN,ariyalurS,poiyathanalur,rayampuram,sennivanam,illu

paiyur,asthinapuram.To describe the status of the pollutions of soil by industrial activities, relevant data sets were surveyed and reviewed.

3. METHOD OF SAMPLE COLLECTION

Quatric technic has been carried out to make the samples observation points for soil samples collection. Soil samples has been collected from the study area randomly for the which the spatial data indicating the locations of the samples. The samples of soil were being evaluated to determine the chemical parameters namely ph,EC ,N ,P,K,Fe,Zn,Mn,Cu. Hand held GPS with 5m accuracy was used to get the spatial data for ten soil samples.Finally calculate the samples values and find the soil samples range.

4.SAMPLE TESTING

Soil pH was determined by glass electrode pH meter in 1:2 soil water suspensionsElectricalconductivity was measured in the supernatant liquid of 1:2 soil water suspensions by conductivity meter. Soil pH expresses soil acidity. Most crops grow best when the soil pH is between 7.0 and 8.2. The plantavailable forms of nitrogen are ammonium-N (NH4 -N) and nitrate-N (NO3 -N). The availability of most micronutrients decreases as pH increases.physical property has been determined whether the text comes under clay lume or sandy clay lume.EC measurement in electrical conductivity instrument,PH value PH meter instrument,micro nutrient content tested from in AAS instrument (Analitical absorption specturmeter.)

5 TEST RESULTS

S.no	Name of the village	EC	PH	TEXT	LIME STONE	N	P	K	Fe	Zn	Mn	Cu
1	ottakovil	0.19	8.2	CL	P	56.40	27	95	6.24	2.26	4.15	0.36
2	pottaveli	0.25	7.9	SCL	N	43.6	42	60	5.16	1.10	2.17	1.16
3	govindhpuram	0.48	7.32	SCL	M	72.4	38	75	6.10	1.19	3.15	2.20
4	Ariyalur N	0.22	7.9	SCL	N	69.7	42	55	5.20	2.15	1.15	2.02
5	Ariyalur S	0.65	8.2	CL	M	66	28	85	6.98	0.86	4.68	0.72
6	Poiyathanallur	0.16	7.74	SCL	N	37.2	19	71	3.15	4.15	0.20	2.15
7	Rayamapuram	0.19	8.4	SCL	N	56	27	130	6.85	1.67	3.21	1.20
8	Sennivanam	0.14	8.2	SCL	N	66	32	110	4.16	3.05	2.91	0.99
9	lluppaiyur	0.19	8.0	CL	P	43.6	23	165	4.15	0.19	1.15	3.16
10	asthinapuarm	0.16	7.0	SCL	N	37.2	22	71	2.16	3.15	3.16	0.15

