

## Impact of Climate Change on Food- and Waterborne Diseases in Europe

Tender: OJ/2008/04/11 - PROC/2008/005



It is now acknowledged that global climate change poses a substantial challenge. The links between climate change and human health have also been well established. This includes the potential of disease transmission and infections. On the impact of climate change on food- and water-borne (FWB) infectious diseases, links have been suggested but not fully established. For example, temperature and salmonellosis incidence rates are highly correlated, and heavy rainfall events are associated with cryptosporidiosis outbreaks. Still there is a need to identify and assess the extent to which climate change may be a causative or exacerbating factor of these diseases.

In light of these challenges the European Centre of Disease Prevention and Control (ECDC) issued a tender entitled "Impact of Climate Change on Food- and Waterborne Diseases in Europe" which aims to:

- Identify and assess the anticipated impact of climate change on the transmission patterns of food- and water-borne diseases, including salmonellosis, listeriosis, cryptosporidiosis and campylobacteriosis, *Vibrio non-cholerae* infections and Norovirus infections
- Identify the correlations between weather parameter and food- and water-borne disease incidences
- Establishing sensitive and user-friendly tools for evaluating the impact of climate change on food and water-borne disease spread

The tender was awarded to a consortium consisting of the Dutch Institute for Health and Environment (RIVM) and the Institute of Hygiene and Public Health (IHPH) of the University of Bonn. While the Dutch working group is developing a tool for an individual risk assessment, the German working group is enhancing the knowledge base relating to waterborne diseases in the context of climate change with a systematic literature search.

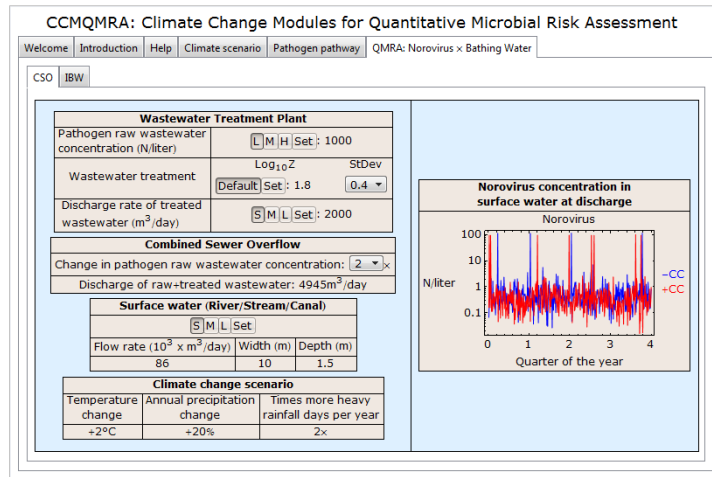


Figure 1: QMRA Screenshot: Definition of a climate condition and climate change scenario

Key information is entered into an online database and both thematic and spatial attributes were assigned to each article. The query of climate, water and pathogen specific attributes facilitates the collation of existing knowledge and the visualization of the differing impacts that climate change might have on specific waterborne diseases in Europe. Weather and incidence data from several European countries are analyzed by use of a GIS to reveal correlations and visualize the weather history prior to reported incidences.

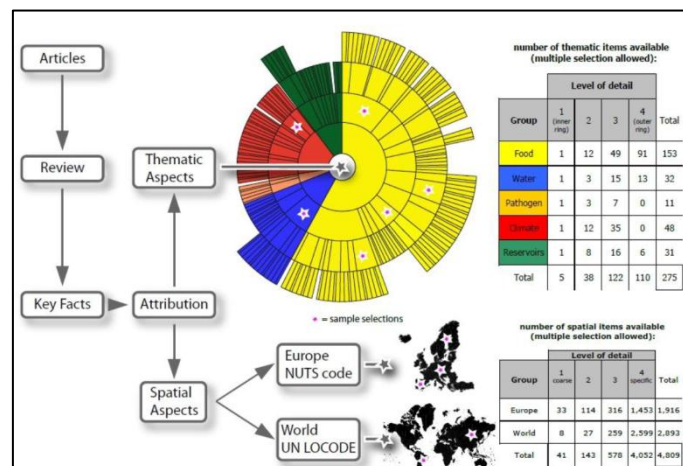


Figure 2: The structure of the interface-supported evaluation process of publications

In November 2011 the results of the project were presented during the 2<sup>nd</sup> Meeting of the ECDC expert group on climate change.

## References:

- Semenza, J., Höser, C., Herbst, S., Rechenburg, A., Suk, J., Frechen, T., Kistemann, T. (2011) Knowledge mapping for climate change and food and waterborne diseases. Crit Rev Environ Sci Techn; published 06.07.2011 (DOI: 10.1080/10643389.2010.518520)
- Semenza, J, Herbst, S., Rechenburg, A., Suk, J. , Höser, C., Schreiber, C., Kistemann, T. (2011) Climate change impact assessment of food and waterborne diseases. Crit Rev Environ Sci Techn; published 26.07.2011 (DOI: 10.1080/10643389.2010.534706)



## Contact:

Jan Semenza (ECDC) jan.semenza(at)ecdc.europa.eu

Andrea Rechenburg (IHPH) arechenb(at)ukb.uni-bonn.de