SPECIFICITIES OF CHEMICAL EXPOSURE RISK ASSESSMENT IN RESEARCH INSTITUTIONS

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Aim

- To present results of the chemical exposure risk assessment conducted at the Institute for Medical Research and Occupational Health (IMROH) in 2014.
- To identify specific aspects of chemical exposure in scientific research institutions
IMROH

- independent public institution under the authority of the Croatian Ministry of Science, Education and Sports
- second largest Croatian research institution
- multi-disciplinary approach to studying how chemical, physical, and biological agents in the general and working environment affect biological systems from a macromolecule to an entire organism.
IMROH

- Total of 161 employees
  - 56 scientific positions, 29 fellow positions, 12 professional positions within research projects
  - 64 support and services
Workplace risk assessment at IMROH

- From 1999.g. (introduced in Croatia in 1997.)
- last revision in 2014
Methodology

- **Identification of chemical hazards**
  - Qualitative and quantitative by research unit/workplace

- **Exposure assessment/dose-response**
  - Estimation of the level of exposure, duration of exposure, route of entry or contact, including work practices and preventive measures

- **Risk identification**
  - Risk of damage to health at individual workplace and health and safety measures required for minimizing risk (Risk = probability of harmful effects \(\times\) severity of effects)
  - Workplaces requiring regular health surveillance (*at higher risk of occupational injuries, occupational disease or work-related diseases*)
Identification of chemical hazards

- 102 employees (63%) exposed to chemicals at the workplace
  - Acids & alkali
  - Organic solvents
  - Mutagens (ethidium bromide)
  - Chemical warfare agents
Specific aspects of chemical exposure

- large number of chemicals and mixtures with acute and chronic toxic potential
- used periodically and in rather small quantities;
Specific aspects of chemical exposure

- Employees are well trained in work safety procedures
- Protective equipment is available and used
Specific aspects of chemical exposure

- Safe storage and disposal may be an additional risk
Health risk identification

- injuries at work caused by acute toxicity of acids and alkali;
- mutagenic potential of ethidium bromide;
- injuries at work caused by acute toxicity of chemical warfare agents;
- no relevant long-term health effects of acids, alkali, organic solvents etc. because of the low level of exposure (small quantity of chemicals used in adequate safe working conditions).
Workplaces requiring regular health surveillance according to current legislation

- Organic dust: 20
- Ionizing radiation: 18
- Height: 16
- Biological hazards: 12
- Carcinogens/mutagens: 9
- Car drivers: 6
- Non-ionizing radiation: 4
- Night work: 2
- Boiler: 1
Workplaces requiring regular health surveillance

- 4 workers exposed to ethidium bromide in line with the Ordinance on the protection of workers from risks related to exposure to carcinogens and/or mutagen

- 12 workers handling chemical warfare agents (because it also involves safety of other persons) however, not recognized in the current legislation
Thank you!