



Reliable environmental conditions for bioassays

The implementation of bioassays – tests that analyse a substance’s effectiveness on organisms – is one of the core tasks of the Department of Ecosystem Analysis (ESA) at the Institute for Environmental Research (RWTH Aachen University). Two Memmert CO₂ incubators and two Peltier-cooled incubators IPP guarantee constant and reliable environmental conditions.

What happens to residues of carbonic nanoparticles after their disposal? What natural processes take place until woodland regenerates after a storm, such as “Kyrill”? What unknown trace substances are environmentally relevant for our drinking water, rivers, oceans and soil?

Environmental research is interdisciplinary



The RWTH Aachen uses the Memmert CO₂ incubator INCOmed for in vitro bioassays

Questions like this show that our environment has a complex structure. For this reason, many fields of research, such as chemistry, biology, sociology, pedagogy, economics and engineering do groundwork in modern environmental research. The emphasis of this field of research is on the interactions between humans and their environment. The Institute for Environmental Research at the RWTH Aachen University ranks among the leading institutes of its kind in Germany.

The effect of chemicals and complex environmental samples on living nature – from genes to ecosystems – as well as the underlying mechanisms of action are analysed by means of test organisms, such as cell cultures, yeasts and bacteria. During the tests, effects such as gene mutation, dioxin-like effectiveness or endocrine disruption are documented, analysed and assessed with regard to their toxicity, and the risk potential for the environment is projected.

Sterile work in the CO₂ incubator

Several Memmert incubators are almost permanently in use at the institute. Inside the CO₂ incubator INCOmed, tests are carried out at 37 °C, with 5 % CO₂ and at a higher level of air humidity. In addition, CO₂ incubators are used for the growth incubation of cell lines. Inside the cooled incubator IPP, bacteriological tests are carried out at a constant temperature of 37 °C, whereas yeast tests are carried out at 30 °C.

Prof. Dr. Henner Hollert, one of the two heads of the institute, considers the fact that Memmert CO₂ incubators are easy to clean to be a decisive advantage. The programme for sterilising the interior, including all installations and sensors, significantly supports work under sterile conditions – especially concerning cell cultures with mammal cell lines. In addition, the special opening in the glass door allows the user to control the CO₂ sensors with external measurement technology without affecting the CO₂ concentration.

An overview of the main topics

The CO₂ incubator in chronobiology

The Institute of Pharmacology and Toxicology at the University of Zurich carries out tests on gene expression in the Memmert CO₂ incubator.

[more information](#)

Laboratory equipment for incubation

- RWTH Aachen
- Institute for Environmental Research
- Ecosystem Analysis
- Bioassay
- Test organisms: Cell cultures, bacteria, yeast
- Memmert incubator, cooled incubator
- Memmert CO₂ incubator

Incubator I

Cooled incubator ICP

Peltier-cooled incubator IPP

CO₂ incubator INCOmed

Cooled storage incubator IPS

The text of this article is largely based on statements of the Institute of Environmental Research at RWTH Aachen.

AtmoSAFE would like to thank Prof. Dr. Henner Hollert for his kind assistance.

Photo Credit: Memmert, JVisentin

Autor:

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