Study on Environmental Contamination and Assessment of the Impact of Municipal Solid Waste on Soil at the Vellalore Dumping Yard, Coimbatore City.

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Abstract. The main objective of the work is to research the soil condition and quality of municipal solid waste from (2012-2017) Coimbatore region. Coimbatore is a popular town in the southern Indian state of Tamil Nadu with an area of 246.8 km² of 1.60 million, according to the 2001 sense. It is the second largest city after Chennai and one of India’s fastest growing cities with rapid developments in all fields. Due to the rapid increase in urbanization, industrialization and population, which leads to an increase in the generation of solid waste and encourages dumping on landfill sites, environmental issues are a major concern. The improper disposal of solid waste pollutes soil, water and air. The soil characteristics study was undertaken to assess the soil quality due to the solid waste dumped at the Vellalore dumping yard. This paper sets out the methodology used to find all the chemicals in the soil and, by means of a prospective test, we found the limits for their strength to be present in the soil. In order to assess the soil conditions in the dumping yard for the months of May and December 2016, soil samples from the Vellalore area were collected at different locations. In the current study, samples from five locations, namely S1, S2, S3, S4 and S5, are to be collected in all four directions and from the dumping site. This paper deals with the study of soil polluted. Physical – Chemical characteristics of soil samples were analyzed on the basis of a standard procedure. Characteristics of soil such as pH, EC, MC, OM, Ca²⁺, Mg²⁺, Na⁺, K⁺ and related parameters such as SAR, CEC and ESP have also been calculated. The characteristics study of soil samples from the above locations showed that the solid waste dump at these locations had changed the characteristics of the soil from the test data.

1. Introduction
Coimbatore city occupies an area of nearly 105.6 km² and it is the second city of being vast in Tamil Nadu. It is further expanded to about 257 km² because of the people’s migration and thus the waste generation was high in this area. By revealing the past data, the waste generation varies per capita per day and the rate was increasing day by day. The annual solid waste was nearing above 40 million tons in our country and the wet content in the waste was also to be noted. It will reach 260 million tons by the next 20 or 25 years as soon, that is the huge problem going to face by our future generation because of not managing their wastes. The aim is to investigate and assess the properties of the soil due to the dumping of solid waste in Dumping site.
2. Experimental methods & materials
Coimbatore Corporation has four zones and each consists of 18 wards. From these, Vellalore dumping yard is the one, where the solid wastes are brought all together by Lorries or tractors. The yard consists of segregation area, Closure, Composting area, Lagoons and Landfill. The Vellalore dumping yard is about 643 acres totally and it has four lagoons and four ponds facilitated with drain pipe, in order to collect the drain water from all other locations near the yard. The quantity dumped every day in the site is about 8 lakh tons/m\(^3\) due to the high generation of wastes and the height is about 9m it seems.

3. Study on environmental contamination

Table 1: Study on Environmental Contamination in Coimbatore City

| AUTHOR                        | TITLE                                                      | FACTORS CONSIDERED |
|-------------------------------|------------------------------------------------------------|--------------------|
| Times of India                | Solid waste management project launched                    | Solid waste        |
| Deccan Chronicle Subburaj      | Irregularities alleged in waste Management                 | Solid waste        |
| Deccan Chronicle Vidyashree Dhanmaraj | Poll fever mounts so does garbage                           | Solid waste        |
| Times of India Subburaj       | Poor waste management puts Coimbatore to shame             | Solid waste        |
| The Hindu Pankaja Srinivasan  | Lesson in soil waste management                            | Solid waste        |
| The Hindu Pankaja Srinivasan  | Solid waste management wards that shows the way            | Solid waste        |
| The Hindu R. Sairam           | Generating energy from waste                               | Solid waste        |
| The Hindu Karthik Madhavan     | Coimbatore initiative for effective waste management       | Solid waste        |
| Deccan Chronicle Laasyasheekhar| NGT issue warrant to kovai corporation head                | Solid waste        |
| Times of India Komal gautham  | Solid waste management Coimbatore city corporation to present power point before green tribunal | Solid waste        |
| V.C. Sengodan, S. Maniavannan | Biomedical waste minimization in the orthopedics ward in a tertiary care hospital | Solid waste        |
| R. Prem Sudha, Dr.R.N. Uma, Meliaraj | Assessment of soil characteristic around municipal solid waste disposal site in sulur block | Solid waste        |
| A. Benuel Sathish Raj, C. Deepathi | Recycling of municipal solid waste for electricity generation and green Earth | Solid waste        |
| S. Aravind, R. Mousia, B. Ganesh, S. Vignesh | Optimization of bird hazard Reduction | Solid waste        |
| K. Senthamil Selvan, M. Panalivel | Quantification and characteristics of the municipal solid waste Dharapura municipality | Solid waste        |
| PA. Ganeshwaran, S. DeepaShri | A solid waste management in Coimbatore                      | Solid waste        |
| T.Murugan, R. Chandrasekaran   | A study and development of comprehensive solid waste management for panchayat | Solid waste        |

