

FRAUNHOFER INSTITUTE FOR TOXICOLOGY AND EXPERIMENTAL MEDICINE ITEM

IN-VITRO TESTING OF AIRBORNE SUBSTANCES FOR INHALATION TOXICITY

The innovative and patented P.R.I.T.[®] technologies enable the use of cell cultures and tissues at the air/liquid interface for testing (cellular alterations) of inhalable substances from the most different sources under appropriate conditions according to the current state of scientific knowledge.



The P.R.I.T.[®] ExpoCube[®] has been designed for the exposure of cells and tissues to airborne substances, including gases, volatiles, sprays, fumes, particles, and many other.

Our services for you research

Development or customization of methods and processes for specific problems and requirements to provide tailored solutions. The newly developed or adapted method can then either be put to use by our experts or, as the result of the commissioned development work, can be handed over to your own laboratories for further use. Performance of studies and analyses of the most different kinds in the context of inhalable substances.

Fraunhofer Institute for Toxicology and Experimental Medicine ITEM

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IN COOPERATION WITH
 **Fraunhofer**
SCAI

P.R.I.T.® ExpoCube® features:

Compatibility with commercial cell culture plates

- Supports culture inserts from Falcon, Costar, and current 12-well format
- Complete separation of culture medium and exposure atmospheres
- No false-positive results due to secondary exposures

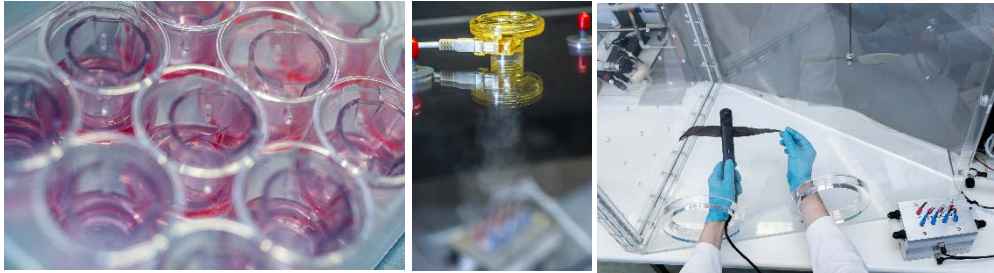
Optimized exposure thanks to CFD (computational fluid dynamics)

- Optimized exposure efficiency while preserving cellular viability

High particulate deposition efficiency without cell-damaging effect

- Increased deposition efficiency of very small particles through thermophoresis
- No requirement for physical preprocessing of the airborne test substance, e.g. electrostatic charging

Prevention of exposure artifacts from unwanted side reactions



Typical sources for testing of airborne substances are:

- Chemical gases from liquid or pressure gas containers
- Vapors from volatile liquids (e.g. volatile organic compounds)
- Aerosols from spray applications
Soluble substances can be transformed into aerosols (droplet aerosols) by different nebulizing techniques. For aerosol testing, special nebulizers (e.g. those relevant for the product to be tested) or devices for general use (e.g. Aeroneb®) can be employed.
- Particulate aerosols
Using methods according to the current state of scientific knowledge, particulate test items can be dispersed in air to form particulate aerosols, which can subsequently be used as test atmospheres. The experimental setup must be adjusted to the specific physical requirements of the particles under investigation (e.g. particle size).
- Smoke aerosols
The P.R.I.T.® ExpoCube® technology can be connected to the most different sources of combustion technology.
- Product-specific aerosol generation
A special option is available thanks to the P.R.I.T.® AE-Box. This box enables manual generation of product-relevant aerosols in the laboratory, for example as created during use of cosmetic products on test items (e.g. hair) or application of consumer products under heat conditions. The test aerosol thus generated under real-life conditions can then easily be fed into the test system for investigation.