

Advanced in vitro exposure systems

VITROCELL® Cloud SEQ 24



VITROCELL® Exposure Systems for Inhalation Toxicology

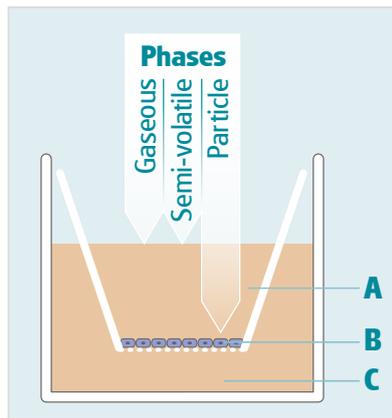
Direct Exposure Technology at Air/Liquid Interface

In response to the scientific need to expose in physiologically relevant conditions, VITROCELL® Cloud exposure modules have been specifically designed and engineered to enable direct exposure of mammalian cells or tissue at the air/liquid interface where the cell systems are not covered with culture media. Researchers can thus use all cell types cultivated on microporous membranes. This approach allows for more credible and authentic results than by submerged exposure due to a closer replication of the human physiology.

The exposure of mammalian cells or tissues to airborne substances is frequently performed under submerged conditions. Here, the test substances are dosed into the culture media. This procedure results in an undesired interaction of the formerly airborne substances with the media causing limitations for authentic analysis.

The advantages:

- No losses
- No dissolution
- No reaction of constituents with culture media
- High sensitivity

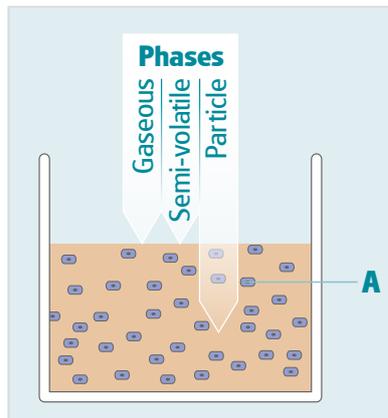


Submerged Cultivation and Exposure in Incubator

- A** Media above cells
- B** Cells on membrane
- C** Media below cells

Interaction of test components with culture media

Low sensitivity

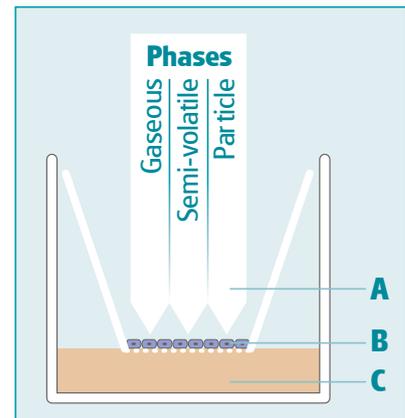


Suspension Cultivation and Exposure in Incubator

- A** Cells in media

Interaction of test components with culture media

Low sensitivity



Air / Liquid Cultivation and Exposure in Exposure Module

- A** Direct and controlled exposure of test atmosphere to cells
- B** Cells on membrane
- C** Media below cells

No losses
No reaction of principle components with culture media

High sensitivity of system

VITROCELL® Cloud SEQ 24

For sequential and multiple exposures to liquid aerosols

This system is specifically designed for dose-controlled and spatially uniform deposition of liquid aerosols on cells cultured at the air/liquid interface. The aerosol is applied for a short time of approx. 3 – 4 minutes.

The VITROCELL® Cloud can be used for aerosols generated from liquids and suspensions. Possible fields of application are screening for inhaled drugs and toxicity testing of inhaled substances including nanoparticle suspensions.

There is a choice among 4 options of Aeroneb® nebulizers:

- 4.0 – 6.0 µm
- 2.5 – 6.0 µm
- 2.5 – 4.0 µm
- 10 µm (special version)

The Cloud aerosol chamber is made of Polycarbonate. The VITROCELL® Cloud SEQ represents another evolution of the well-known Cloud system. Keeping functional process parameters according to established devices like the VITROCELL® Cloud 6, 12

or 24 it enhances these devices even further. It offers the possibility to sequentially expose rows of inserts to create dose-response effects via multiple exposures in one experiment. The concentration of nebulized liquid is kept at the same level for each nebulisation and the cell-cultures under comparable conditions.

