Centre of Toxicology and Health Safety

Head: Dagmar Jírová, M.D., Ph.D.

E-mail: jirova@szu.cz

Research activities of the Centre are focused on topics covered by the **Act No.258/2000 Coll. Law,** on public health protection, and related Decrees dealing with requirements on health safety of consumer products and their ingredients. Toxicological endpoints such as local toxicity (skin and eye irritation, skin absorption and penetration, skin sensitization), systems toxicity such as acute and repeat dose toxicity, genotoxicity, mutagenicity, carcinogenicity, inhalation toxicity, microbiological safety and others are investigated in relation to the expected route of exposure. Toxicological evaluation is accompanied by top professional chemical analyses identifying chemical contaminants in consumer products such as food contact materials, toys, children products, cosmetics, food additives, special categories of food, food, medical devices, chemicals and chemical preparations and other materials coming into contact with human body. The effect of application of relevant protective measures is studied and the claimed efficacy of consumer products assessed. Toxicological methods comprise primarily alternative toxicological methods in vitro avoiding animal experiments, including QSAR applications. When justified, the biomedical exposure tests that involve human volunteers are included. Such strategy of toxicological testing is fully in agreement with the politics of European Commission stipulated in EU legislation related to protection of animals used for scientific purposes (**Directive 2010/63/EU**), regulations dealing with marketing of chemicals in the EU and test methods to assess hazard and risk of chemicals (Regulation **2007/1906/ES REACH** and **Regulation 2008/440/ES**). If animal experiments are justified, e.g. in the area of medical products, the Centre can offer a highest standard animal welfare facility, that is accredited and provides housing and care for animals involved in experiments respecting latest requirements on protection of animals used for scientific purposes. The biomedical research involving human volunteers or experimental animals is subject of approval by respective ethical review committees of the NIPH and Ministry of Health.

Activities of the Centre also cover basic research in the area of personalized medicine, namely evaluation of tools for predictive testing, exploration of mechanisms of action of anticancer drugs, and search for markers useful in individualized therapy of human cancers. For such research facilities equipped with genetic analyzers as real-time PCR and DNA sequencing, tissue culture laboratories and laboratories certified for manipulation of genetically modified organisms are routinely used.

Research units of the Centre represent integral parts of reference centers and laboratories in the NIPH. They develop new test methods, conduct validation of these methods, cooperate on national and international basis with other scientific institutes and laboratories (namely JRC: Joint Research Center of the EU), participate in ring tests and proficiency tests organized by national or international accreditation and standardization bodies, such as CEN, ISO, EDQM and others. NIPH, namely Centre of Toxicology and Health Safety, is recognized and nominated by the Czech Institute for Standards as a centre for technical standardization in the area of cosmetics and children products. Laboratories of the Centre are accredited and conduct a number of physical, chemical, microbiological and toxicological tests on request for control authorities, companies and

organizations including NGOs, consumer associations or associations of manufacturers and/or private subjects.

Experts of the Center of Toxicology and Health Safety of the NIPH represent the Czech Republic in a number of scientific, expert and regulatory bodies of the European Commission and of the Council of Europe in the area of consumer products. National reference centres and laboratories and their experts assist to the Ministry of Health in harmonization of the legislation, they support decision making of the Ministry of Health by scientific expertise and by laboratory analyses and participate in the in-market control conducted by control authorities in the Czech Republic.

Professional expertise of scientific units and reference laboratories is provided to new scientists and health professionals during their undergraduate and postgraduate education, training courses and consultations.

Centre of Toxicology and Health Safety comprises :

Unit for Chemical Safety of Products

Unit for Special Food Categories and Microbiology of Consumer Products

Unit for Biomedicine and Welfare of Laboratory Animals

Unit for Alternative Toxicological Methods

Toxicogenomics Unit

National reference centres and laboratories:

National Reference Laboratory for Experimental Immunotoxicology

National Reference Centre for Cosmetics

NRL for Genetic Toxicology

NRL for Welfare of Laboratory Animals

NRL for Food Contact Materials and Children Products

NRL for Food Additives

NRL for Microbiology of Food, Items of Current Use and Indoor Environment

NRC for Health Safety of Building Materials

NRL for Experimental Immunotoxicology

NRL for Welfare of Laboratory Animals