

**Health Safety: Application of Biological Agent in Refuse Storage Areas  
(RSAs) of Hong Kong Housing Authority (HKHA)**

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## Executive Summary

The Hong Kong Housing Authority has gradually built up links with various sectors of environmental industry and has actively involved in the air quality management of public housing estates. Indoor air quality is important to human health because we spend more than 80% of our time indoors.

The quality of indoor air depends both on the quality of outdoor air and the strength of emissions of indoor sources. Toxic, volatile chemicals and petrifying bacteria from these Refuse Storage Areas (RSAs) are health risks that we are constantly exposed to. Odour from refuse in RSAs has been long standing nuisance to the surrounding environment.

There are limitations to conventional physical and chemical indoor air treatment methods. For example, filters and electrostatic precipitators sold in markets are only effective on large particulates. Masking by scented sprays merely covers up the problem instead of solving it. Chemical oxidants such as ozone may produce other harmful or even carcinogenic by-products.

The BioTech Deodorizing System is developed as an innovative solution for air quality improvement and odour abatement. The BioTech Deodorizing Agent is a state-of-the-art biotechnological product that degrades and decomposes pollutants in the air. Being an original bioremediation method, the BioTech Deodorizing System, coupled with a specifically designed dosing system, is applied in-situ (on site) to tackle the air quality and odour problem.

The BioTech Deodorizing Agent is a novel blend of beneficial microbial consortium of five genera and over a hundred species. These microorganisms include those that may be familiar to the general public, including: Photosynthetic-Autotrophic *Rhodospseudomonas*, *Lactobacillus* (similar to those in yogurt), Yeast *Saccharomyces* (similar to those in wine and soy sauce), and Algae (similar to those in edible Chrysophyta).

Being a new product in the field, the BioTech Deodorizing Agent was examined in a series of vigorous tests and experiments. General safety tests including chemical and biological content, as well as Material Safety Data Sheet (MSDS) have been conducted and the results prove that the agent is non-toxic, non-flammable and stable in storage. Toxicity test in regards to lethal concentration (LC<sub>50</sub>) also indicates that the agent is non-toxic at its normal application dosages. Furthermore, in order to further demonstrate the safety of the biological agent, animal tests were carried out on acute oral toxicity, acute skin toxicity, skin irritation,

and eye irritation. All results indicate that the product is non-toxic and causes no abnormality.

There are always concerns whether the microorganisms present in the Agent would accumulate in the air of treated RSAs after application. The performance test results of treated areas show no increase of total airborne bacteria (TAB). Instead, TAB in all treated sites has substantially decreased after application. All TAB figures after treatment met the IAQ standard, as stipulated in the “Guidance Notes for Management of IAQ in Offices and Public Places.”

In conclusion, the BioTech Deodorizing System is an innovative technology in solving IAQ and odour problems. Various tests and experiments have been conducted on the Deodorizing Agent, and all results show that it is non-toxic, non-flammable, and causes no skin or eye irritation. Also, the microorganisms present in the BioTech Deodorizing Agent would not accumulate in the air of treated RSAs after application. Therefore, the BioTech Deodorizing System has no public safety or hazard concerns. It is safe for application in odorous or other poor air quality premises, such as RSAs.