Please download the VITROCELL® Cloud demonstration video from our website.



VITROCELL® Cloud SEQ 24

for 24 inserts (24-well size) allowing sequential and multiple exposures of individual rows for quick dose-response curve measurements



Exposure Systems



Dose Supply



Dilution



Racks & Carts



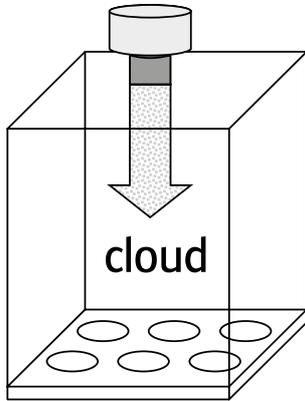
Dose Monitoring



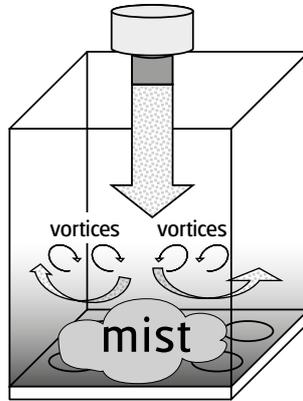
Skin Exposure



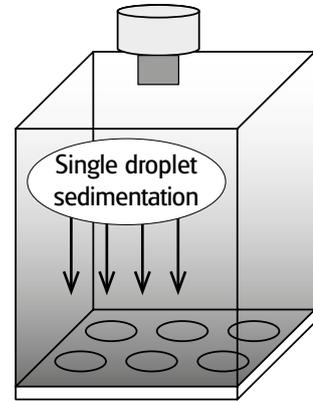
Auxiliary Equipment



Phase 1
Emission Of Cloud



Phase 2
Homogeneous Mixing



Phase 3
Gravitational Settling

Various configurations of the VITROCELL® Cloud SEQ



VITROCELL® Cloud SEQ 24
without insert cover
First exposure



VITROCELL® Cloud SEQ 24
with two insert covers
Second exposure



VITROCELL® Cloud SEQ 24
with four insert covers
Third exposure

Features

- Up to 6 doses @ 4 replicates for 24-well sized inserts
- New exposure system for liquid aerosols
- High droplet output rate – cloud dynamics
- No external air-flow required (simple)
- No humidity control required
- Dose-controlled and spatially uniform aerosol deposition
- Small residual volume in nebulizer reservoir
- Low insert-to-insert variabilities
- Easy handling
- Clinically relevant

About VITROCELL®

VITROCELL® exclusively concentrates on the developing, producing, installing, training and servicing of advanced *in vitro* exposure systems.

The VITROCELL® Systems' team is driven by their vision for new in-vitro standards through state-of-the-art technology, highly qualified workmanship and absolute client dedication. VITROCELL® has successfully collaborated with clients from leading research institutes, contract research organizations, regulatory authorities or industrial laboratories across the world. Working with our team experts, all modules have been tailored to create durable and complete turnkey-systems for *in vitro* inhalation toxicology. Gases, environmental atmospheres, nano particles and complex mixtures are analyzed on lung cells at the air/liquid interface using these systems. VITROCELL® technologies are also applicable to solutions for skin research.

Over a decade of devotion to research in this specific field has given our team of design & precision manufacturing specialists the opportunity to mentor highly diversified and complex projects **from conception to completion**. We strive to become a constructive member of each research team, providing support when it is needed, advice when it is required and modules of the highest quality, which are even polished by hand before leaving here to be integrated into your workspace. Every piece of our German engineered equipment is manufactured to the highest of standards – yours.

For more information
please scan the QR-Code:



VITROCELL® Systems GmbH
Fabrik Sonntag 3
79183 Waldkirch
Germany

Tel. +49 7681 497 79-50
Fax +49 7681 497 79-79
Email: info@vitrocell.com
www.vitrocell.com

VITROCELL®
S Y S T E M S