

Potential Use of Waste Water Sludge from Sewage Treatment Plant (STP) Islamabad as Environmental Friendly Manure

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ABSTRACT

With growing population solid waste management is becoming one of the serious problems throughout the world. Some of the processed waste like sewage sludge generated by sewage treatment plants can be re-used after treatment for fertilizer and energy production. This study was carried out to find out the potentials of sewage sludge as an organic fertilizer in Pakistan whose economy is based on agriculture. For this purpose, chemical analysis of the waste water was carried out to determine the quality of raw waste water (influent) and treated waste water (effluent). The pH, EC, TSS, COD and BOD₅ were found very high in the influent however, after the waste water treatment, the effluent quality was found within the limits of National Environmental Quality Standards (NEQs). Furthermore, sewage sludge produced after wastewater treatment was analyzed for chemical composition i.e. for Total Nitrogen Content (TN), Total Phosphorous Content (TP) and Organic Matter Content (OM), important constituents of organic fertilizers, and was compared with control (commercial compost). TN, TP and OM content remained high in sewage sludge as compared to the controls. In order to study the amount of harmful microbes present in sewage sludge samples, microbial analyses for Total *Coliforms*, Faecal *Coliforms*, and *E. Coli* was also carried out on sewage sludge and control samples. According to the results, the Total and Faecal *Coliforms* were found very high i.e. >16000 (Most Probable Number) MPN/grams whereas, *E.Coli* population remained between 7000-12000MPN/grams. The most important aspect noted in this study was: as the sludge aged and was exposed to sunlight for a longer period of time, microbial population started to decline. From the results, It can be concluded that sewage sludge has potential to be used in greenbelts, forests and can also be applied for some restricted agricultural purpose after ample sunlight exposure. In addition, inversion of sludge may expose and increase the process of microbial death in short period of time. Further studies should also be conducted to know the effect of time-dependent UV exposure for microbial removal as well.