

NSFT

Norsk Selskap for Farmakologi og Toksikologi

Annual Report 2023 – Toxicology section NSFT including the ERT report

This is the Toxicology board's report for our activities during February 2023 through January 2024. This report is submitted for approval at the toxicology section's annual meeting held at the Radisson BLU Resort Beitostølen from 9.00-9:30 on 27 January 2024.

The composition of the board

The board members for the toxicology section in 2023 were as follows:

Chair – Marianne van der Hagen (2023-2025) – Miljødirektoratet / Norwegian Environment Agency, Oslo
Odd Andre Karlsen (2022-24) – UiB, Bergen
Johanna Samulin Erdem (2022-24) – STAMI/NIOH, Oslo
Josef Daniel Rasinger (2023-25) - Havforskningsinst. Institute of Marine Research Bergen
Eleonora Longhin, (2023-25) – NILU Oslo
Mette Helen Bjørge Müller (2023-25) – NMBU Ås
Vegard Sæter Grytting (2023-25) – FHI/NIPH Oslo
Susann Wolf (2023-25) – STAMI/NIOH Oslo, (vara)

Marianne van der Hagen has been the representative of the Toxicology section on NSFT's main board

Nomination Committee for 2023: Shan Narui, Hubert Dirven, and Jason Mathews.

The work of the board

The board had 1 physical meeting (in Oslo), 8 digital meetings and some e-mail communications during the year.

The winter meeting 2023 was arranged in Beitostølen, 26-28 January

Toxicology relevant sessions included:

Non-alcoholic fatty liver disease

Endocrine disrupters

The Poulsson session Roland Seifert;

The Beito lecture - Demedication and dediagnosing

The Nordic symposium Advances in cancer development and treatment, and

New approach methodology for RegTox

- Toxicology:
- 9 abstracts were presented as **oral presentations**:
- Winner of the **best oral presentation** was **Simon Schmid**, Norwegian institute for water research (NIVA) Title: Uncovering metabolic disturbances in chitin metabolism and phenotypical endpoints after exposure to teflubenzuron in *Daphnia magna*
- 12 short **poster presentations**
Winner of the **best poster presentation** was **Sara Alsaedi**, The National Institute of Occupational Health in Norway (STAMI) Title: Hazard effects associated with HDPE microplastics combined with *Pseudomonas lurida* in human lung alveolar A549 cells.

The spring meeting 2023 was arranged as a hybrid meeting on Thursday 8 June 2023 at the Norwegian Institute of Public Health (NIOPH, FHI). The topic was "New Approach Methodologies – From research to use in regulatory toxicology". There were speakers from NIOPH, NMBU, NILU, STAMI, VKM, and Miljødirektoratet. Number of participants was about 60.

The autumn meeting 2023 was arranged as a hybrid meeting on 6 November 2023 in cooperation with The Plastics Network at the University of Bergen. We supported the "Recent advances in plastic and plastic additives research" symposium as the Toxicology sections fall meeting. The meeting was mainly organized by The Plastics Network at the University of Bergen. Number of participants was 115 in total.

Best article 2023: Nominasjon av NSFT's publikasjonspris innen toksikologi for 2023 - beste artikkel fra norske fagmiljøer

Since 2014, NSFT has awarded a prize for the year's best publication from Norway based Researchers within pharmacology and toxicology (accepted for publication in the period 1 November the year before to 31 October this year).

The deadline for submission/nomination of an article was 8 December 2023.

We received 3 excellent submissions for the best article in toxicology for 2023, however one of them was accepted for publication after the deadline and may be re-nominated in 2024. The committee included Susann Wolf (NIOH/STAMI), Mette Müller (NMBU), and Marianne van der Hagen (Norwegian Environment Agency).

