Project description:

Background

The diverse geological and geochemical conditions present in Slovakia are responsible for a range of health impacts. For example, in some areas, groundwater and drinking water is deficient in calcium and magnesium. Around 10% of the country, area-wise, is thought to be affected by anthropogenic pollution. In high-risk regions, life expectancy is considerably lower than the national average and the incidence of serious illnesses, such as cancer and cardiovascular diseases, is 2-5 times higher. Studies have shown significant correlations between the presence or deficit of some elements in the geological environment and people’s health. To date, however, systematic research has not been carried out on the negative impacts of both natural and anthropogenic conditions on health.

Objectives

The Geohealth project’s main objective was to reduce the negative impact of geological conditions on the health of the population of Slovakia.

Specific objectives were to:
- Compile data on the environmental indicators for groundwater and soil that have the highest impact on health, along with data on the health indicators for Slovakia that are most influenced by geological conditions;
- Link the environmental and health indicator data and assess their interrelationship;
- Identify and characterise the areas where residents suffer from health problems associated with an unfavourable geological environment and to define maximum (or minimum) levels for chemical elements in soil and groundwater based on negative health effects; and
- Draw up a proposal to reduce the negative health impact of geological conditions and to implement the proposed measures.

Results

The Geohealth project identified and confirmed correlations among environmental conditions and the health status of inhabitants which could have significant policy implications. It produced databases, maps of environmental and health data, and studies, in support of proposals for legal and technical measures.

These included the imposition of simple measures to increase the consumption of minerals, such as calcium and magnesium, in areas of deficiency through the promotion of mineral water, appropriate diets and vitamin supplements, along with national measures to improve the quality of drinking water sources.

The project established an artificial neuron network that showed that calcium and magnesium in groundwater and water hardness (Ca+Mg) are the strongest chemical elements influencing human health. Other evaluated environmental indicators were found to be less influential. It thus proposed increasing the recommended levels of Ca, Mg and Ca+Mg in the Slovak Drinking Water Guideline to around twice their current values.

The results will have a significant impact on future research internationally. The innovative method of the artificial neuron network can moreover be adapted to other research fields where inter-relationships between large data sets are studied. Another innovative approach was the compilation of national datasets of environmental and health indicators in numeric and map form.

Geohealth furthermore helped raise awareness among the public of a range of environment-influenced health problems and led to the active search for solutions. It held informal meeting with residents in the most vulnerable areas to explain the risks posed by the geological environment and how to avoid them in their everyday life.

The beneficiary is continuing to publicise the impact of the project as well as carrying out pilot testing of proposed measures within another LIFE project, Life for Krupina. It recognises that long-term efforts will be needed to achieve sufficient policy support at national and European level that will transform the project recommendations into appropriate actions. The project team is also helping revise guidelines for drinking water quality at EU level.

Further information on the project can be found in the project's layman report and After-LIFE Communication Plan (see "Read more" section).
Environmental issues addressed:

Themes

Risk management - Human health protection
Water - Water quality improvement

Keywords

public health, drinking water, environmental assessment, groundwater, pollution control

Target EU Legislation

- Water
- Directive 75/440 - Quality required of surface water intended for the abstraction of drinking wat ...
- COM(2012)673 -"A Blueprint to Safeguard Europe's Water Resources"

Natura 2000 sites

Not applicable

Beneficiaries:

Coordinator: State Geological Institute of Dionýz Štúr
Type of organisation: Research institution
Description: The Štátny geologický ústav D. Štúra institute carries out geological research and surveys in Slovakia, with particular emphasis on environmental and geochemical mapping. Several national geochemical databases serve as the main source of data for the compilation of environmental risk levels in the Slovak Republic, relating to groundwater, soil, river sediments, rocks, natural radioactivity and forests. In regions of high human-caused pollution, the occurrence of chemical elements, namely toxic metals, is compared with health
indicators. The institute has compiled basic environmental and health indicators for Slovakia for 2006-2009.

Partners
None

Administrative data:

Project reference LIFE10 Env/SK/000086
Duration 01-SEP-2011 to 31-AUG-2016
Total budget 418,678.00 €
EU contribution 207,273.00 €

Project location
Bratislavsky kraj (Slovakia Slovensko) Zapadne
Slovensko (Slovakia Slovensko) Stredne
Slovensko (Slovakia Slovensko) Vychodne
Extra-Regio (Slovakia Slovensko) Associated
Slovakia (SK) (Slovakia Slovensko)

Read more:

Newsletter
Title: "GEOHEALTH LIFE+ Project Newsletter 3"
(327 KB) Year: 2013 Editor: Geohealth No of pages: 2

Newsletter
Title: "GEOHEALTH LIFE+ Project Newsletter 2"
(360 KB) Year: 2013 Editor: Geohealth No of pages: 1

Newsletter
Title: "GEOHEALTH LIFE+ Project Newsletter 1"
(4.91 MB) Year: 2012 Editor: Geohealth No of pages: 2

Newsletter
Title: "GEOHEALTH LIFE+ Project Newsletter 4"
(2.78 MB) Year: 2014 Editor: Geohealth No of pages: 2

Newsletter
Title: "GEOHEALTH LIFE+ Project Newsletter 5"
(1.44 MB) Year: 2015 Editor: Geohealth No of pages: 1

Project web site
Project's website

Publication: After-LIFE
Title: After-LIFE Communication Plan
Editor: State geological Institute of Dionýz Štúr
No of pages: 3
| Publication: Layman report | Title: Layman report (Slovak version)  
Author: Fajcíková, K., Cvecková, V., Rapant, S.  
Year: 2016  
Editor: State geological Institute of Dionýz Štúr  
No of pages: 29 |
| --- | --- |
| Publication: Layman report | Title: Layman report  
Author: Fajcíková, K., Cvecková, V., Rapant, S.  
Year: 2016  
Editor: State geological Institute of Dionýz Štúr  
No of pages: 29 |
| Publication: Technical report | Title: "Chemical composition of groundwater/drinking water and mortality for oncological diseases, Slovak Republic (Action A5: Environmental analysis)" (1.94 MB)  
Author: S. Rapant, V. Cvecková, K. Fajcíková, ... [et al]  
Year: 2015  
Editor: Geohealth  
No of pages: 19 |
| Publication: Technical report | Title: Project's Final technical report  
Year: 2016  
Editor: State geological Institute of Dionýz Štúr  
No of pages: 39 |