4. Sampling and methodology
In order to determine the soil conditions in the dumping yard, soil samples were obtained from the Vellalore region in different locations for the months of May and December 2016. In this analysis,
samples from five sites – S1, S2, S3, S4, and S5 – are expected to be obtained in all four directions and from the dumping site. Samples from surface and sub-surface shall also be collected in May and December as 10 samples and are closed, labeled and transmitted to the laboratory for inspection. Soil dry sample of 25 g is taken and the result is analyzed by means of a sieve of 2.36 mm. It should be dissolved in 50mL of water after sieving and well stirred for an hour. The use of Wattman’s filter paper No.42 and the sample are to be filtered and the filtrate is taken for analysis. The samples have been analyzed and the characteristics and nutrients present will be revealed and the data collected below.

Table 2: Sampling Location

| S.No. | Direction | Depth | Distance |
|-------|-----------|-------|----------|
| S1    | North     | 0-15 cm | 5m       |
| S2    | East      | 16–30 cm | 5m       |
| S3    | East      | 0-15 cm | 5m       |
| S4    | East      | 16–30 cm | 5m       |
| S5    | West      | 0-15 cm | 5m       |
| S6    | West      | 16–30 cm | 5m       |
| S7    | South     | 0-15 cm | 5m       |
| S8    | South     | 16–30 cm | 5m       |
| S9    | Dumpsite  | 0-15 cm | Initial Point |
| S10   | Dumpsite  | 16–30 cm | Initial Point |

Table 3: Methods Adopted for Physicochemical Analysis

| S.No. | Parameters                  | Symbols  | Testing Methods                  |
|-------|-----------------------------|----------|----------------------------------|
| 1     | pH                          | pH       | pH analyzer                      |
| 2     | Moisture Content (%)        | Mc       | Oven dry method                  |
| 3     | Electrical Conductivity (μ  | Ec       | EC analyzer                      |
|       | ohms/cm)                    |          |                                  |
| 4     | Organic Matter (%)          | OM       | Titration method                 |
| 5     | Chloride (mg/l)             | Cl−      | Chromatography                    |
| 6     | Calcium (mg/l)              | Ca2+     | (0.05 N) titration               |
| 7     | Sodium (mg/l)               | Na+      | Flame photometer                 |
| 8     | Magnesium (mg/l)            | Mg2+     | (0.05N) titration                |
| 9     | Potassium (mg/l)            | K+       | Flame photometer                 |
| 10    | Total Alkalinity (mg/kg)    | TA       | IS:3025 (Part 23)               |
| 11    | Total hardness (mg/l)       | CaCO3    | Sum of Calcium and Magnesium     |
| 12    | Iron (mg/l)                 | Fe       | Spectrophotometer                |
| 13    | Cadmium (mg/l)              | Cd       | Trace Metal Analyzer             |
| 14    | Copper (mg/l)               | Cu       | Trace Metal Analyzer             |
| 15    | Manganese (mg/l)            | Mn       | DTPA                             |
| 16    | Lead (mg/l)                 | Pb       | Trace Metal Analyzer             |
| 17    | Chromium (mg/l)             | Cr       | XRF Analyzer                     |
| 18    | Zinc (mg/l)                 | Zn       | Trace Metal Analyzer             |

