



The Research Group
Analytical, Environmental and Geo-Chemistry

has the honor to invite you to the public defense of the PhD thesis of

Annelies Van Heyst

to obtain the degree of Doctor of Sciences

Title of the PhD thesis:

Challenges in the evaluation of mineral oil hydrocarbons in food

Promotor:

Prof. dr. ir. Marc Elskens

Co-promotor:

Dr. Els Van Hoeck

Dr. Birgit Mertens

The defense will take place on

Thursday, April 1, 2021 at 16h00

The defense can be followed through a live stream. Contact
Annelies.Van.Heyst@vub.be for more information

Members of the jury

Prof. dr. Yue Gao (VUB, chair)

Prof. dr. ir. Frederik Leroy (VUB, secretary)

Prof. dr. ir. Tamara Vanhaecke (VUB)

Prof. dr. Adrian Covaci (UAntwerpen)

Dr. Sander Koster (Nestlé, Switzerland)

Abstract of the PhD research

The last decade, migration of mineral oil components from food contact materials into various foods has been reported. In Belgium, data on the contamination of food by mineral oil were lacking. Therefore, the objective of this thesis is to evaluate the risks of the Belgian consumer related to the exposure to mineral oil by investigating the exposure to these substances and their corresponding hazard.

First, a common state-of-the art method was implemented providing some insights in the advantages and disadvantages of the method. Next, a market survey was performed. In order to evaluate the exposure of the Belgian population, a sampling strategy was developed using the most recent Belgian food consumption survey (FCS), resulting in a unique selection of food matrices tested for mineral oil. The samples were analysed and a large amount of occurrence data was generated. By combining these occurrence data and the data of the FCS, a dietary exposure assessment could be executed. Afterwards, the exposure data were combined with hazard-related information in order to assess the risks associated with exposure to mineral oil.

However, characterization of the hazards of mineral oil present in food is complicated by different factors. One important limitation is that the composition of the mineral oil detected in food remains unknown. Additionally, not all mineral oil found in food samples have the same composition as even in the same matrix, variations in mineral oil composition have been observed. Therefore, the hypothesis that in vitro bioassays could be applied to collect toxicological information on mineral oil present in food samples was investigated.

Curriculum vitae

Annelies Van Heyst was born on the 22nd of May 1990 in Antwerp. In 2015, she obtained her Master's degree in biomedical sciences, environment and health sciences with distinction from the University of Antwerp. After her studies, she started a PhD at Sciensano (former Scientific Institute of Public Health; WIV-ISP) in collaboration with the Vrije Universiteit Brussel (VUB). As PhD researcher, she specializes in the complex matter of mineral oils and associated analytical methods and regulation. Annelies has presented the results from this work at several national and international scientific conferences and has received the young lecture award during the 40th edition of ISEAC, an international conference on Environmental & Food Monitoring. Her work resulted in five scientific publications in international peer-reviewed journals of which two as a first author. Annelies participated in a training at the Bundesinstitut für Risikobewertung (BfR) in Berlin where she gained insight in the analytical methods an interpretation of mineral oil data. Currently, Annelies is working as a R&D scientist at Primoris.