Groundwater Contamination by Nitrate in Damascus Problem and Treatment[1]

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Abstract

Damascus Basin Area is considered as highest location in Syria, where nitrate contamination is considered as an increasing problem.

This research has primarily focused on denitrification by biological method using anoxic fluidized-Bed Reactor. The efficiency of this bed was then compared using different kinds of bacterial carrier as Pentonight particles (Diameter0.5-1 mm), Cubic redwood (2×2×2 cm), Polyethylene cylinders (Diameter 4 mm, height 3mm), sand (1.2-0.6 mm), activated carbon particles (Diameter 1-3 mm).Additionally, the research has compared the efficiency of denitrifcation using different types of carbonic nutrient as molass, ethanol, and acetic acid . Phosphoric nutrient is dehydrogenated sodium-orthophosphate .

The conclusion which was derived is that activated carbon particles as a carrier of biofilm are more efficient than any other materials.

The molass has provided good results as a carbonic nutrient with some disadvantages due to the deposition, on the pips and pumps. the ratio of molass/nitrate is nearly 1.5 .

Acetic acid has provided also good results as a carbonic nutrient, but it is less economic than molass.

The ratio of Acetic acid/molass is nearly one.

[1] For the paper in Arabic see pages (135-149).

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