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Title: Removal of paraquat pesticide with Fenton reaction in a pilot scale water system
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Reviewer #2:

Reviewer comments:

This paper reports on the potential of using the Fenton reaction to remove the pesticide Paraquat inside a water distribution system. The research, although quite applied, is interesting and worthy of publication in DWES. However, I suggest authors address the following comments: - please proof-read the article well, there are quite a number of typographical/grammatical errors:

- P. 234 line 2: "it was studied" should be rephrased;

  P. 234 line 13: faster, not fastest;

  P. 234 line 18: removed the "of" after "in situ";

  P. 234 line 21: "over long periodS" (add S);

  P. 234 line 24: add AN before "accident";

  P. 235 line 25: whether, not weather;

  P. 235 line 26: add "system" after distribution;

  P. 241 line 22: worse, not worst;

  P. 242 line 11: faster, not fastest.

We acknowledge your positive remarks about our work and the corrections made. The text was changed following all your suggestions throughout the manuscript; these changes are highlighted in yellow. We have also proof-read the article as recommended.

- In this article, paraquat was added from an organic solvent, which will result in extremely high organic matter concentrations, higher than what is usually observed in real water mains, BUT the concentration of paraquat is also much higher than usually encountered. Authors should acknowledge these both statements.

It is true that gramoxone was used instead of analytical standard paraquat due to economical reasons. In addition, in case of a deliberate contamination event of a drinking water distribution system, it is more likely that such available commercial products are used instead

of expensive analytical ones. This was now clarified in section 2.1, as well as the fact that other organics are introduced apart from PQ.

The high values of concentration used have two purposes in this work; one of them is to better simulate the deliberate contamination of a drinking water system, which suggests high concentrations of pesticides are found – this was now clarified in section 2.2 upon your suggestion; the second one is for technical reasons: to assess DOC, high concentrations are needed, once 100 mg/L PQ is equivalent to about only 40 mg of organic carbon per liter. Thus, when PQ was degraded, its concentration decreases, as well as DOC values.

- P. 237 line 25: the tap water was passed over an iron filter: what type of filter is that? Does it remove colloidal iron only, or also dissolved iron?

Regarding the filters, it is composed of a water softening with manganese dioxide and the iron removal is made by ion exchange resins. This way, colloidal and dissolved iron can be removed. Water has passed through the filter only once - before the experiment. Therefore this has no impact in the experiments done. This issue was clarified in section 2.3.2.

- The temperatures used (>20 ºC) are not always very relevant for practical water distribution mains (at least not for drinking water produced from ground water). Will the effect of temperature still be minimal at temperatures as low as 9-10 ºC?

About the temperature, as it was studied before (Santos et al., 2011), it can be inferred that using lower temperatures, the process will be slower; nevertheless, by simply increasing the time of exposure to the Fenton's reagent, the contaminant can still be removed with efficiency. As shown by Santos et al (2011), using low temperatures (e.g. 10 ºC) degradation rate decreases (as a consequence of the temperature effect in the kinetics – Arrhenius law), but using longer reaction times, in some cases the mineralization performance can even be improved (because there is a decrease of the undesired thermal decomposition of hydrogen peroxide).

Reference: Santos M.S.F., Alves A. and Madeira L.M. (2011). Paraquat removal from water by oxidation with Fenton's reagent. Chem. Eng. J. 175, 279-290.

- P. 240 line 27: how is pH 5 close to the pH of natural water????

The referee is right; we have corrected this sentence and explained that the reasoning behind was to test a pH which is closer to the pH of tap water, and would allow decreasing acid consumption (as compared to runs at pH 3).

- P. 243: the pipes corrode fast under low pH and high H_2O_2 dosing conditions. What is the practical meaning for all of this when one wants to use Fenton in a water distribution main? Authors should comment on this.

The practical meaning is that such conditions should be applied to a real water distribution system just in case of a contamination event. Even so, the conditions required for in situ decontamination allow the pipes to resist for 3-4 years. The text was clarified to better illustrate this issue (end of section 3.2.1).