



Presented to:
**UNITED NATIONS ENVIRONMENT PROGRAMME
PROGRAMME DES NATIONS UNIES POUR
L'ENVIRONNEMENT**



SUSTAINABLE KATOWICE AGGLOMERATION PROJECT
Union for Sustainable Development of the Cities of the Katowice Agglomeration
United Nations Centre for Human Settlements
United Nations Development Programme

NEOZYMES™

ADVANCED TREATMENT TECHNOLOGY FOR POLLUTION CONTROL

January 16-17, 1996
Katowice, Poland

Neozyme International, Inc.
33 Journey, Suite 200
Aliso Viejo, CA 92656
Phone: (714) 360-8773
Fax: (714) 360-8774

This paper was prepared and presented by Neozyme International, Inc at the Sustainable Katowice Agglomeration Project Conference in Katowice, Poland. Copies of all or any part of this paper is prohibited without the express written permission of Neozyme management.

**NEOZYMES™
ADVANCED TREATMENT TECHNOLOGY
FOR POLLUTION CONTROL**

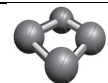
INTRODUCTION

The following presentation describes an innovative bio-organic, catalytic product that improves wastewater treatment and odor control. A brief description of the product and how it was developed is followed by three actual case studies performed over a one year period. The conclusion uses this actual data to describe the technological and economic benefits of the product.

BACKGROUND

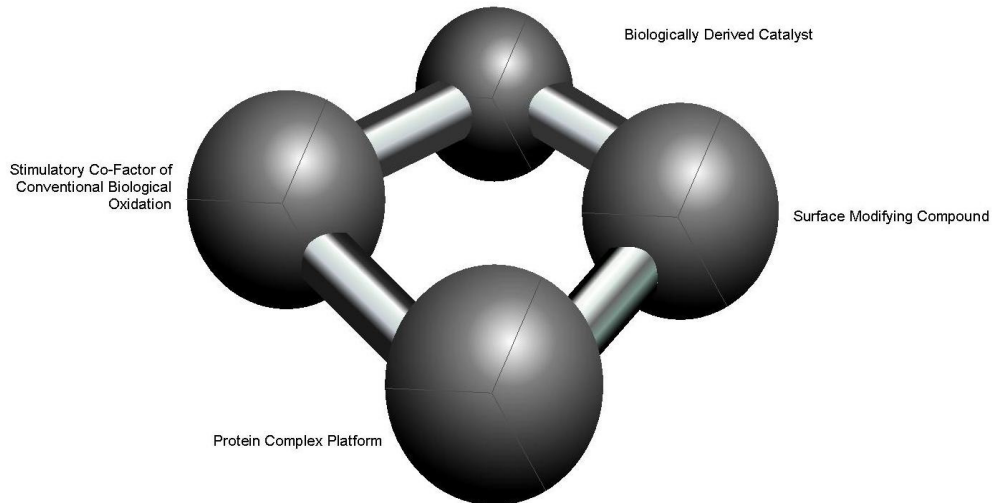
Until recently, the first step in wastewater treatment has been the removal of insoluble and dissolved contaminants by filtration and settling technologies. The addition of chemicals has been used to aid in the separation of solids from the fluid component of wastewater. The resulting solids or sludge is compressed by removing excess water and then transported to landfills for disposal.

After the initial removal of solids from wastewater, high concentrations of dissolved contaminants can remain. Dissolved organic contaminants can be removed by biological processes that result in the conversion of these contaminants to carbon dioxide and other gases, water, and biomass. Loss of gases effectively reduces total dissolved solids, yet the resulting biomass, due to the proliferation of microorganisms, becomes yet another form of waste solids requiring treatment.



TECHNOLOGY BREAKTHROUGH

Novel catalytic agents known as Neozymes™ have been developed that significantly improve the operational characteristics of biological wastewater treatment systems.



NEOZYME®

Neozymes are classified as catalysts because they accelerate and improve the efficiency of both chemical and biological reactions. The Neozyme formulations contain biologically derived catalysts, surface modifying synthetic compounds, protein complexes acting as a platform for reactions, and stimulatory co-factors of conventional biological oxidation.

The Neozyme formulations do not contain bacteria. A proprietary process is used in the manufacturing of these Neozymes and patents are pending on the formula compositions.

Neozymes improve wastewater treatment through several mechanisms:

- Increased solubility of hydrophobic wastewater components;
- Improved gas diffusion, increasing dissolved oxygen levels;
- Accelerated ionic interactions, catalyzing the breakdown of wastes; and
- Activation of biomass in conventional wastewater oxidation.

APPLICATIONS

Neozymes have numerous applications for the enhanced treatment of wastes. The primary applications are:

- Municipal wastewater treatment;
- Load reduction within municipal collection systems;
- Industrial wastewater treatment; and
- Remediation of petroleum hydrocarbon contaminated soil.

Neozymes catalyze aggressive chemical interactions under mild conditions. Therefore, Neozymes are a safer alternative to the other harsh chemicals for a number of applications. These include:

- Industrial cleaning including metal cleaning and degreasing;
- Odor control in compost and industrial applications;
- Fat, oil, and grease (FOG) control in grease traps, digesters, sumps, and conduits;
- Greenhouse, swimming pool, and household cleaning; and
- Soil conditioning.

BENEFITS OF NEOZYMES

Neozymes provide technological and economic benefits when used alone or in conjunction with other wastewater treatment technologies. Neozymes are beneficial because they:

- Are non-toxic, non-irritating, non-flammable, and 100% biodegradable;
- Increase the solubility of inorganic and organic wastes;
- Aggressively catalyze the destruction of wastes under mild conditions;
- Increase dissolved oxygen (DO);
- Reduce biological oxygen demand (BaD);
- Reduce chemical oxygen demand (COD);
- Reduce Total Suspended Solids (TSS);
- Reduce solids and sludge volume remaining after waste treatment;
- Increase capacity of waste treatment systems; and
- Reduce maintenance of traps, sumps and conduits by eliminating FOG build-up.