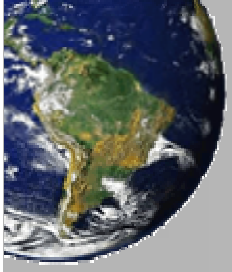


RS DYNAMICS

Detection & Monitoring of Methane Effluence Over Closed Coal Mining Sites Using ECOPROBE 5

Case Study

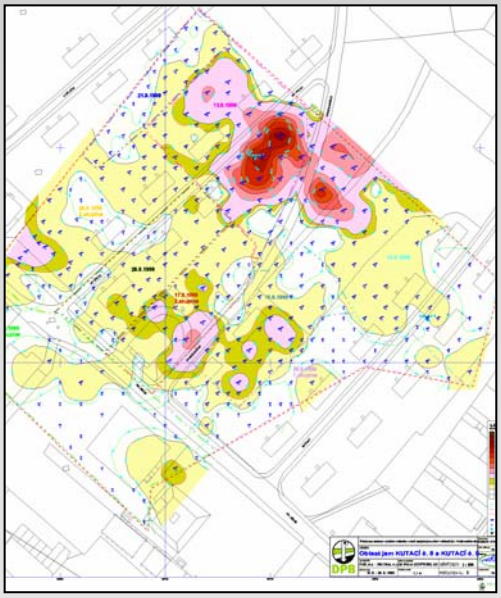
Closing down Coal mine sites is a world-wide problem. Over the past years, mining programs have been reduced and mines were finally shut down. Closed mines cause enormous difficulties as natural Methane is trapped and cannot escape from the shaft sealing. Methane concentrations often exceeds LEL (Lower Explosion Limit) with the gas expanding along geological faults and other geological heterogeneities. In this way, explosive Methane concentration can penetrate into houses and buildings apparently located far from the abandoned mine. Then by simply ringing a bell serious explosion accidents may be caused. It is obvious that there is an increasing demand for instrumentation and investigation methods with improved accuracy and resolution.

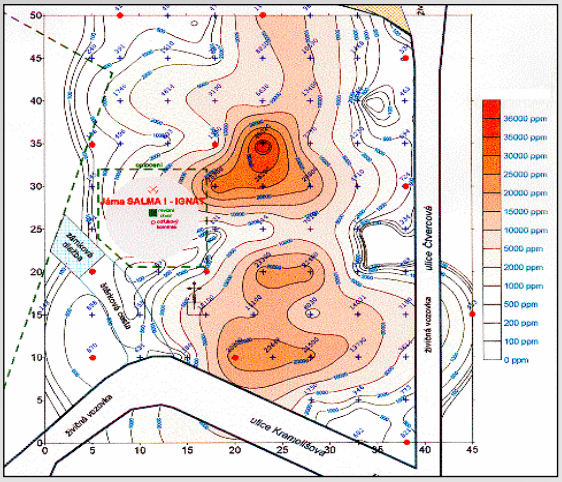
The study site is located over closed Coal mines and their immediate surroundings. The surface survey is focused not only on geological faults where effluence for Methane can be expected especially when atmospheric pressure goes down, but the whole region has to be systematically monitored to provide the best possible security.

Strict requirements were put in the instrumentation tender and finally several **ECOPROBE 5** units were purchased by the security department. Two groups of technicians worked in shifts every day surveying the region.

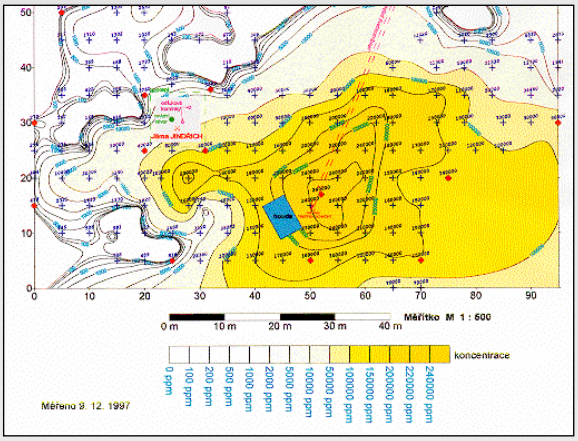
ECOPROBE 5 provides selective measurements of Methane and CO_2 with 20 ppm detection limit. These two parameters are especially suitable for surface survey over closed mines, and together with other **ECOPROBE 5** parameters provide a perfect overview on the surveyed region. CO_2 concentrations are often present above closed mine sites, especially in field depressions and cavities, and therefore represent health risk problems.

GPS data logging is a powerful, efficient and convenient tool for surveying large sites and is also widely used in the areas surrounding closed mines.





Samples of contour maps showing high Methane concentrations; the large sites surrounding closed mines were measured using GPS data logging systems.



Conclusion:

ECOPROBE 5 instruments are successfully used for surveying closed Coal mines regions. Industrial activities in the vicinity of Coal mines often produce various surface contamination and cause misinterpretation when simple gas analyzers without a separate reading for Methane are used. **ECOPROBE 5**'s unique combination of separate and very sensitive Methane and Total Hydrocarbon channels (detection limit is 20 ppm) provides a definitive solution for this particular Methane effluence survey.