

INSURE

Innovative Sustainable Remediation



Newsletter 2, February 2017

INSURE (*"Innovative Sustainable Remediation"*) is a 4 year Interreg Central Baltic project (September 2015 – August 2019), aimed at the improvement of sustainable remediation of contaminated sites in Central Baltic region, thus decreasing runoff of polluting substances into Baltic Sea.

Latvian Environment, Geology and Meteorology Centre (LEGMC) is one of the seven partners involved in project implementation. Project lead partner is County Administrative Board of Östergötland (CAB), other partners are Motala Municipality, University of Helsinki, Populus Group Oy (POP), Vidzeme Planning Region and Valmiera City Council. At the moment the project is at the 3rd implementation period (01.09.2016 - 28.02.2017).

Visiting pilot territories in Latvia, 18th of October 2016

To assess potential contamination in chosen pilot areas and to review if they are suitable for pollution dispersion modeling, a one day visit was organized in both pilot territories in Latvia – "Krustmaji" near to Buka village, and former black fuel (mazut) storage area in Valmiera city.

Two partners met in Valmiera pilot area – LEGMC and Valmiera City Council. The main aim of this visit was to obtain potential monitoring sites for boreholes, taking into account possible runoff direction. It was recognized that the site is abandoned and dangerous for practical survey works due

to some deep holes in the ground, as well as contamination with oil products – in the open railway system, there were oil products detected on the layer, additionally in storage tanks there were residues of black fuel (mazut), and the sampling made in April 2016 indicated soil pollution with oil products. It was decided to use this pilot site for modeling of contaminated substances dispersion in groundwater.



Three partners met in "Krustmaji" site – LEGMC, Vidzeme Planning Region and Populus Group Oy. Soil samples were taken according to previously made study data in an effort to get more actual information on pesticide pollution in soil.



These samples were taken to Finland for testing – DNA was isolated from these samples and also were tested the microbiological activity. According to latest



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data it was decided not to use this territory for modeling purposes, nevertheless, this will serve as a test area for alternative remediation process – phytoremediation.

It was also discovered that both sites are located near sensitive territories – black fuel (mazut) former storage facility in Valmiera city is bordered by residential area, while “Krustmaļi” site is bordered by agricultural land.

Study visit to Estonia – management of contaminated sites, 16-17th of November 2016

To improve knowledge basis on various remediation technologies, a study visit to Parnu, Estonia was organized. In Parnu city LEGMC experts visited company Mativesi OÜ, that produces and maintains reverse osmosis technological systems. Reverse osmosis filtration systems are used in waste polygons, as well as in remediation projects of contaminated sites, where such systems can be set up for local operation processes.



Two waste management companies were visited – AS EcoPro complex Vaivara in Ida-Virumaa and AS VÄÄTSA PRÜGILA in central part of Estonia. Reverse osmosis filtration systems are installed in the both sites, they are adjusted for infiltration amounts and pollutants from waste polygons, and they can ensure also both – “in-situ” and “ex-situ” – soil treatment methods.

Meeting of Latvian partners, 16th of December 2016

In middle of December all three latvian partners – Valmiera City Council, Vidzeme Planning Region and LEGMC – met in Riga to discuss project implementation status and problems, possible solutions and planned next activities. There also attended experts from Riga Technical University, State Environmental Service and consultant of practical study works.



The most important aspect that was pointed out in the meeting was that results gathered from studies in both pilot areas (“Krustmaļi” and former black fuel (mazut) storage area in Valmiera), which are very common types of contaminated areas in municipalities, should be useful for decisions on applying most appropriate remediation methods. Study results and implemented activities should serve as good practice examples also in cases presented in other municipalities.

Start-up meeting on modeling issues, 18-20th of January 2017

To implement planned modeling activities a common start-up meeting was organized for two partners – LEGMC and CAB, meeting was held in Sweden, Linköping, 18-20th of January 2017.



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Both partners discussed on hydrological and hydrogeological characteristics (similarities and differences) in Sweden and Latvia, on common problems and possible solutions in environmental modeling. Both partners will use different dispersion models – in Sweden NET model (based on S-HYPE) will be used for surface water pollution modeling, in Latvia adapted LAMO model will be used for groundwater pollution modeling, which is based on *Groundwater Vista* software. CAB presented chosen pilot area in Sweden for modeling – runoff areas of two big lakes (Lake Skutbosjön-Dovern and Lake Håcklasjön), and LEGMC also presented the chosen pilot area in Latvia – former black fuel (mazut) storage facility for the heating system in Valmiera city. In both chosen pilot areas studies are planned – in Sweden, the monitoring is already started in October 2016, in Latvia, study works will start provisionally in April 2017.

Experiences of project partners (POP, CAB, UHEL)

The Virrat hydrocarbon polluted site in Finland was added as an official INSURE pilot site in 2016. The site will be remediated (LUKE and POP) according to the remediation plan approved by the environmental authorities last year. Large-scale excavation was avoided and the major part of the site will be remediated by phytoremediation using hybrid poplars and associated microbes starting this year.

CAB (Magnus Kviele and Jenny Hultgren) and POP (Kim Yrjälä) gave talks about INSURE at the 6th Joint Nordic Meeting on Remediation of Contaminated Sites, NORDROCS, held in Otaniemi, Espoo, Finland 5 – 8th of September 2016. Jarno Laitinen from INSURE steering group gave a talk: Eco-innovative SMEs as facilitators in circular economy transition toward sustainable management of contaminated

sites risks. Kimmo Tiilikainen, Minister of Agriculture and Environment in Finland, gave the opening speech at NORDROCS.

POP (Paola Diaz and Kim Yrjälä) did a sampling trip to Krustmali pilot site in Latvia in October 2016. Sampling was done from the previously detected spots of pesticide pollution for analysis of the microbiological activity.

POP (Kim Yrjälä and Paola Diaz) gave talks at the Soil Science Days, 9 -10th of January 2017 in Helsinki about INSURE and isolation of endophytic microbes from hybrid aspen plants in phytoremediation of petroleum hydrocarbons. The threat of pollution to soil and waterways was one major topic of the meeting.

University of Helsinki is working with two local sites: in Janakkala a combination treatment of chemical oxidation and bioremediation is used on a contaminated site on a residential area. In Villähde a diesel polluted zone on industrial area, inaccessible by conventional methods, is being treated with electro-kinetically aided biostimulation.

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