



MTV PRO-BIOTIC ENZYMES Application Procedure for Leachate Treatment

Probiotic Enzymes are fast acting aerobic solution to treat the effluents in the ETP or STP or in drains or nalas as the circumstance arise. The quantity of the enzymes application is dependent on the pollution contents. The combination of enzymes are also dependent on the pollutants. The enzymes will reduce COD, BOD, TDS, TSS, Nitrates, Sulphates, Ammonia, Phosphates, etc., balance pH, increase dissolved oxygen.

As a general rule, the enzymes are diluted into water and applied to the pollutants. The ratio of dilution varies with the flow of the incumbent pollution.

The best way to treat the effluents is to add the diluted enzymes at the entry point into a collection or retention tank or aerator tank at ETP/STP. It helps the enzymes to mix well with the incoming polluted effluent. A continuous dosing system with a small tank will be set up for regular treatment process.

For this testing purpose, Add 1Lt of the enzymes into the container with 300 lts of effluents and stir well for mixing. Repeat stirring thrice a day with a stick or pipe. If the mix can be stir pumped continuously, results in excellent reduction of pollutants. For trials, you can test the treated effluents after 48 hrs. If need be, for further reduction of COD/BOD etc., the application be repeated twice(1+2) before final result is obtained.

In case of stagnant water body, a churning or circulation of the sprayed water body is advisable for better result.

1. There are no alkaloids used in our product or method of treatment.
2. The following herbals are used in our extract to kill coliform and other Bacteria in waste water.
 - a. Neem Leaves / Bark,
 - b. Custard apple plant leaves / Bark,
 - c. Black Pepper,
 - d. Dry Ginger,
 - e. Pippili extract, etc.

These are individually known for its Anti Bacterial / fungal / virus property and in combination will reduce coliform and other bacteria in the waste water. This will not help in BOD or COD reduction.

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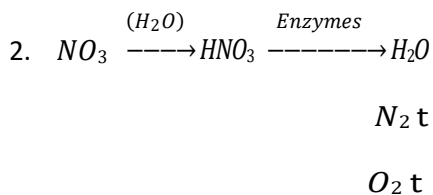
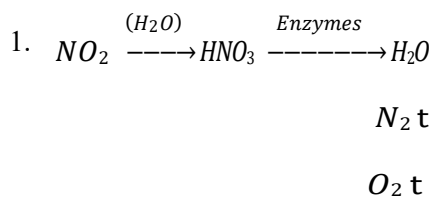
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3. The chemical reactions are difficult to explain in total but a general form can be as below where in the reactions yield to liberate oxygen and hydrogen abundantly which will increase the dissolved oxygen in the waste water under treatment. Some of the examples are as below.

The Nitrogen is present in waste water in the form of Nitrous oxide, Nitrogen peroxide, Nitrates, etc. All these materials dissolve in water producing Nitric acid which is responsible for reduced pH or increased acidity of water. When Probiotic Enzymes are added, it will decompose this into water, Nitrogen and Oxygen. This reaction will help in increasing the dissolved oxygen in water which will reduce the BOD and COD.



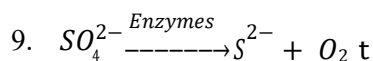
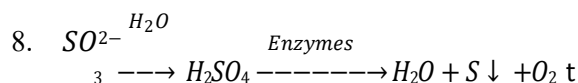
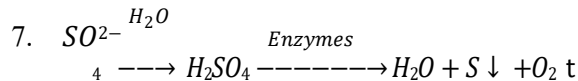
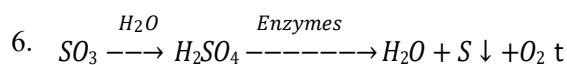
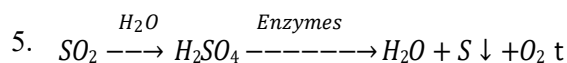
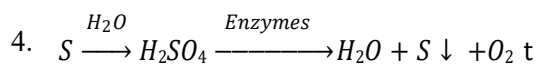
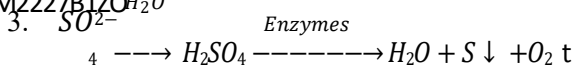
Another chemical pollutant example is of Sulphur. The sulphur is present in the form of Sulphur dioxide, sulphur trioxide, Sulphate ions, etc, which are from the earth crust naturally or from fertilizers used and carried into the waste water by rains. All these are converted into sulphuric acid which increased the acidity of water and reduction in pH. The Probiotic enzymes decompose these sulphuric acid into precepitates of Sulphur, sulphide ions, Water and release Oxygen. The oxygen liberated will increase the dissolved oxygen in water and helps in reduction of COD and BOD. The sulphur dioxide is also responsible for the obnoxious odour produced by the water body.



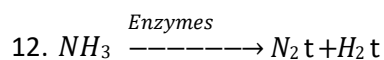
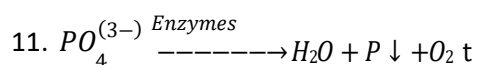
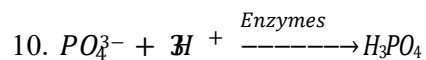
Figure 1 Initial and after 1 week of probiotic application



GST:- 27AAPCM2227B1ZO



Another possible chemical reaction is of Phosphorus. The phosphate ions react with charged protons of acidulated water forming phosphoric acid. Our Probiotic Enzymes will decompose these into precipitated phosphorous molecules and liberate hydrogen and oxygen depending on the contents. This will further help in reduction of COD and BOD as desired.



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Similar reactions are envisaged of many other chemicals present in the waste water.

4. Probiotic enzymes are sprayed on top surface. Since the probiotic ions are heavier than water, they sink to the bottom. However, considering the lightness of the ions, rock salt (Sea Salt, NaCl) is added to the solution while diluting for spray such that the heavy molecules of sodium carry the probiotic ions to the bottom of the surface. We do not need the use of power spray jets for infusion into the water but only for enhancing the spread of the solution to wider area, the spray jets are being used.



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Carbonaceous BOD encompass both Natural and Synthetic chemicals present in waste water by oxygen liberated from other organic reactions and released to atmosphere in eco friendly manner



Figure 2 Leachate Treatment spray

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