

## Medicinal Junk Soil and its Abolition by Cow Dung

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**Abstract:** Soil is the upper piece of the world's outside and bolsters our life supplies through compound, natural and physical components. People depend a ton on soil for its sustenance and safe house. Because of late natural changes in present day life, dumping of poisons to soil, has corrupted its quality. Soil contamination is a noteworthy worry in the fight against natural catastrophe. The sole reason for the trial think about led was to exhibit the corruption of soil microorganisms when lethal substances gathering because of dumping of restorative waste to soil and how it impact living things like plants which develop specifically on it. Additionally a trademark consider on the physical and concoction properties has given a nitty gritty perspective of the issue. Promote it was discovered that when the harmfulness of soil builds living things think that its hard to flourish and it can be killed by bovine excrement.

**Keywords:** soil, environmental changes, toxic substance, toxicity.

### 1. INTRODUCTION

Soil is a critical component in human survival and can be depicted by different definitions. Soil is an extremely complex heterogeneous medium which comprises of strong stages containing natural issue and minerals and soil arrangement as the liquid stage where soil response, transport and adsorption occur[1].

The interest for soil treatment systems is thus developing and the advancement requiring little to no effort, productive and ecologically benevolent remediation innovations by microorganisms has for the most part turned out to be one of the key research exercises in natural science and innovation. In choosing the most suitable soil remediation techniques for a specific contaminated site of healing centers and medications dumped regions. It is of huge significance to consider the trademark highlights of the dirt and the contaminants [2,3].

Previously, soil sullyng was not considered as critical as air and water contamination, since soil defilement was frequently with wide range and was more hard to be controlled and represented than air and water contamination. Be that as it may, as of late it has gotten the eyes of numerous individuals how imperative is it to secure the dirt. Bioremediation is one of the strategies to recapture the regular properties of the dirt lost because of contamination [4]. A standout amongst the latest and compelling techniques incorporate bioremediation where

either a plant or a microorganism is utilized to detoxify the soil[5,6]. Microbial remediation alludes by utilizing some microorganism to play out the retention, precipitation, oxidation and decrease of overwhelming metal in the dirt. Siegel et al. (1986) found that parasites could discharge amino acids, natural acids and different metabolites to break up substantial metals and the mineral containing overwhelming metals[7].

Specialists have broke down the likelihood of utilizing biotesting strategies to decide the phytotoxicity of lapsed medications as a sort of restorative squanders. Squander pharmaceuticals are named as pseudostable natural ecological pollutants[8].The expanding flood of overwhelming metals into the bodies from modern, horticulture, and household exercises is of worldwide concern on account of their well report negative consequences for human and ecosystem[9].

A ripe soil ought to contain from 2-8 % of natural issue and non ripe soils contain under 2%. In corrosive, drained soils, which are frequently sandy, generous parts of the natural issue is as plant flotsam and jetsam and fulvic acids (FAs). In nonpartisan and basic soils contains an extensive level of the natural issue which introduce as humic acids (HAs) and humin [10].

Protection from antimicrobial specialists has come about into high rate of dreariness, mortality and treatment disappointments, accordingly expands social insurance costs. The pervasiveness of various anti-infection safe

living beings in doctor's facility and its surroundings are a genuine worldwide issue. Multi-tranquilize safe pathogen travel locally as well as universally, recently presented pathogen spread quickly in powerless has particularly in immuno-traded off patient and individual who visit the healing center condition.

**2. MATERIALS AND METHODS**

The dirt of dumped medicinal squanders were gathered in and around the spots of healing center .The dirt waste ought to be in a straightforward plastic clean polyethylene sack and were shut firmly. The examples were conveyed quickly to the research center under a sterile condition. Due aseptic care was taken amid transportation and the examples were kept cool until the point that they were subjected to bacteriological analysis.[11]. The physical and substance properties of soil were investigated by soil testing packs.

**2.1. Microbiological Analysis**

**Nutrient Agar**

Nutrient agar powder (28g) was disintegrated in 1000mL of water and was left for around 5mins to break down the knots and blended. It was then cleaned via autoclaving for 15 minutes at 121°C and cooled in a water shower to 47°C and was filled sterile Petri dishes.

**Mueller-Hinton Agar**

Mueller-Hinton of precisely 24g was weighed and filled 1000mLr of water. This was homogenized utilizing an attractive stirrer and hot plate and sanitized in an autoclave for 1210C for 15min. The agar was cooled up to 37oC on the work seat before usage. The Preparation and immunization of tests were done by pour plate method[12].

