

## ***Interactive comment on “Optimization shallow groundwater quality by the application of photocatalysis treatment technique in El Obour city, Egypt” by El-Montser M. Seleem et al.***

### **Anonymous Referee #2**

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In this paper groundwater samples are taken and mainly analysed for heavy metals and pathogenic micro-organisms. Furthermore a treatment with doped TiO<sub>2</sub> and solar light is proposed to remove the micro-organisms for drinking water purposes. The paper is scientifically of a low level, since photocatalysis is mainly interesting for the reduction of organic micro-pollutants that are not taken into account. In addition, there is no optimization performed as suggested by the title. General comments: - The objective (and knowledge gap) at the end of the introduction is not clear. Is it the purpose to use the water infiltration, for drinking or for irrigation? This determines the relevant parameters and treatment needs. - Since the rest of the paper focuses on drinking water application, the suitability for irrigation is e.g. not relevant (pg3, line 22-27) - When treatment

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with photocatalysis for drinking water purposes is the main topic of the filter, heavy metal concentrations are not relevant, since they are not removed by photocatalysis (pg 5, line 1-5). - The discussion in the manuscript is poor, since the results are not related to previous work. - It is concluded that photocatalysis is a promising technology for disinfection, but it is not related to alternative treatment, e.g. UV without catalyst (which is common practice). - Recommendations section should not be part of the manuscript - Check quality of the figures, the lines between the data points have no meaning. - Check language, including tenses. - Specific comments: - Pg 1, line 11, delete “work” from abstract. - Pg1, line 19-20, how can this be concluded since “organic residuals” were not measured. - Pg 1, line 22, “became important in recent years..” - Pg 1, line 24, “popular” = “severe” - Pg 1, line 26, “consequence of an...” - Pg 2, line 2, delete “in the water” - Pg 2, line 2, “Pathogenic bacteria can cause. ....” - Pg 2, line 3, delete sentence - Pg 2, line 7-9, avoid repetition - Pg2, line 11, “interaction” - Pg2, line 12, strange sentence, since chlorine is meant to have an residual in the network (unlike photocatalysis) - Pg 2, line 15, bromate is a consequence of disinfection with ozone and not chlorine. - Pg 2, line 21, what organic pollutants are of importance? - Pg 2, line 22-24, not relevant in this context so delete. - Pg 2, line 29, sentence should be completed - Pg 2, line 31, what is meant by “since years ago”? - Pg 2, line 31, what is the reason for raising groundwater tables? - Pg 2, line 32, delete “dangerous” - Pg 3, line 2-3, relevant in this context? - Pg 3, line 18 “estimated” = “determined” - Pg 2, line 34, “underline”? - Pg 2, line 34 “plenty of” = “many” - Pg 4, line 7, mention if the catalyst is a powder. - Pg 4, line 15-19, give “doses”. - Pg 4, line 22-24, water is drinkable or not, so explain how many samples comply (and what type of treatment is needed to produce drinking water). - Pg 5, line 19, explain what needs to be removed to obtain what type of water quality. - Pg 5, line 24, which “organic residuals” are meant? - Pg 5, line 29-31, not relevant here... - Pg 6, line 6-8, how can this be concluded since “organic residuals” were not measured.

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