

Appendix 2: Specification of Requirements (= Appendix 1 to the contract)

1. Description of the project

In Denmark there are 3 different zones around drinking water abstraction wells. The first 10 meters are a physical zone, where all activities are forbidden, in the next 15 meter farming, fertilizers and the use of pesticides is prohibited. Beyond this general regulation there are vicinity zones, where the sizes are depending on the transport of groundwater to the wells. For these vicinity zones the municipalities can suggest limitations in the use of pesticides. The Danish Environmental Protection Agency (DEPA) wishes to investigate if differentiated authorisation criteria can be defined which will allow the use of some pesticides, which pose a low risk of leaching, in these vicinity zones. The identification of the pesticides with a low risk of leaching should be easy to administer and should be independent of the intended use, and therefore conventional groundwater modelling cannot be used. The two most important substance properties in relation to risk of leaching are the sorption and degradation of the substance. In the risk assessment sorption is determined by the Freundlich coefficient¹ normalised with respect to organic matter K_{foc} , and the degradation is described using the half-life, DT_{50} . Generally the leaching risk will decrease as the DT_{50} decreases and as the K_{foc} increases. It may therefore be possible to define substances with a low risk of leaching based on their DT_{50} and K_{foc} . The DEPA are considering the two following approaches for defining substances with a low risk of leaching:

1. Based on the Northern Zone project on groundwater models in the Northern Zone² the modelling results in the project show that substances with a $DT_{50} < 10$ days and a $K_{foc} > 500$ mL/g will not leach.
2. The leaching risk is a combination of the degradation rate and the sorption properties. The leachability of a substance can be expressed by calculating the Groundwater Ubiquity Score called the GUS index. The GUS index is defined as: $GUS = \log(DT_{50}) \cdot (4 - \log(K_{foc}))$. Based on the GUS index substances are divided into different categories with regard to their leaching ability. There are two different ways of dividing substances based on GUS. One is:
 <1.8 = Immobile
 $1.8 - 2.8$ = Moderately mobile
 >2.8 = Very mobile

and the other is that the leaching potential based on GUS is:

- <0.1 = Extremely low
- $0.1 - 1.0$ = Very Low
- $1.0 - 2.0$ = Low
- $2.0 - 3.0$ = Moderate
- $3.0 - 4.0$ = High
- >4.0 = Very high

¹ Also the Freundlich exponent $1/n$ is calculated, and it is very important for calculating the leaching risk in the FOCUS groundwater models. However, in this project $1/n$ is not taken into account.

² Geosigma (2013): Comparison of Northern Zone Groundwater Models.

Based on this DEPA could consider allowing the use of substances with a GUS index <1.8 or <2.0 .

DEPA therefore wishes to get an evaluation of the number of active substances which would fulfil the criteria given above. When evaluating an active substance it is required to evaluate both the active substance itself and all the metabolites included in the definition of the residue for groundwater in the list of endpoints. The evaluation should be based on the DT_{50} and K_{foc} used to calculate the Danish tax on pesticides. This data will be provided by the DEPA.

The deliverable from the project is a report presenting and discussing the two proposals from DEPA to select pesticides with a low risk of leaching, and the pesticides, which fulfil the criteria should be listed.

In the report other ways of easily selecting pesticides with a low risk of leaching should be discussed and the pesticides, which would fulfil these criteria, should be listed.

2. Delivery deadline

The deadline for delivery of the final draft of the project report is at December 18th 2017. The deadline for delivery of the final version of the report is at February 1st 2018.

3. Procedural demands regarding approval, report design etc.

After the final draft of the report has been submitted on December 18th 2017 the Danish Environmental Protection Agency will read the report and comment on it. The comments will be send to the provider on January 12th. After that the provider should prepare the final version of the report where they address the comments made by the Danish Environmental Protection Agency. The final version of the report should be submitted on February 1st 2018.

Regarding formalities in connection with the report and publication please consult:

<http://mst.dk/service/om-miljoestyrelsen/designguide-og-publikation/>

4. Budget and payment plan

The maximum budget for the project is 250.000 DKK. A payment plan will be agreed upon on the basis of the contract sum and the time schedule presented in the tender. It is assumed that the main part of contract sum can be paid after delivering the final draft of the project report at December 18th 2017.

5. Background/More information:

The background for the procurement is a political agreement on a new pesticides strategy for the period 2017-2021 in which a broad majority of the Danish parliament has required special approval conditions in vicinity zones (point 5a). Link to the political agreement:

<https://www.regeringen.dk/media/3299/21-04-2017-aftaletekst-pesticid.pdf>