5.1 properties of soil sample collected from study area

6. RESULT&DISCUSSION

By comparing with previous datas particular number of properties only having huge difference when compared to the other factors. For example PH value varies from 7.32 to 8 .3 at govinthapuram shows the increase of alkalinity in soil content. K potassium content also increase in illipaiyur it has the range beyond the limit.
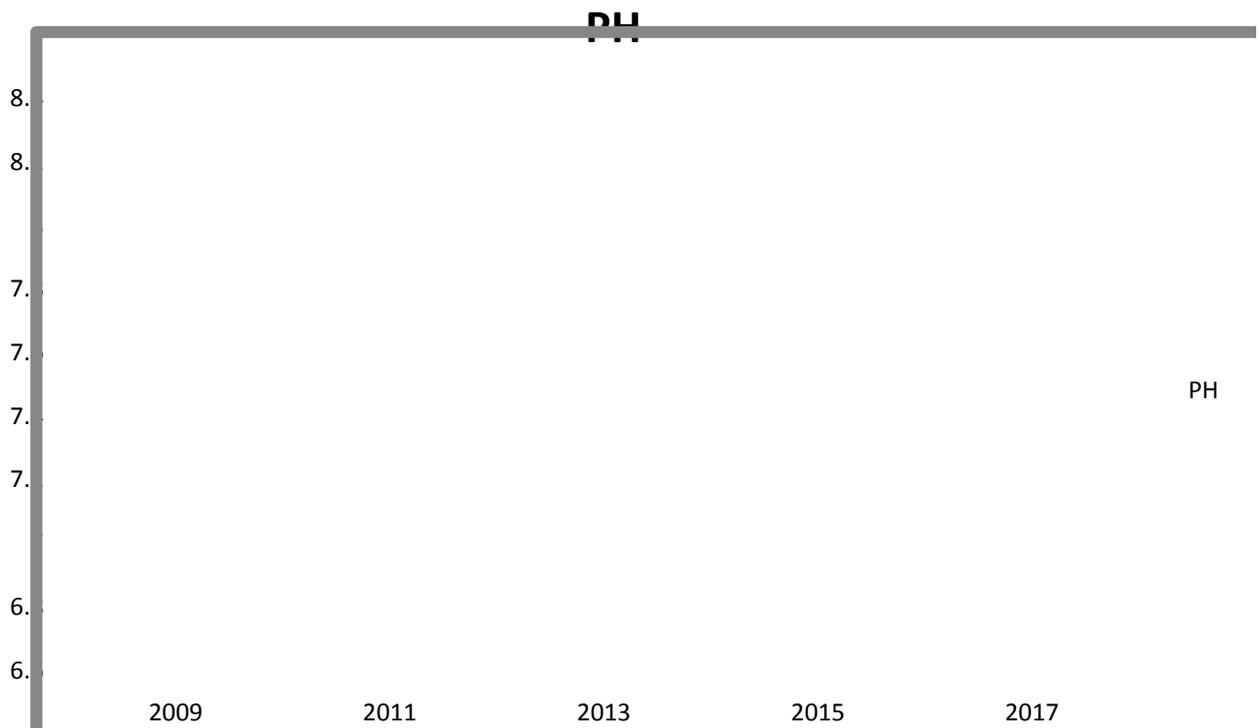
PH

8.				
8.				
7.				
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6.				

PH

| 2009 | 2011 | 2013 | 2015 | 2017 |

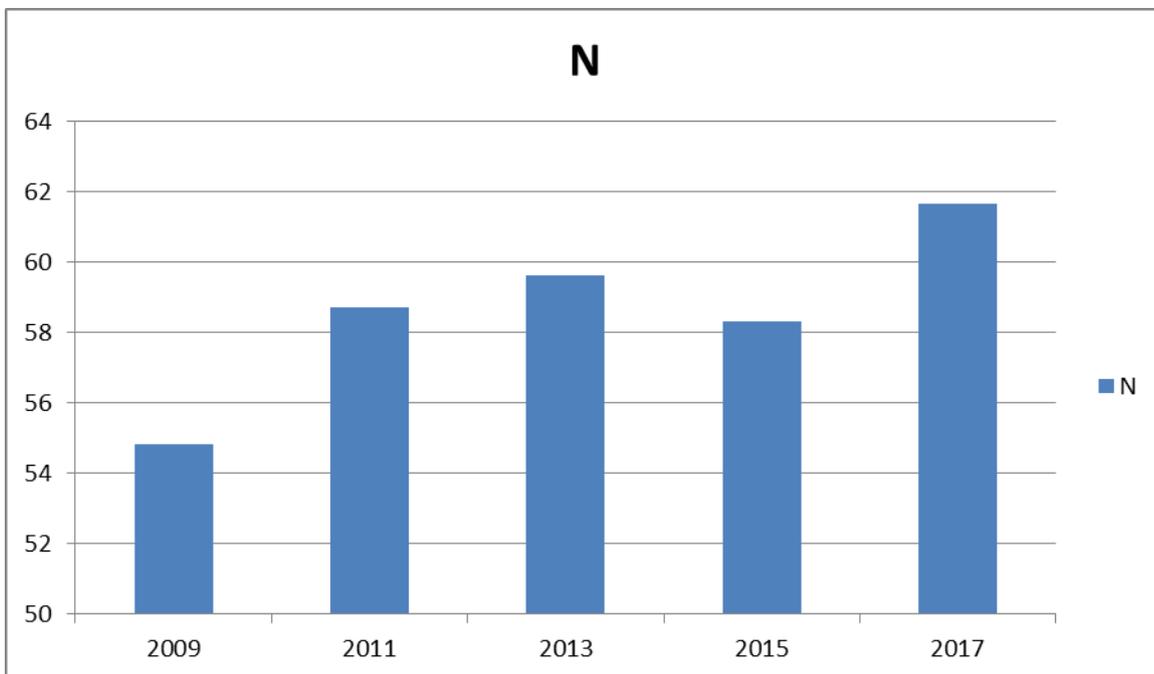FIG I comparison of PH value from previous data's

