

Courses and Practical Trainings

The knowledge and expertise acquired by our team are transferred to several sectors of society, through courses, practical trainings, seminars, as well as by scientific publications and reports.

CETESB – Companhia Ambiental do Estado de São Paulo

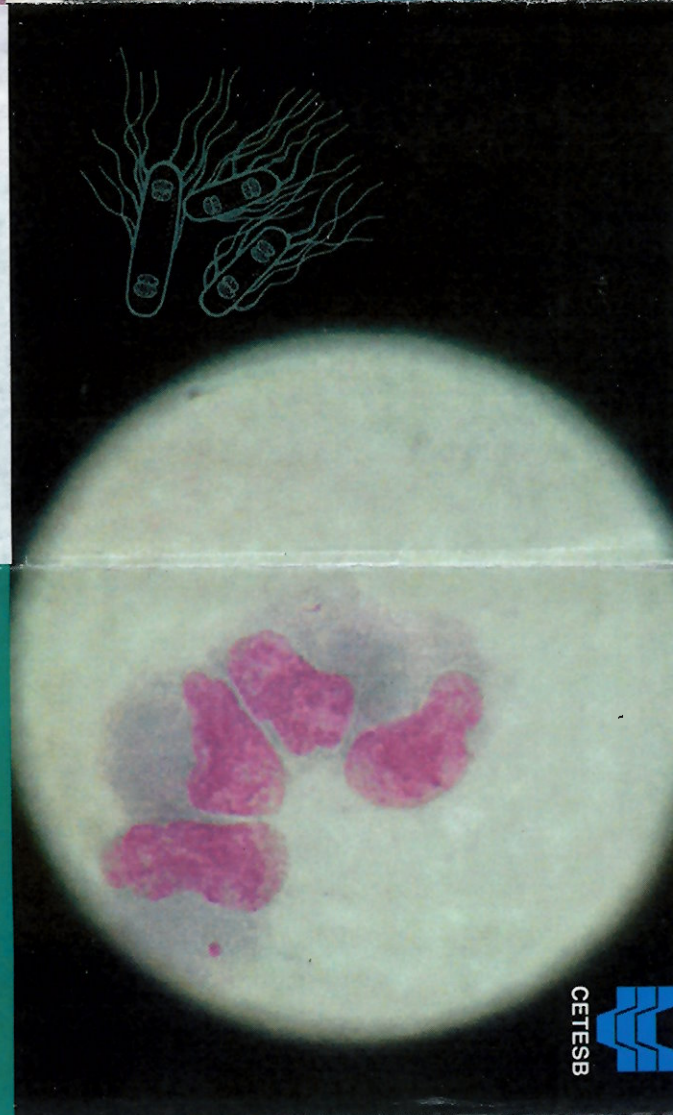
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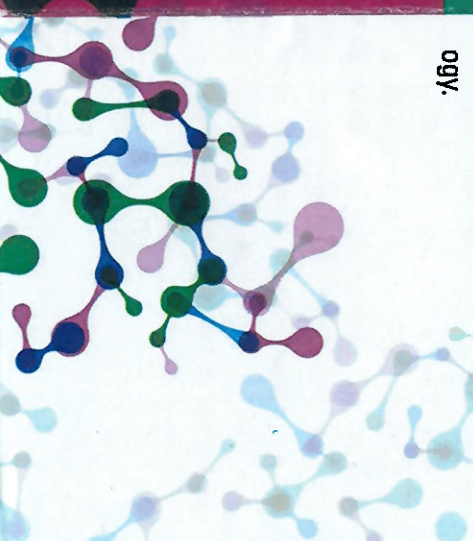
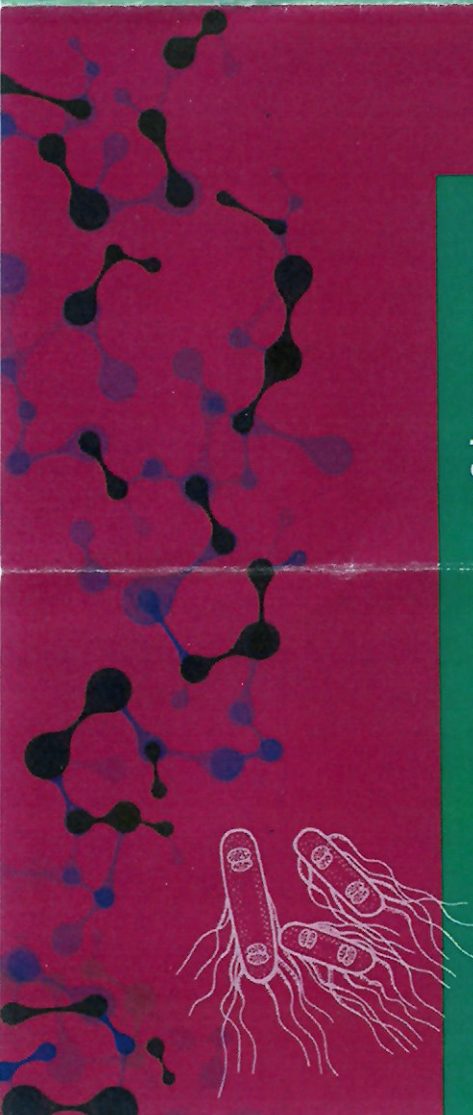
TOXICOLOGY AND GENOTOXICITY

