

## Internship vacancy on probabilistic risk assessment of chemicals (≥6 months)

For the risk assessment of chemicals the RIVM derives health based guidance values (e.g. RfD, ADI, [Dutch] MTR). Guidance values are derived for various legal frameworks, regarding risk assessment of chemicals in e.g. soil, surface water, drinking water, food and at the workplace. There are various ways of propagating the uncertainties in the underlying toxicological information and extrapolation steps into the final health based guidance value. The method that is currently often applied is a deterministic method where single (point) values are used for the toxicological point of departure (PoD) and for each extrapolation factor, e.g. to extrapolate from experimental animal to humans. The uncertainty in the PoD and extrapolation factors is covered by choosing conservative or worst-case values. Recently, a probabilistic approach is getting attention as a method to propagate uncertainties. This probabilistic approach is in line with, and an extension of, the currently often applied deterministic method. The probabilistic approach quantifies the uncertainty in the derivation of a health based guidance value by using ranges (or distributions) instead of single values for the PoD and various extrapolation factors. Application of this methods results in an uncertainty distribution from which a health based guidance value can be derived. The added value of this approach is that it provides a scientifically better risk characterization and more insight concerning the uncertainties in the derived guidance value. More information on the probabilistic method can be found here: <https://www.rivm.nl/en/aproba-plus>

Based on preliminary analyses the probabilistic method yields similar (sometimes slightly higher, something a bit lower) guidance values compared to the deterministic approach, but with additional benefits, as mentioned above. Although the probabilistic method is scientifically better and more informative, the method will not be directly adopted by legislative frameworks. This requires more insight in the differences in results between deterministic and probabilistic derivations of guidance values.

RIVM is looking for a master student who is interested in human risk assessment of chemicals for an internship of at least 6 months. During this internship the student will derive probabilistic guidance values and compare them with (already derived) deterministic guidance values to get an overview of the general differences between both methods.

Interested students can send questions and their application regarding this vacancy to Dr. Bas Bokkers ([bas.bokkers@rivm.nl](mailto:bas.bokkers@rivm.nl)).