The winning publication was by Yvette Dirven, Dag Markus Eide, Erika Witasp Henriksson, Rune Hjorth, Anoop Kumar Sharma, Anne Graupner, Gunnar Brunborg, Jarle Ballangby, Anne Mette Zenner Boisen, Stellan Swedmark, Kristine Bjerve Gützkow, and Ann-Karin Olsen with the title "Assessing testicular germ cell DNA damage in the comet assay; introduction of a proof-of-concept" which was published in Environmental and Molecular Mutagenesis in

January 2023 (<https://doi.org/10.1002/em.22527>). The article was the Editor's Choice Article in February 2023.

Exposure to chemicals that cause genotoxicity in germ cells may lead to serious health effects in future generations. Such chemicals are regulated, and to assess if a chemical is genotoxic, *in vivo* tests must be carried out both in somatic tissue and germ cells to investigate if the chemical reaches the germ cells and if it interacts with the DNA. Today, few validated and accepted methods are available for the investigation of genotoxicity in male germ cells, and often two *in vivo* tests must be carried out to get this information.

One of the tests that is most used by the chemicals industry to assess genotoxicity, is the Comet Assay, which is the standardized OECD test guideline 489. Today, this test is not recommended for investigation of germ cells even if among others Norwegian scientists have demonstrated the possibility. In cooperation with regulatory authorities in Norway, Sweden and Denmark, and scientists at the Norwegian Institute of Public Health and Technical University of Denmark, Ann-Karin Olsen has published this article proposing a methodological concept to enable specific analysis of genotoxicity in testicular germ cells of mice, that can be incorporated into the current test guideline (TG) 489, the *in vivo* comet assay.

The concept is based on the unique DNA content, shape and size of different germ cell nucleoids, enabling identification of specific germ cell populations in testicular cell suspensions and thus separating data relevant to germ cells as opposed to the somatic tissues surrounding the germ cells.

This means that in the future there may be no need for two separate *in vivo* tests, but that chemicals can be tested for genotoxicity both in somatic tissues and germ cells in the same test. This will reduce the need for more animal tests and at the same time increase the knowledge about how chemicals reach and interact with DNA in germ cells.

The article is a good example of cooperation between the scientists and authorities within the field of regulatory toxicology. It is an important study that eventually may lead to better revision of OECD TG 489 and better regulation of potentially genotoxic chemicals.

Membership

- Among the total 209 NSFT members, 129 are members of the toxicology section (or both sections). See annual report for the NSFT for more details regarding membership.

(continued)

Årsberetning fra ERT-komiteen 2023

Den norske komiteen for godkjenning av Europeiskregistrerte toksikologer (ERT) har etter Årsmøtet 2023 bestått av: Åse Krøkje (leder), Norges teknisk-naturvitenskapelige universitet; Christine Bjørge, Miljødirektoratet; Espen Mariussen, Folkehelseinstituttet; Hege Stubberud, GE Healthcare AS; Ketil Hylland, Universitetet i Oslo; Marie Bjørgan, Yara International ASA; Elise Rundén-Pran, Norsk institutt for luftforskning, Shan Narui, Statens arbeidsmiljøinstitutt og Oddvar Myhre, Folkehelseinstituttet.

Informasjon om ERT-ordningen finnes på NSFTs nettsider:

<https://www.nsft2.no/toksikologiseksj/ert/>

Oppsummering av ERT-komiteéns arbeid i 2023: Komiteén mottok høsten 2023, 11 søknader om re-registrering. Søknadene ble behandlet i ERT-komiteén den 12. januar 2024. Komiteén mottok ingen søknader om førstegangs-registrering. Vi ser behov for å informere om ERT-ordningen på Vinter-møter og på aktuelle arbeidsplasser. Det er per januar 2024 omtrent 70 registrerte toksikologer på den norske listen. Den norske ERT-komiteen har diskutert konsekvenser av pandemien på mulighet til å innfri møte/kurskrav i ERT-registreringsordningen. I overensstemmelse med EUROTOX sine anbefalinger blir det utvist skjønn og fleksibilitet ved vurdering av re-registreringer. Imidlertid virker det som problemet er begrenset pga godt tilbud av relevante webinarer og virtuelle møter. ERT-komiteen har jobbet med oppdatering av informasjon på NSFTs hjemmeside, blant annet informasjon også på engelsk.