



Recommendations on environmental monitoring of unconventional hydrocarbons operations

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RECOMMENDATIONS ON ENVIRONMENTAL MONITORING OF UNCONVENTIONAL HYDROCARBONS OPERATIONS

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Unconventional hydrocarbons exploration and production can theoretically endanger the quality of soils and water resources in the area of activities on land surface. Only obeying strict health safety and environmental standards and procedures on each well site which minimize possibility of spills and leakages and introduce quick remedy actions in case of any accident may significantly diminish probability of unnoticed events which might cause adverse effect in environmental quality. But even with highest technology standards, there is a need for additional control tools which could track and detect any unwanted changes in soils and natural water and groundwater bodies. Such a tool is even more necessary to detect any signs of adverse impact of possible shale gas development legacy – stray gases and fluids migration towards fresh water zone and land surface along wellbore casings or other potential natural or induced migration pathways. A properly designed dedicated environmental monitoring system in relation to defined baselines is believed to be able to play a role of such an early warning control tool.

Dedicated environmental monitoring in an early exploration and production stage in Europe should be prepared and conducted for particular well-pads chosen as representative for a location. In next phase, when more well pads operate, the monitoring program should cover a group of well pads located within the same location. Monitoring scope and network must be planned with regard to local current and historical land use, geological and hydrogeological conditions, ecosystems needs as well as to specific features of used well drilling and completion technology. Monitoring needs to cover the entire life-time of shale gas operations, with baseline state measurements, observations of boreholes drilling & completion activities and their direct impact on surroundings. In each phase, the scope and frequency of observations may differ but the results utilization must enable quick and proper remedy actions.

Environmental monitoring ought to be conducted by independent institutions and results should be stored in a well-organized and easily accessible database operated by a relevant, legally entrusted bodies.

Additional environmental monitoring might be necessary around mining waste facilities and treatment installations to observe potential impact of waste generated by shale gas activities, especially if legal requirements and control measures cannot ensure tracing proper handling of flowback fluid.