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# Thyroid disrupting chemicals during pregnancy: an invitation to collaborate in the consortium on thyroid and pregnancy

Arash Derakhshan<sup>1,2\*</sup>, Akhgar Ghassabian<sup>3,4</sup>, Leonardo Trasande<sup>3,4,5</sup> and Tim I. M. Korevaar<sup>1,6</sup>

## Abstract

This is an invitation letter for the principal investigators and cohort studies to join the Consortium on Thyroid and Pregnancy. The inclusion criteria are population-based cohorts with data on maternal thyroid function during pregnancy and any measurement of known groups of endocrine disrupting chemicals.

## Correspondence

Thyroid hormones regulate pregnancy metabolism as well as development of the placenta and fetal brain. Maternal thyroid dysfunction during pregnancy is associated with pregnancy complications, suboptimal offspring neurocognitive development and cerebral morphology differences. Various components of the thyroid system are vulnerable to exposure to endocrine disrupting chemicals (EDCs) including the complex regulation of thyroid hormone synthesis, metabolism, transport, signaling and the balance of hypothalamic–pituitary–thyroid axis. While numerous epidemiological studies have shown that higher exposure to a variety of EDCs is associated with differences in thyroid hormone concentrations in

pregnant women, these were mostly small single-center studies that overall have yielded inconclusive and heterogeneous results which cannot be readily implemented for regulatory and policy-making purposes.

To overcome heterogeneity, increase statistical power, investigate new hypotheses/(patho)physiology, improve precision of effect estimates and to provide better generalizability, we aim to utilize individual participant data (IPD) meta-analyses to investigate the thyroid disruption effects of EDCs in pregnant women from pregnancy-cohorts worldwide. We have already proven the principles of this approach within the Consortium on Thyroid and Pregnancy (currently consisting of 32 cohorts and ~70,000 participants; <http://www.consortiumthyroidpregnancy.org>), to investigate the association of maternal thyroid function test abnormalities with a variety of adverse pregnancy outcomes [1, 2].

Via this letter, we would like to invite principal investigators and already established cohort studies with available (published or unpublished) data on maternal thyroid function and EDCs to join the Consortium on Thyroid and Pregnancy. The inclusion criteria for various types of data that can contribute to the Consortium on Thyroid and Pregnancy can be found below. We hope you can join our efforts to strengthen the epidemiological research on the thyroid disruption effects of EDCs during pregnancy to provide more clear and solid results for all the EDC stake-holders.

\*Correspondence:

Arash Derakhshan  
a.derakhshan@erasmusmc.nl

<sup>1</sup> Department of Internal Medicine, Academic Center for Thyroid Diseases, Erasmus MC, Rotterdam 3015 CN, The Netherlands

<sup>2</sup> Institute for Risk Assessment Sciences (IRAS), Utrecht University, Utrecht 3584, The Netherlands

<sup>3</sup> Department of Pediatrics, New York University Grossman School of Medicine, New York, NY 10016, USA

<sup>4</sup> Department of Population Health, New York University Grossman School of Medicine, New York, NY 10016, USA

<sup>5</sup> New York University College of Global Public Health, New York City, NY 10016, USA

<sup>6</sup> Department of Internal Medicine, Division of Vascular Medicine and Pharmacology, Erasmus MC, 3015 CN Rotterdam, The Netherlands



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If you wish to participate, or require more information, please contact us via e-mail (a.derakhshan@erasmusmc.nl).

### Inclusion criteria

Population-based cohorts with any of the following serum measurements during pregnancy: serum TSH, free T4, total T4, free T3, total T3, TPO antibodies, Tg antibodies; AND serum, plasma or urinary measurements of any EDC groups during pregnancy (including but not limited to: phthalates, bisphenols, organophosphate or organochlorine pesticides, per- and polyfluoroalkyl substances [PFAS], brominated or chlorinated flame retardants, polychlorinated biphenyls [PCBs] and etc.).

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### Authors' contributions

A.D., A.G., L.T. and T.J.M.K. wrote and reviewed the correspondence.

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### Data availability

No datasets were generated or analysed during the current study.

### Declarations

#### Ethics approval and consent to participate

Not applicable

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

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