**Enumeration of microbial colonies**

Settlement forgetting about was conveyed outwardly by checking the quantity of unmistakable provinces that showed up on the plates. Figuring of province framing unit (CFU) per g for the microscopic organisms and the spore shaping unit (SFU) per g for the parasites depended on the recipe:

$$CFU/ML \text{ or } SFU/g = \text{Number of colonies} \times \text{dilution factor} / g \text{ of sample suspension}$$

**3. RESULTS AND DISSCUSION**

Diverse Soils of dumped therapeutic junk were gathered close outpatient zone and surgical ward of doctor's facility were gathered and its parameters were investigated. The physical and synthetic properties were investigated .and decided its dirt poisonous quality. The pH and dampness content was definitely changed and it was totally harm the dirt surface which was unfit for the development of plants (Table1).

Table 1. Physical Properties of Medical Waste Contaminated Soil

Sl. No.	Sample	pH	Sand (%)	Silt(%)	Clay (%)	Specific gravity(mg/ m <sup>3</sup> )	Turbidity (NTU)	Water holding Capacity (%)	Moisture content( %)	Bulk density (g/m <sup>3</sup> )
1.	Control soil	6.8	73	4.7	25.6	2.67	480	49.6	47	0.012
2.	Soil of Out.Patient ward	5.4	46	2.4	12.8	1.63	795	32.4	15	0.015
3	Soil of surgical ward	4.4	32	2.6	25.6	0.89	597	21.6	21	0.006
4	Soil of injection room	3.5	35	1.2	27.8	0.56	784	30.4	36	0.004
5	Soil of medical lab	5.3	31	1.6	1.3	0.78	654	45.4	12	0.001

The dirt of dumped therapeutic waste indicated acidic. The dirt surface property of sand residue and earth were completely lost its tendency. The dampness content was step by step diminished to 12% of medicinal lab soil.. The mass thickness of waste sullied soil was observed to be quickly lessened from 0.12 to 0.001 g/m<sup>3</sup>. The turbidity of test soil was seen at a high rate of 795 NTU in outpatient ward.

The fruitfulness idea of soil relies upon NPK content. The measure of nitrogen introduce in soil was quickly diminished from 0.28 to 0.002% in misuse of medicinal lab.. The phosphorous and potassium substance of this example soil was observed to be completely diminished to

0.0001% of soil of infusion room and therapeutic lab. Along these lines this dirt does not contain any fundamental supplements and empower the danger in soil. The plant development relies upon C:N proportion . The dirt of medicinal waste indicated negative C:N proportion which suggests the surface of soil..Soil poisons can be killed by including cow manure in the extent of 1:10. The nitrogen content was bit by bit expanded from 0.02 % to 0.12% in the dirt of outpatient ward after treatment with cowdung. The most extreme level of phosphorus was raised to 0.04% and potassium level was observed to be brought to 0.03% up in soil of medicinal lab(Table 2)

Table 2. Effect of cow dung on different types of medical waste contaminated soil

S.No	Samples	Nitrogen(N) (%)		Phosphorous(P) (%)		Potassium(K) (%)	
		I	II	I	II	I	II
1.	Control soil	0.28	0.28	0.06	0.06	0.03	0.03
2.	Soil of O.P	0.02	0.12	0.0001	0.01	0.004	0.02
3	Soil of surgical ward	0.001	0.06	0.0003	0.005	0.001	0.01
4	Soil of injection room	0.003	0.02	0.0001	0.01	0.002	0.01
5	Soil of medical lab	0.002	0.08	0.0001	0.04	0.001	0.03

I-Initial stage II-After treatment with cow dung

The above outcomes unmistakably demonstrated that the measure of soil having greater lethality .Soil contains every single fundamental supplement for development of plants. Presently a day's dirt can be tainted by dumping squanders which make contamination the earth and make genuine risk the general public. Be that as it may, Some of them are debased by organisms in soil. The restorative waste polluted soil and its items contain soil poisons which can be killed by bovine excrement. Dairy animals manure has great adsorbent of poisons which bolster the development of plants.

In the meantime the microbial populace was observed to be higher(7.0x10<sup>4</sup>) in therapeutic waste dumped soils close outpatient zone when contrasted and control and surgical ward(Table3) . It additionally contains numerous multidrug safe microscopic organisms, for example, Klebisella pneumoniae, streptococcus pneumoniae E.coli

pseudomonas aeruginosa Salmonella typhi and Enterococcus sp pseudomonas aeruginosa was observed to be dominatingly seen in terminated tablets dumped garbage [13].

A few scientists found that the Staphylococcus aureus, Bacillus cereus, Bacillus subtilis, Klebsiella pneumoniae, Samonella typhi , Shigella dysenteriae, Proteus vulgaricus , and Streptococcus viridians in strong medicinal waste.. The nearness of Salmonella, Shigella, and Klebsiella species means that fecal sullyng. [14]. Pollution with Staphylococcus aureus has 30% rate event in all strong healing facility squander sample.[15,16]. Staphylococcus aureus is hazardous among staphylococcus sort as it can create distinctive kinds of poisons which are warm safe. These sort of microbes were found in soil which spread contaminations and ailments to the general public.

