

Post-doctoral position in epidemiology / biostatistics

Exposure to pesticides and child health: dealing with classification bias and measurement errors by using Bayesian statistics

Job profile: post-doctoral researcher (full time)

Research field: Epidemiology, bias classification, Bayesian statistics, pesticides, child growth

Starting date: January 2020

Duration: 14 months

Institution: French Institute for Health and Medical Research (INSERM)

Hosting department: Institut de Recherche en Santé, Environnement et Travail (UMR 1085)

Team: Exposure Assessment and Epidemiological Research on Environment, Reproduction and Development (3ERD)

Location: Rennes (Brittany), France

Supporter's name (contact): Rémi Béranger (remi.beranger@univ-rennes1.fr)

With more than 250 members, the *Institut de Recherche en Santé, Environnement et Travail* (UMR 1085 – Irset ; <https://www.irset.org/en>) is one of the largest inter- and multi-disciplinary European research centres on environmental and occupational health. Irset is a joint research unit of the **Inserm** institute, **Rennes 1 University and the EHESP - School of Public Health**, in partnership with the Universities of Angers and the French Antilles, the CNRS, and the Teaching Hospitals of Rennes, Angers and Pointe-à-Pitre. Its mission is to study the biological processes and the environmental factors (whether chemical, biological, physical, social and cultural, occupational, geographical or economic) that affect human health, and to help public health authorities make informed decisions on the basis of scientific data.

The team 3ERD aims to identify and characterize environmental exposure induced by human activity and its impact on the reproductive system (function and organs) and on child development. A specific research axis of the team is focusing on the influence of occupational and environmental exposures to chemicals during the pregnancy. In this field of research, the most robust results are obtained through **longitudinal studies of mother-child/birth cohorts** combined with precise measurements of pre- and post-natal exposure to environmental contaminants.

Description:

The project is based on the Inter-Cal project, coordinated by the International Agency for Research on Cancer (IARC, World Health Organization), and funded by the French Agency for Food, Environmental and Occupational Health & Safety. The Inter-Cal project seeks to address and take into account selection and classification bias in the InterPhone study. Inter-Cal also seeks to extend statistical techniques developed for research on mobile phones and cancer to other research areas, such as pesticides and child health.

In collaboration with the IARC investigators and statisticians, the applicant will have to investigate different statistical methods, including hierarchical Bayesian approaches, to control simultaneously for selection/attrition bias and multiple types of classification bias / measurement errors when assessing the influence of prenatal pesticide exposures on child growth, in the Elfe French birth cohort. This will include theoretical work conducted via computer simulation, but also

characterization of the bias present in different types of measure of exposure used in several studies conducted in our team.

Profile expected:

The applicants must have a PhD (or be about to earn one), preferably in epidemiology or biostatistics. The applicant is expected to be able to conduct appropriate statistical models in the R or Python platform, and to have a good command of English language (French is not mandatory). Experience in SAS and WinBUGS/JAGS/STAN software is a plus. Experience in one of the following fields is also welcome: Bayesian statistics; pesticides exposures; Birth cohort; classification bias characterization.

Applicants should send a CV and motivation letter to Rémi Béranger (remi.beranger@univ-rennes1.fr) before the November 22nd. A recommendation letter (English or French) is not mandatory but would be appreciable.