

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University

Applicant

Lisa Melymuk, Ph.D.

Habilitation thesis

Tracking the chemical signal of modernity: Linking policy, behaviour and environment to understand human exposure to chemical pollution

Reviewer

Linda Schenk, Ph.D. Docent.

Reviewer's home unit, institution

Integrative Toxicology, Institute of Environmental Medicine, Karolinska Institutet, Stockholm.

Dr Melymuk's habilitation thesis focuses on illuminating the routes and sources of human exposure to chemical pollutants. Her research includes the study of the distribution and behaviour of contaminants and has provided valuable knowledge on the sources, pathways, and impacts of these pollutants on human health. Her work has also contributed to the development and refinement of methods for assessing human exposures.

The habilitation thesis is based on a selection of 20 peer-reviewed publications from Dr Melymuk's extensive, and well-cited, publication record. The selected publications include 2 reviews and 18 original articles based on document studies and environmental or human sampling. The selected publications clearly document her experience in performing the research as well as formulating and leading research projects and supervise junior researchers.

Dr Melymuk outlines a framework for understanding human exposure, consisting of three major categories of drivers of exposure, which is followed by a section on tools and techniques for understanding chemical exposures including research development needs. The three major drivers of exposure identified are chemical policy, lifestyle-factors and environment. The thesis presents case-studies how chemical policy has impacted the exposure to polybrominated flame retardants and polychlorinated biphenyls. The thesis also gives examples of consumer choices affecting body burdens, as well as instances where products advertised as safer may not significantly differ in terms of contents to specific hazardous compounds. Under environment, differences between occupational and non-occupational settings are pointed out before elaborating on factors affecting indoor environments.

Overall, the thesis is well structured and based on a solid body of research contributing to methodology and knowledge on the nature and determinants of chemical exposures.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

-How do socio-economic factors play into the frame-work for understanding the drivers of chemical exposure?

-Should climate zones be given more attention as an environmental determinant of chemical exposure from indoor environments?

-How can non-target screening contribute to developing the future policies on reducing harmful chemical exposures? In the conclusions, a need for interlinkages and integrations of techniques is mentioned, which developments would facilitate the use of non-target screening findings for policy development?

-What are the opportunities and limitations of passive samplers as a means to set and implement exposure guidance values for indoor environments? What are the key factors driving the variations in chemical concentrations reported by different laboratories?

Conclusion

The habilitation thesis entitled "Tracking the chemical signal of modernity: Linking policy, behaviour and environment to understand human exposure to chemical pollution" by Dr. Lisa Melymuk **fulfils** requirements expected of a habilitation thesis in the field of Environmental Health Sciences.

Date: February 6th 2025

Linda Schenk
Signature: Linda Schenk

Signature page

This document has been electronically signed
using eduSign.

eduSign