Table 3. Microbiological Analysis of Soils

S.NO	Site	CFU/g	Type of organisms
1	Control	3..2x10 <sup>4</sup>	Many bacteria and fungi
2	Soil of O.P	7.0x10 <sup>4</sup>	Klebisella pneumoniae, streptococcus pneumoniae E.coli,Salmonella typhi
3	Soil of S.W	5.4x10 <sup>4</sup>	pseudomonas aeruginosa, Enterococcus sp, E.coli Shigella dysenteriae,
4	Soil of injection room	3.6x10 <sup>4</sup>	Klebisella pneumoniae, pneumoniae E.coli,Salmonella typhi Staphylococcus aureus
5	Soil of medical lab	4..0x10 <sup>4</sup>	Proteus vulgaricus , pseudomonas aeruginosa,

#### 4. CONCLUSIONS

We investigated the physical, synthetic and microbiological examination of soil, the proportion of soil poisons and its effectiveness of soil .The sickness causing microorganisms were prevalently seen in restorative waste soils. .The development of plant was lessened as the grouping of the poisonous quality was expanded. Restorative waste contains poisons which repress the seed germination .The base centralization of poison animates the development of plants. The fast development was seen in charge and 0.2gm harmful soil. The development was totally obstructed in 1gm of lethal soil. The plants required supplements for its development as nitrogen, phosphorus and potassium which was totally truant in the dangerous soil. The poisons totally diminished the NPK substance of the dirt .Therefore plants can't become because of absence of supplements.

#### REFERENCES

[1] Ashwini, A,Waoo, Bhopal.Journal of environment and human.. 2, 2014, pp.34-38.

[2] Uhlman, M.I. and Greenfield, T.M.. Journal of Hazardous Materials., 66, 1999,pp 31-45.

[3] Mann, M.J. Journal of Hazardous Materials, 66, 1999, pp119-136.

[4] chaosu,A.;Environmental sceptics and critics. 3(2) 2014, pp24-38.

[5] Wuana, R.A. Okieimen, F.E. and Imborvungu, J.A. International Journal of Environmental Science and Technology,. 7, 2010 pp 485-496.

[6] Asha Latha P. and Sandeep Reddy S. International Journal of Basic and Applied Chemical Sciences.,2 2013pp32-35.

[7] Siegel S.M.,Margalith Gaulon, Siegel B.Z. Water air and soil pollution,53,1990, pp335-344,

[8] Daughton C.G. Ternes T.A. Health Prospect, V.1071999. pp 907-937.

[9] L.M Metaka. EMT Henry. W.R.L. Masamba. S.M Sajidu.. Int.J. Environ.Sci. Technol, 3(2) 2006,pp 131-139.

[10] Robert E. Pettit. organic matter, humus, humate, humic acid, fulvic acid and humin:their importance in soil fertility and plant health. www.humates.com.

[11] Maserejian N.N. Giovannucci E. Rosner B. Zavras A. Joshipura K., Am J Epidemiol. Epub 164(6), 2006,pp.556-66

[12] Colins and Lyne, Microbiological Methods, Arnold,London2004,pp24-45.

[13] Anbuselvi,S, Priyanga .K and Albenna Reji ,Int.J. Chem. Tech. Res.,10(,5) ,2017,pp799-801.

[14] Aarestrup, F. M.. Agero, Y. Smidt, P. G. Madsen, M. and Jensen L. B. Microbiol. Infect. Dis., 37,2000 pp 127- 137

[15] Dhawan, B. Mohanty, S. Das, B.K. and Kapil, A. Natl Med J India, 17, 2004 52--53.

[16] Sessa sai ratnamala bommareddy. International Journal of Civil Engineering and Technology (IJCIET) Volume 8, Issue 1, January 2017, pp. 263–272, Article ID: IJCIET\_08\_01\_028

[17] S. Nithya, Lalitha Shree, Kiruthika and Krishnaveni, Solar Based Smart Garbage Monitoring System Using IOT, International Journal of Electronics and Communication Engineering and Technology, 8(2), 2017, pp. 75–80.

[18] Viral V Kapadia. Trade-Off Between Traditional Garbage Collection Vs Hardware Garbage Collection. International Journal of Computer Engineering and Technology, 5(7), 2014, pp. 55-61.

[19] Viral V Kapadia and Dr. V K Thakar, Evaluation Search Operation For Traditional Processor And A Different Memory Processor For Garbage Collection. International Journal of Computer Engineering and Technology, 5(7), 2014, pp. 149-156