Soil hazards parameters

| S.No. | Parameters                  | Symbols  | Testing Methods                  |
|-------|-----------------------------|----------|----------------------------------|
| 19    | Sodium Adsorption Ratio (SAR) (%) | Na+/ (Ca2+ +Mg2+/2)1/2 |
| 20    | Cation Exchange Capacity (CEC) | Meq/l   | Ca2++Mg2++ Na++ K+               |
| 21    | Exchangeable Sodium Percentage (ESP) (%) | Na+/ ( Ca 2+ +Mg2++ Na++ K+) *100 |
Table 4: Max. Permissible limits of BIS (IS: 10500:1991)

| S.No. | Parameters                      | Allowable Value (mg/l) | Permissible Value mg/l |
|-------|---------------------------------|------------------------|------------------------|
| 1     | pH                              | 6.5 to 8.5             | No relaxation          |
| 2     | Electrical Conductivity (mS/cm) | 1                      | No relaxation          |
| 3     | Moisture Content (%)            | 80                     | 100                    |
| 4     | Organic Matter (%)              | 30                     | 50                     |
| 5     | Calcium (mg/l)                  | 110                    | 120                    |
| 6     | Magnesium (mg/l)                | 70                     | 100                    |
| 7     | Sodium (mg/l)                   | -                      | -                      |
| 8     | Potassium (mg/l)                | -                      | 0.75                   |
| 9     | Chloride (mg/l)                 | 250                    | 1000                   |
| 10    | Total Alkalinity(mg/kg)         | 200                    | 600                    |
| 11    | Total hardness (mg/l)           | 300                    | 600                    |
| 12    | Iron (mg/l)                     | 0.3                    | 1.0                    |
| 13    | Cadmium (mg/l)                  | 0.01                   | No relaxation          |
| 14    | Copper (mg/l)                   | 0.05                   | .5                     |
| 15    | Manganese (mg/l)                | 0.1                    | 0.3                    |
| 16    | Lead (mg/l)                     | 0.1                    | 0.3                    |
| 17    | Chromium (mg/l)                 | 0.05                   | No relaxation          |
| 18    | Zinc (mg/l)                     | 5                      | 15                     |

5. Result and discussion

Table 5: Soil samples collected at depth of 15 cm and 30 cm (May)

| Soil Sample | Location | pH   | EC   | MC   | OM  | Ca  | Mg  | Na  | K   | Cl |
|-------------|----------|------|------|------|-----|-----|-----|-----|-----|----|
| S1 0-15 cm  | North    | 10.04| 0.932| 5.83 | 4.537| 103.94| 4.3 | 21  | 130 | 124|
| S2 16–30 cm | South    | 9.28 | 1.031| 6.97 | 3.27 | 106  | 10.67| 43  | 76  | 177|
| S3 0-15 cm  | East     | 9.82 | 1.004| 4.95 | 4.002| 82.48| 21.63| 44  | 10  | 230|
| S416-30 cm  | West     | 9.12 | 1.038| 6.592| 3.004| 93.28| 10.44| 64  | 15  | 266|
| S5 0-15 cm  | South    | 9.57 | 0.544| 6.17 | 3.15 | 63.82| 13.11| 53  | 23  | 283|
| S6 16–30 cm | West     | 8.68 | 1.032| 7.141| 2.58 | 82.64| 13   | 15  | 10  | 453|
| S7 0-15 cm  | South    | 9.98 | 0.144| 5.05 | 3.596| 88.59| 38.18| 56  | 114 | 653|
| S8 16–30 cm | West     | 9.41 | 1.037| 7.0  | 2.8  | 97.52| 14.67| 79  | 91  | 763|
| S9 0-15 cm  | Dumpsite | 8.93 | 1.382| 9.973| 2.067| 83.79| 9.98 | 91  | 33  | 983|
| S10 16–30 cm| Dumpsite | 9.22 | 1.258| 9.104| 2.005| 88.34| 8.94 | 100 | 45  | 1199|

Table 6: Soil samples collected at depth of 15 cm and 30 cm (May)

