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## MIGRATION OF NATURAL GAS RELEASED FROM DAMAGED DISTRIBUTION PIPELINES THROUGH SOIL

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### Abstract

The purpose of this research is to study how the natural gas transported by damaged distribution pipelines can migrate through the soil. If the gas emissions are not detected on time and the air vents are placed on inappropriate sites or are not maintained properly, gas can migrate directly throughout preferential pathways: bed sand pipes, sewer pipes, cable channels, channels for heating, then can enter the confined space and form explosive mixtures. As a proof of these phenomena, a series of events that occurred in industry and accidents suffered by civil citizens have occurred. The equipment used for emissions measurement is provided with 16 sensors to indicate the methane gas concentration. The sensors operate on the thermal conductivity principle being able to measure concentrations between 0% and 100% volume. A field version was adopted for tests to measure concentration of gases migrating through soil. For each location the soil permeability was determined using the running times distance between the source and the release detection heads. Also maps were drawn with time isolines for a particular concentration in order to characterize the dynamics of the natural gas migration, which helps improving the efficiency of solving technical expertise of the events due to natural gas explosions.

*Key words:* natural gas, migration, soil, technical expertise

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