Toluene diamine (TDA) is used in the manufacture of toluene diisocyanate (TDI) which is a major raw material for the production of polyurethane foams. Amine-substituted aromatic compounds constitute a very important class of environmental pollutants, due to their toxicological nature and industrial use as intermediates in polyurethane synthesis. Over 50% losses into the environment are through industrial waste water, leakage from landfills or storage site; spillage during shipping and handling may also represent source of surface and ground water contamination. Data are lacking on the extent of the global release of toluene diamines, as well as their transport, distribution, and degradation within the environment. The multimillion-pound urethane industry is rapidly growing consumer of aromatic diamines in huge quantities as raw materials for the manufacture of aromatic diisocyanates.

Isolation of microorganisms was done from polyurethane foams dumped soil. It is strongly felt that polyurethane foams have unreacted Toluene diisocyanate. If the organisms could survive many years on the dumped solid polyurethane foams, containing soil, it could have taken the TDA and impurities as sole carbon source. Forty-two fungi have been isolated from the soil collected from the polyurethane dumped site. Among the 42 fungi *Aspergillus nidulans* was shortlisted for degradation of 2,4-TDA. The growth of *Aspergillus nidulans* and its biochemical characterisation was carried out. Total Nitrogen and Protein of the biomass was also estimated. Biochemical
characterisation of *Aspergillus nidulans* was carried out using microbial biosensor technique with various antibiotics, organic compounds and heavy metals and results are discussed. Permeabilisation of *Aspergillus nidulans* was done using 10 % phenol and it was observed that intracellular enzyme was responsible for biodegradation of 2,4-TDA. *Aspergillus nidulans* was grown in M9 medium to degrade 2,4-Toluene diamine. For optimum degradation, the parameter arrived at were (i) glucose concentrations 0.75 mg/l (ii) time of degradation 4th day (iii) pH 5.5.

Biodegradation experiment was conducted using *Aspergillus nidulans* biomass which was harvested at 72 hrs (log phase) in aseptic condition and experiments were designed using Design Expert (30 experiments in triplicate). In these experiments interestingly, biosorption of 2,4-TDA was observed in the mycelia. The optimized values were observed for biodegradation as time (5.6 hrs), initial concentration (7.62 mg/L), temperature (36.6°C) and pH (6.7). The optimized values observed for biosorption are time (5.8 hrs), initial concentration (6.94 mg/L), temperature (34.9°C) and pH (6.9). In spectrophotometer absorption in the UV range, peak for 2,4-TDA was observed at 294 nm, whereas biodegraded products peaks were observed at 238 nm and 218 nm. In IR analysis, the biodegraded product are shown in absorption spectrum at 1170 cm\(^{-1}\), which is characteristic of carbonyl group. Technoeconomics for these biodegradation studies is also projected.