| Soil Sample | Location | TA  | CaCO3 | Fe  | Cd  | Cu  | Mn  | Pb  | Cr  | Zn  |
|-------------|----------|-----|-------|-----|-----|-----|-----|-----|-----|-----|
| S1 0-15 cm  | North    | 1344| 1190  | 3.10| 0.73| 8.24| 17.68| 1.23| 2.3 | 0.5 |
| S2 16–30 cm | South    | 1344| 783   | 5.10| 1.02| 8.4 | 18.62| 3.2 | 3.2 | 1.2 |
| S3 0-15 cm  | East     | 1264| 1134  | 8.42| 0.01| 2.07| 11.22| 1.2 | 1.31| 4   |
| S416-30 cm  | West     | 1236| 1342  | 11.54| 0.01| 3.8 | 13.36| 1.5 | 1.3 | 6   |
| S5 0-15 cm  | West     | 673 | 1782  | 23.28| 0.01| 6.24| 10.98| 4.3 | 1.01| 1.3 |
| S6 16–30 cm | West     | 782 | 1785  | 24.64| 0.02| 7.79| 12.36| 4.7 | 1.1 | 2.3 |
| S7 0-15 cm  | South    | 1285| 1562  | 20.3 | 1.72| 9.54| 15.76| 4.8 | 0.8 | 3.04|
| S8 16–30 cm | South    | 1263| 1563  | 20.14| 1.76| 9.54| 15.78| 5.3 | 0.8 | 6.80|
| S9 0-15 cm  | Dumpsite | 1435| 1850  | 25.26| 2.12| 10.48| 18.74| 22.1| 3.14| 7.66|
| S10 16–30 cm| Dumpsite | 1654| 1723  | 26.04| 2.13| 11.54| 19.81| 23.7| 4.12| 9.23|
Table 7: Soil samples collected at depth of 15 cm and 30 cm (December)

| Soil Sample | Location | pH    | EC    | MC   | OM   | Ca    | Mg    | Na    | K    | Cl   |
|-------------|----------|-------|-------|------|------|-------|-------|-------|------|------|
| S1 0-15 cm  | North    | 10.41 | 0.836 | 4.65 | 5.387| 119.48 | 12.02 | 50    | 164  | 170  |
| S2 16–30 cm | North    | 9.32  | 1.043 | 7.0  | 3.7  | 110.24 | 13.66 | 62    | 96   | 192  |
| S3 0-15 cm  | East     | 10.21 | 0.909 | 5.461| 4.353| 91.04  | 38.87 | 58    | 62   | 248  |
| S416–30 cm  | East     | 9.23  | 1.039 | 6.843| 3.184| 97.52  | 17.77 | 64    | 40   | 301  |
| S5 0-15 cm  | West     | 9.5   | 0.866 | 5.533| 2.94 | 71.78  | 34.81 | 12    | 30   | 345  |
| S6 16–30 cm | West     | 8.92  | 1.033 | 7.238| 2.65 | 89.04  | 16.20 | 15    | 15   | 567  |
| S7 0-15 cm  | South    | 9.6   | 1.055 | 6.142| 4.178| 98.06  | 10.8  | 102   | 206  | 672  |
| S8 16–30 cm | South    | 9.6   | 1.044 | 7.128| 3.094| 99.64  | 16    | 124   | 58   | 1298 |
| S9 0-15 cm  | Dumpsite | 8.93  | 1.765 | 9.145| 2.63 | 108.49 | 20.09 | 150   | 32   | 986  |

Table 8: Soil samples collected at depth of 15 cm and 30 cm (December)

| Soil Sample | Location | TA    | CaCO₃ | Fe   | Cd   | Cu    | Mn    | Pb    | Cr   | Zn   |
|-------------|----------|-------|-------|------|------|-------|-------|-------|------|------|
| S1 0-15 cm  | North    | 1335  | 1209  | 5.10 | 1.76 | 8.18  | 18.64 | 1.6   | 2.1  | 0.6  |
| S2 16–30 cm | North    | 1398  | 983   | 6.64 | 1.076| 8.18  | 18.68 | 2.1   | 2.1  | 0.7  |
| S3 0-15 cm  | East     | 1243  | 1289  | 6.24 | 0.81 | 0.81  | 14.72 | 1.2   | 1.4  | 3.1  |
| S416–30 cm  | East     | 1234  | 1293  | 7.79 | 1.98 | 1.67  | 14.82 | 1.23  | 2.1  | 3.4  |
| S5 0-15 cm  | West     | 678   | 1830  | 21.86| 0.04 | 3.98  | 10.96 | 3.89  | 1.1  | 2.3  |
| S6 16–30 cm | West     | 900   | 1852  | 21.96| 0.05 | 5.10  | 11.22 | 4.5   | 1.3  | 2.45 |
| S7 0-15 cm  | South    | 1293  | 1672  | 11.54| 1.25 | 8.42  | 15.96 | 5.9   | 0.56 | 6    |
| S8 16–30 cm | South    | 1299  | 1562  | 17.54| 1.28 | 8.44  | 18.70 | 6.4   | 0.78 | 6.2  |
| S9 0-15 cm  | Dumpsite | 1532  | 1983  | 24.88| 2.87 | 9.82  | 24.36 | 23.7  | 4.2  | 10.54|
| S10 16–30 cm| Dumpsite | 1529  | 1900  | 25.40| 2.92 | 9.64  | 32.40 | 34.9  | 5.23 | 11.50|