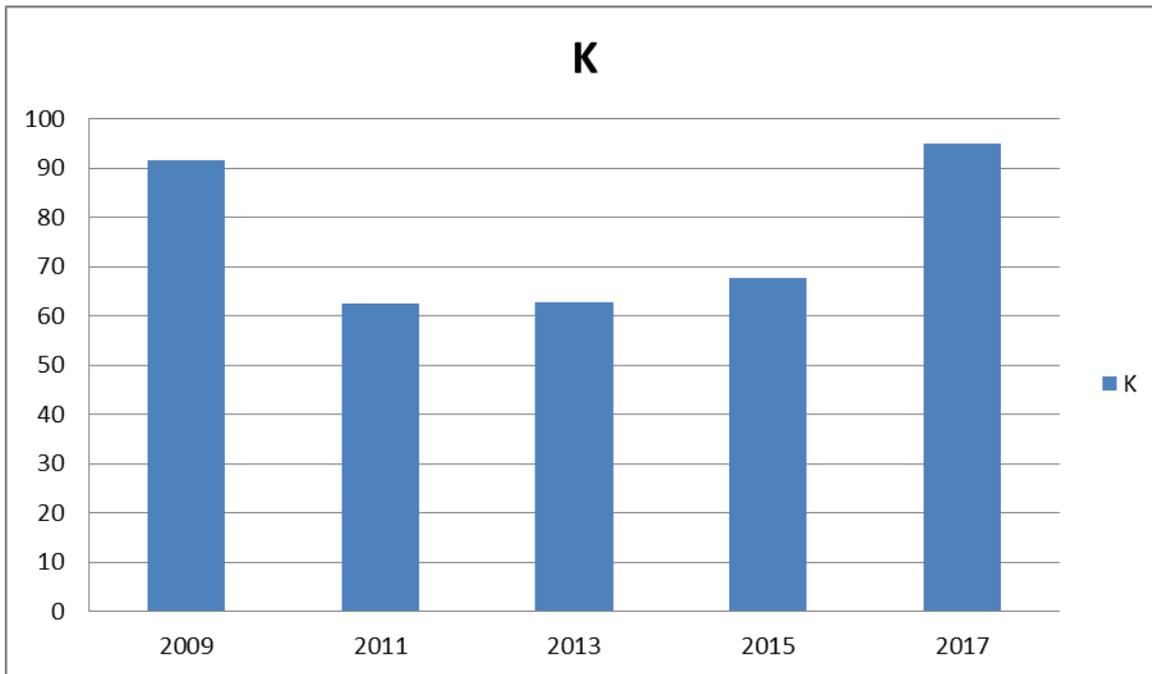FIG 2 comparison of N value from previous datas

FIG 3 comparison of k value from previous data's

7. CONCLUSION

The physical chemical factor has been suceccfully from the collected soil samples around ariyalur district,such as ottakovil,pattaveil,govindhpuram,ariyalur s,Asthinapuram ect.,totally 10 samples collected in the Ariyalur district,from the test result we concluded the parameters such as PH increases with increase in distance from the factory. in distance.the presence of heavy metal beyond to ranges wiil affect living organisams the range of increment is high when compared to previous earlie data.

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