**Response to Reviewers**

We are truly grateful to the editors’ patience and the reviewers’ critical comments and thoughtful recommendations. Based upon these comments and recommendations, we have made careful modifications on the manuscript of “The In-Situ Remediation of Chlorpyrifos-Contaminated Soil by Immobilized White-rot Fungi”. All changes made to the manuscript were highlighted in red colour. We have also responded point by point to the reviewers’ comments as listed below with clear indications of the line numbers of the revised manuscript.

Responses to the comments from reviewer were presented as below. We appreciate the reviewer for his or her thoughtful and thorough reviews. It is expected that we would have addressed all of concerns.

Reviewer A:

P1, Title : Procedure described in manuscript (30 g of soil in culture vessel at 30℃) could not be labeled In situ.

**Response**: The authors have corrected the title as “The Remediation of Chlorpyrifos-Contaminated Soil by Immobilized White-rot Fungi”.
P1, L7, Abstract: soil-immobilized is wrong term; plant material, not soil was used for immobilization.

**Response**: The authors have corrected the sentence between Line 6-7 as following:“This research focused on the degradation of chlorpyrifos via immobilized white rot fungi in soil”.

P3,L 95: Microorganisms should be described more precisely (collection number, isolation source). Why were these WRFs chosen? Have these fungi been used previously in some (degradation) experiments? Please, enter a brief information or reference.

**Response**: Specific white rot fungi (*Phlebia* sp., *Lenzites betulinus*, and *Irpex lacteus*) were provided by the Microbiology Laboratory of the Shenyang Institute of Applied Ecology of the Chinese Academy of Sciences (Shenyang, China). They were isolated from soil samples collected from the surface of an agriculture field in Shenyang, China by the enrichment method. These WRFs have ability to degrade pollutants. Li et al. use them to degrade carbofuran, and the degradation rate were 60-70% .1 The *Lenzites betulinus* has ability to degrade lignin.2 Kalpana et al. found that *Irpex lacteus* resulted in the complete decolorization and degradation of the textile Levafix Blue E-RA granulate dye within 4 days.3

1. Z. Li, X. Wang, Z. Ni, J. Bao, H. Zhang, *Pol. J. Environ. Stud.* **29** (2020) 1 (https://doi.org/10.15244/pjoes/102671)
2. A. Knežević, I. Milovanović, M. Stajić, N. Lončar, I. Brčeski, J. Vukojević, J. Ćilerdžić, *Bioresource Technol.* **138** (2013) 117 (http://dx.doi.org/10.1016/j. biortech.2013.03.182)
3. D. Kalpana, N. Velmurugan, J. H. Shim, B. T. Oh, K. Senthil, Y. S. Lee, *J. Environ. Manage.* **111** (2012) 142 (https://doi.org/10.1016/j.jenvman.2012.06.0 41)

P3, L98: Basic characteristics of soil should be provided (pH, moisture, texture, organic substance, C/N/P content,).

**Response:** The soil was from the campus in Shenyang, China. It was not polluted by chlorpyrifos. The content of soil organic matter was about 14 g/mg. The soil contains trace element such as nitrogen and phosphorus. Soil texture is delicate and alkaline. The properties of the soil is similar to agricultural or other soil types.

P4,L 103-108: Paragraph should be shortened and simplified. For example: Two successive inoculation on malt agar plate....

**Response:** Two successive inoculations on malt agar plate were performed in a solid 1.5% (w/v) malt extract/agar medium and stimulated in an incubator at 28°C, pH=7.

P4, L105: an explanation of the source of nitrogen is unnecessary

**Response:** As recommended, the authors deleted the sentence “in which malt extract powder was used as a nitrogen source for the growth of fungi”.

P4,L106: What is the natural pH? What does natural pH mean?

**Response:** The authors corrected the “nathral pH” as following: “pH=7”. (The natural pH means the “the pH value of the media”.)

P4,L113-116: Description of imobilization procedure is not clear (duration of immobilization procedure, temperature, use of a chemical agent, presence of nutrient medium). What is the mass ratio of fungal mycelium and plant material?

**Response:** After activation, strains of the same size and accurately weighted were placed with carriers for 7 days in the incubator at 28℃. The culture dish including malt extract provides nitrogen source for the growth of strains. The mass ratio of fungal mycelium and plant material was 1mg : 1g=1:1000.

P4, L119: Why aseptic soil was used?

**Response:** Because we want the soil do not contain any microorganism to degrade chlorpyrifos. After inoculation, only white-rot fungi degrade chlorpyrifos. This makes the results accurate.

P4, L120 What is the volume of water that is added?

**Response:** 30ml.

P4,L123: What is composition of “fungi culture medium”? Whether the degradation capacity was examined for cultures on solid media or immobilized on plant material?

**Response:** “Fungi culture medium” contains 0.2g malt extract and 0.15g agar in 10ml distilled water. On solid media, the degradation rates were about 40-50% by three strains. The degradation rates were up to 60-70% with three strains immobilized on plant material.

P4,L136: What is the purpose of drying?

**Response:** To make the dry weight of the soil up to 30g. If not drying, the total weight include water and soil weight.

P4, L137: 1 g from L127 or L115? Inoculum size should be specified as the number of spores in 1 g (or mycelium mass)

**Response:** 1 g from L115. The authors corrected the paragraph between L137-138 as following: “1.0g of immobilized white rot fungi (mycelium mass) was added to the soil surface of the solid plate”.

P4, L139: How much water is needed for the experiment?

**Response:** No water was needed for this section.

P4, L146: 1.0 is repeated

**Response:** The second 1.0 has been changed as 1.5.

P7,L195: Concentration of chlorpyrifos should be added in title of Fig.1.

**Response:** The authors have corrected the paragraph as following: “Fig. 1 The influence of immobilized strains on the degradation of 100 mg/kg chlorpyrifos”.

P8,L219, Title of Fig. 2 : Please delete “selected” and “as bellow”.

**Response:** As recommended, the authors deleted “selected” and “as bellow”.

P10, L269, Title of Table III: Please, delete “test results”; better version - Degradation rates obtained in orthogonal experiment.

**Response:** As recommended, the authors have corrected the paragraph as following: “Table III. Degradation rates obtained in orthogonal experiment”.

P11, L277: "in Table III" insted of "below".

**Response:** As recommended, the authors have corrected the paragraph as following: “The efficiency of chlorpyrifos removal was affected by each parameter as shown in Table III.”

P11, L286-290: Final results of orthogonal test should be clarified. It is not clear if A3B3C1D2 is a prediction or it is confirmed by experimental results. Under what conditions a degradation rate of 75% was obtained? What software was used for design of orthogonal experiment and data processing?

**Response:** The A3B3C1D2 is confirmed by experimental results. The authors did experiments to determine the value of each factor at the maximum degradation rate and combined them together (A3B3C1D2). Then the authors did an experiment according to this combination and get a degradation rate (75%). The orthogonal experiment used SPSS statistics 22.0 (SPSS Inc., Chicago, IL, USA). Microsoft Excel software was used to process all experimental data.

P12,L301: Does 1 g refer to WRF mycelium or immobilized material (WRF + plant)?

**Response:** The 1g refer to WRF mycelium.