

## ***Interactive comment on “HESS Opinions: Agricultural irrigation with effluent – Pharmaceutical residues that we should worried about” by Dror Avisar and Gefen Ronen-Eliraz***

### **Anonymous Referee #2**

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There are so many papers on this same topic that it is very hard to state something that goes beyond general statements (and we all do that). I learnt basically nothing. It is a nice (very nice) summary of many things that we already know, so, in my opinion, there is no novelty included. It reads like a proposal, introducing the problem (which is of course very relevant) but not yet producing any new scientific advance, rather than a promise to make it (new elements, metabolites, risk, . . .). For example, the introduction. What is the state of the art? Why do you write a paragraph such as the one lines 3-9, page 2? There are two paragraphs with just introduction to the problem, not to the literature. Then, pharmaceuticals appear in page 3, with the sentence: “Investigations of the occurrence, influence and toxicity of common organic contaminants, such

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as fertilizers and oil compounds, among others, have also been published.”. Exactly, this is what the paper is about, and I would like to see the relevant literature on the topic. And it goes well beyond pesticides. There are papers on the fate of drugs, UV filters, livestock antibiotics, illicit drugs, caffeine, . . . in surface water, groundwater and wastewater bodies. And there are hundreds of those. So, if I were a reader, I would expect a good state-of-the-art report that can help me understand the magnitude of the problem.

All three figures are irrelevant. The first is just plotting UN data; the second is local (Israel) case. None of them talk about pharmaceuticals (the title of the manuscript). The third one seems like writing again something from the literature, published by Grozlan et al (twice).

Now, for the specific questions you pose. I would definitely be very interested in a paper that addresses one (just one) of these questions thoroughly. It would probably look like an encyclopedia, though. But see how you deal with them: - What other components are present in effluents? The text talks only about carbamazepine and diclofenac . There are hundreds of organic molecules, with very varying concentration, and these concentration values depend on the degree of treatment (partially). Yes, carbamazepine is the most recalcitrant one, this is true.

- At what concentrations? There is only one sentence, and it could not be more general: “only a few nanograms to micrograms per liter”. All of them? Everywhere? Is it relevant then?

- What are their degradation products? I believe that this question is not answered by looking at just one specific substance, that is already available in the literature. Plus, you do not explain what are the variables that condition the degradation paths that would really occur in a given case.

- How chemically stable, and how toxic are these degradation products? You do not address this problem, but only in one line saying a very general statement.

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- How do these components and degradation products impact the irrigated environment? So, how much gets into the plants eventually, how much remains sorbed in the soil, and how much goes to groundwater (where it mixes with billions of liters and further degrade due to the presence of soil biofilms that retain them and by the changes in redox conditions that degrade them).

- What are the regulated parameters in water regulation? Do they provide any parameters in the context of recycled water? Do the regulated parameters indeed define high-quality effluents? This part I know nothing, and found the text very interesting, but it will not be enough to make it the core of the paper.

Altogether, I am sorry to say that I do not recommend this paper for publication.

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