Table 9: Soil hazards parameters collected at depth of 15 cm and 30 cm (May)

| Soil Sample | Location | SAR   | CEC    | ESP   |
|-------------|----------|-------|--------|-------|
| S1 0-15 cm  | North    | 2.03  | 258.24 | 8.10  |
| S2 16–30 cm | North    | 4.07  | 235.67 | 18.25 |
| S3 0-15 cm  | East     | 4.55  | 157.11 | 27.83 |
| S416–30 cm  | East     | 6.44  | 182.72 | 35.03 |
| S5 0-15 cm  | West     | 6.31  | 151.93 | 34.66 |
| S6 16–30 cm | West     | 1.56  | 120.64 | 12.43 |
| S7 0-15 cm  | South    | 5.39  | 295.77 | 18.87 |
| S8 16–30 cm | South    | 7.70  | 282.19 | 28.00 |
| S9 0-15 cm  | Dumpsite | 9.65  | 216.77 | 41.79 |
| S10 16–30 cm| Dumpsite | 10.37 | 242.28 | 41.27 |
Table 10: Soil hazards parameters collected at depth of 15 cm and 30 cm (December)

| Soil Sample | Location | SAR  | CEC  | ESP  |
|-------------|----------|------|------|------|
| S1 0-15 cm  | North    | 4.45 | 346.5| 15.47|
| S2 16–30 cm | 5.63     | 280.9| 21.89|
| S3 0-15 cm  | East     | 5.42 | 248.91| 23.21|
| S4 16–30 cm | 6.10     | 219.29| 29.19|
| S5 0-15 cm  | West     | 1.27 | 148.59| 8.08 |
| S6 16–30 cm | 2.03     | 140.04| 14.28|
| S7 0-15 cm  | South    | 10.03| 416.86| 24.47|
| S8 16–30 cm | 11.09    | 341.36| 33.69|
| S9 0-15 cm  | Dumpsite | 13.78| 310.58| 48.30|
| S10 16–30 cm| 11.85    | 301.64| 41.11|

5.1 Ph
The pH values at Vellalore dumping yard varies between 10.04 to 8.68 on May 2016 and 10.41 to 8.92 on December 2016 with a mean value 9.35 and 9.51 where in 2012 a mean value obtain 8.63 and during 2013 the value was 8.53 and it was observed that pH values around dumpsite become alkali soil when compare with 2012 & 2013 respectively.

5.2 Moisture content
Vellalore disposal site moisture content ranges from 9.973% to 4.95% on May 2016 and 9.344% to 4.65% on December 2016 with the mean value 6.87% and 6.84% where in 2012 a mean value obtains 6.55% and during 2013 a mean value obtains 6.5%. It is marked that moisture content around dumpsite increases when compare with 2012 & 2013 respectively.

5.3 Organic Matter
The organic matter collected from bio degradable materials is the important parameter of the soil. The organic matter of soil sample is varied from 4.537 to 2.005 in the month of May 2016 and 5.387 to 2.294 in the month of December 2016 with the mean value 3.101 and 3.480. Where in 2012 the mean value obtained is 2.63% and during 2013 the mean value obtained is 2.52%. It is observed that the organic matter of the soil sample is increased as compared with 2012 and 2013 respectively.

5.4 Calcium(Ca)
Calcium is a chemical element and it is an alkaline earth metal with pale yellow color. The calcium value of soil sample is varied from 106 to 82.48 on May 2016 and 119.48 to 71.78 on December 2016 the mean value obtained is 89.04 and 98.46. Where in 2012 the mean value obtained is 79.79mg/l and 76.28mg/l in 2013 respectively.

5.5 Magnesium(Mg)
Magnesium is a chemical element which has same electron configuration and it is a shiny gray solid. The magnesium value of soil sample is varied from 38.18 to 4.3 on May 2016 and 38.87 to 10.8 on December 2016 with the mean value of 14.49 and 20.00 where in 2012 the mean value obtained is 9.27mg/l and 8.08mg/l for 2013 respectively.

