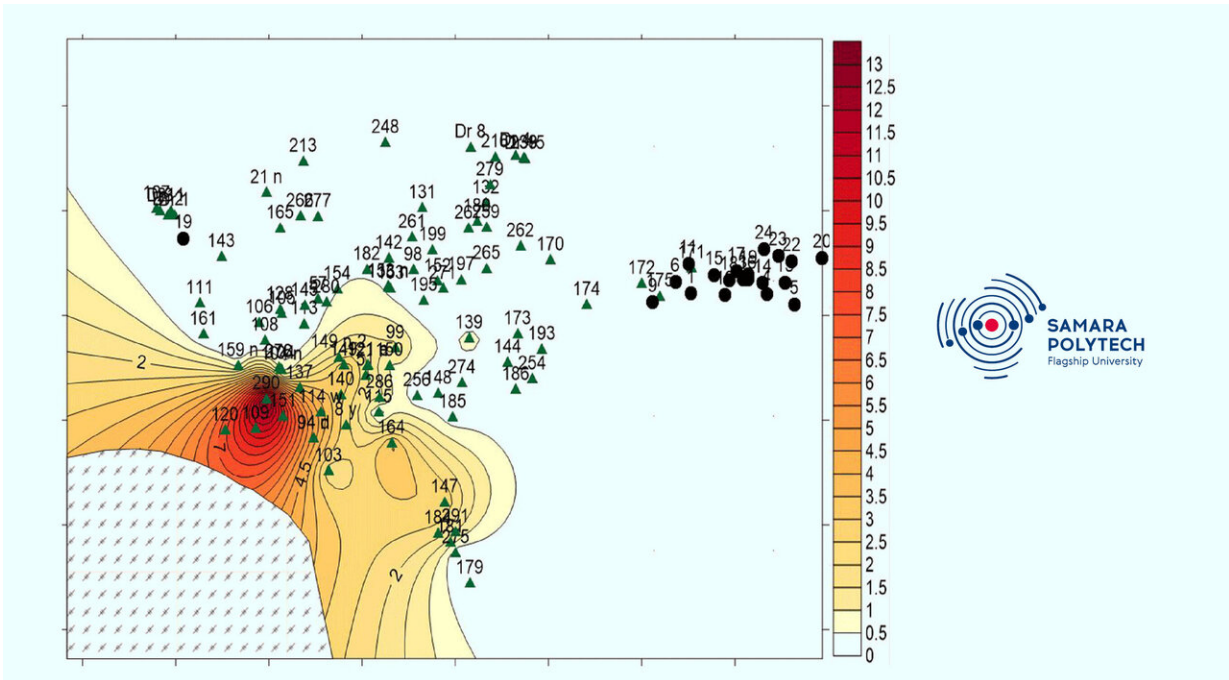


Scientists learn to control the oil lens

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Credit: Samara State Technical University

Groups of observation wells designed to monitor the groundwater regime will not help to track the movement dynamics of an oil lens. This is an important indicator that reflects the degree of environmental safety, because when pumping out products from the lens, voids are formed in the ground.

Reconstruction of factories (the construction of modern industrial parks

and the removal of communications on racks) significantly prevents the penetration of petroleum products into the ground. However, wastes accumulated as a result of the activities of oil refineries continue to have a negative impact on the environment. The method developed at Samara Polytech will allow engineers not only to monitor the state of groundwater, but also to predict the movement dynamics of the lens below the site on which the buildings are constructed.

"Without knowledge of the geophysical processes, hydrodynamics of groundwater, the regularities of their movement in the layers in this area, it is very difficult to predict the important parameters of the lens, its volume and the qualitative composition of oil products contained in it," explains Olga Tupitsyna, professor of the Chemical Technology and Industrial Ecology Department. Under her leadership, an interdisciplinary team of scientists and students of Samara Polytech has developed a groundwater research program that allows predicting the direction of lens movement during seasonal changes in water levels in water storages, with active operation of the water intake area, on exposure to the layer from the main production site of the enterprise. The resulting mathematical model will also determine the localization of the sources of concentration of petroleum products, quickly extract them and effectively clean the soil, ground and groundwater.

Provided by Samara State Technical University

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