HUMAN TOXICOLOGY AND ENVIRONMENTAL HEALTH

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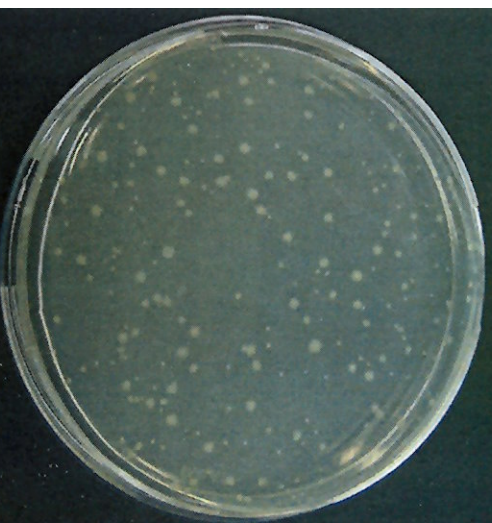
ENVIRONMENTAL ANALYZES LABORATORIES

We perform laboratory analyses and provide information on the effects of environmental chemical contaminants to the human health and to the ecosystems. The laboratory assays are mainly performed to detect chemical compounds able to change the genetic material of exposed organisms. Genotoxic compounds react with the DNA molecule, directly or after biotransformation, and induce mutations that can potentially cause diseases in the individuals and/or their descendants. The results of the analytical assays and the environmental toxicology studies taken together can be used to support CETESB's fiscalization and pollution control actions. Our genotoxicity tests methods with microorganisms are accredited ISO/IEC 17025, we are committed to providing the highest quality data. Our multidisciplinary team of professionals includes biologists, biomedical, pharmaceuticals-biochemists, specialists graduated in genetics and toxicology.



Laboratory of Toxicology and Genotoxicity

Ames test (*Salmonella*/microsome)



The *Salmonella*/microsome assay, known as the Ames test was developed to detect chemically induced mutagenesis, and is performed either with liquid samples or with organic extracts. We analyze water samples, industrial effluents, soils, sediments, sludges and particulate material. The test uses a variety of *Salmonella* Typhimurium strains, genetically modified, able to detect compounds that interact with the DNA through different mechanisms of action, in the presence or absence of *in vitro* metabolic activation.



Comet Assay (Single Cell Gel Assay)

The comet assay is performed with blood cells of fish environmentally exposed, or with cells in culture. This method of single cell gel electrophoresis detects DNA damage in individual cells. DNA with more induced breaks tends to migrate more rapidly within the electric field, and the pattern of DNA migration often resembles a comet. The extent of the DNA migration depends directly on the DNA damage present in the cells, so the "tail's" length is considered to be proportional to the damage induced.

Micronuclei

The genotoxic activity can be evaluated in eucariotic cells by measuring the increase of the frequency of micronuclei in the exposed cells. Blood cells of fish exposed to environmental contaminants can be evaluated in *in situ* tests. In the lab, *in vitro* tests are performed with different cells in culture, exposed to the contaminants.

Environmental Toxicology

Studies are prepared to evaluate the effects of chemical environmental contaminants to the human health or to animals. Technical information and opinions are given to evaluate the consequences of the presence of toxic contaminants to the environment and to humans.

FIT – Toxicological Information Form

We maintain a data base at CETESB's website, with summarized information on the use and occurrence of chemical substances in the environment, their behavior in water, air and soil, their toxicity and the appropriate regulations.

