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## Endocrine disruption and antimicrobials

Endocrine disruptors are hormonally active substances of natural or synthetic origin affecting the endocrine (hormonal) systems of humans. Such compounds can be found in chemical groups like steroids, cyclic hydrocarbons, phenols, flavonoids, phtalates, parabens or toxic metals. They are used as antimicrobials, biocides, plasticizers, surfactants, UV filters or fire retardants. They may be released from consumer products, e.g. cosmetics, toys, food packaging materials, household products, medical devices and other products of industry or agriculture. In the EU, they are banned for consumer products. Recently regulated CMR substances from the group of Antimicrobials/Preservatives (biocides) comprise: Chloracetamide (Reprotox. Cat. 2), Phenol (Mutagenic Cat. 2), Nonylphenol (Reprotox. Cat. 2), Parabens (pentyl-, phenyl-, benzyl- for absent data on reprotox.), Ketoconazole (Reprotox. Cat. 1B), Boron compounds (Reprotox. Cat. 1B), Formaldehyde (Carcinogenic Cat. 1B), Polyaminopropyl Biguanide-PHMB (Mutagenic Cat. 2). Significant reprotoxic effect has been proved in the past namely for distinct bisphenols (Reprotox. Cat. 2) or phthalates (Reprotox. Cat 1B or Cat. 2) which were subsequently banned. However, the production of analogous compounds is increasing underlining the necessity to test their safety including reprotoxicity. The European Commission's general policy is the use of alternative toxicological methods *in vitro* instead of conventional tests on vertebrates. Available methods *in vitro* to detect endocrine disruption are: OECD TG 455/457–Estrogen Receptor Transactivation Test Method, OECD TG 456–Effects on Steroidogenesis, OECD TG 236–ZFET, zebrafish embryo epigenetic assay, MCF-7 cell proliferation assay, Xenoscreen YES/YAS yeast assay. Results of a pilot study to prove applicability of methods *in vitro* to detect reprotoxicity are presented.

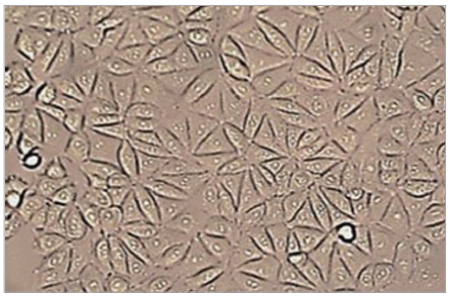

***Figure 1:*** *OECD TG 455/457-VM7Luc4E2 cell line, kindly provided by Prof. M. Denison, UC DAVIS, for research purposes.*

### Biography

Jirova Dagmar, MD, PhD, graduated and received her PhD at the Charles University in Prague. Her professional specialization is in Dermatotoxicology and Immunotoxicology, focused on safety assessment of cosmetics and other consumer products. She is holding a position of the Head of Centre of Toxicology and Health Safety at the National Institute of Public Health, Prague, Czech Republic. She is the author of more than 200 publications in scientific journals, proceedings and monographs, posters or articles and publications for the public. She was the Principal Investigator in number of research projects in the field of alternative toxicological methods for evaluation of health risks of chemicals and consumer products.

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