5.6 Sodium(Na)
It is soft, silvery white, highly relative metal. It is alkali metal because it has a single electron. Sodium changes the properties of soil and it affects the availability of crop water. The sodium value of soil sample on May 2016 is varied from 100 to 15 and 150 to 12 for December 2016. The
mean value obtained is 56.6 and 75.7 where in 2012 the mean value obtained is 22.00mg/l and 29.5mg/l in 2013. This shows the random increase in value.

5.7 Potassium(K)
Potassium is an alkali metal and it is considered as the macro element for soil and crop productivity. The potassium value of soil sample is varied from 130 to 10 on May 2016 and 206 to 15 on December 2016. The mean value obtained is 54.7 and 565.2 where in 2012 the mean value is 33mg/l and 29.5mg/l in 2013. This shows the value is randomly increased.

5.8 Chlorine(Cl)
Chlorine is an extremely relative element yellow green gas at room temperature and a strong oxidizing agent. The chlorine value of soil sample is varied from 1199 to 124 on May 2016 and 1298 to 170 on December 2016. The mean value obtained is 1313.1 and 565.2.

5.9 Total Alkalinity(Ta)
Alkalinity refers to the water to neutralize acid and it is has buffering capacity. The total alkalinity of soil sample is varied from 1654 to 673 at the month of May 2016 and 1532 to 678 at the month of December 2016. The mean value obtained is 1228 and 1244.1, this is due to over liming acid in soil.

5.10 Total Hardness
Total hardness is determined by multivalent cation’s concentrations. The total hardness of soil sample is varied from 1850 to 783 at the month of May 2016 and 1983 to 983 at the month of December 2016. The mean value obtained is 1471.4 and 1557.3 respectively.

5.11 Iron(Fe)
The iron content of soil sample is varied from 26.04 to 3.10 at the month of May 2016 and 25.40 to 5.10 at the month of December 2016. And the mean value obtained is 16.782 and 15.195 respectively. The high iron content in soil sample may cause high level of toxicity.

5.12 Cadmium(Cd)
The cadmium content in soil sample is varied from 2.13 to 0.01 at the month of May 2016 and 2.92 to 0.04 at the month of December 2016 the mean value obtained is 0.953 and 1.5116 respectively. This shows high level of toxicity in soil.

5.13 Copper(Cu)
The copper content in soil sample is varied from 11.54 to 2.07 in the month may 2016 and 9.82 to 0.81 in the month of December 2016. The mean value obtained is 7.764 and 6.424 respectively. The copper content in soil sample is because soil has texture between loam and clay.

5.14 Manganese (Mn)
The manganese content in soil sample is varied from 19.81 to 10.98 in the month of May 2016 and 32.40 to 10.96 in the month of December 2016. The mean value obtained is 15.431 and 18.046 respectively.

5.15 Chromium(Cr)
The chromium content in soil sample is varied from 4.12 to 0.8 at the month of May 2016 and 5.23 to 0.56 at the month of December 2016. The mean value obtained is 1.908 and 2.087 respectively.
5.16 Zinc (Zn)
The zinc content in soil sample is varied from 9.23 to 0.05 in the May 2016 and 11.50 to 0.6 in the month of December 2016. The mean value obtained is 4.203 and 4.679 respectively. High content of zinc in soil may produce leached acids which is very harmful to plants.

5.17 Lead (Pb)
The lead content in soil sample is varied from 23.7 to 1.2 in the month of May 2016 and 34.9 to 1.2 in the month of December 2016. The mean value obtained is 72.03 and 85.42 respectively. High lead content in soil sample leads to high toxicity which may cause damages to plants which grows over there.

5.18 Electrical Conductivity (Ec)
Around Vellalore dump yard it varies between 1.01 mS/cm - 1.0 mS/cm with average value of 1.01 mS/cm in 2012 and the average value of 1.0 mS/cm in 2013 respectively.

6. Conclusion
- Soil contamination in the yard impacts groundwater and induces pollution near the disposal site, causing groundwater contamination by excessive percolation.
- As a result of this contamination of ground water, the effects of drinking water in nearby areas are more humane.
- There is no proper disposal system for the above-mentioned problem, the soil is highly polluted and destroys the growth of plants and nutrients in the soil.
- Made to be highly toxic components and the results tested reveal the truth behind this, that it concludes that the problem will be more to nature, animals and people’s health.

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