11 February 2019

Dear Sir/Madam,

I have read carefully Dr Hana Chaloupecká's PhD and I would like to inform you that it can be considered scientifically ground breaking as it examines a very difficult dispersion phenomenon (puffs) in the chaotic nature of the atmospheric turbulence. This is justified by the fact that both in reality and in the wind tunnel it is not sure that the released material of each puff will pass from a sensor.

Dr Chaloupecká has proved using a very good and systematic way that the new, threshold-based method for the calculation of the arrival time is logic and better than e.g. the dosage method. Also, the parameters of useful probability density functions have been proposed in the dissertation that could be used for operational modelling. This is a task that will be performed by Dr Chaloupecká in the future.

Based on Scopus (checked in 30 January 2019) Dr Chaloupecká has 8 publications from which in 6 of them she is the first author. I consider this number satisfactory for receiving a PhD and I am very optimistic that she can support future research in this area.

I provide specific comments/corrections for Dr Chaloupecká. I have grouped them in 5 categories.

1. Questions

1.1. Abstract

1) "will be utilized in an operational model" or "are utilized in an operational model"?

1.2. General

1) Can the equations of the new puff model be used for real urban canopies? Is there any limitation?

1.3. Introduction

1) What is "sarine leakage"?

2) What is "SARS"?

3) Is there a relation between the Bhopal accident and puff releases?

1.4. Chapter 2

1) In Table 1 is it "Cambustion HFR400" or "Combustion HFR400"?

2) What is the intermittency factor mentioned in chapter "Threshold method utilizing residual concentration". Also which is the most common reason for a concentration time series to appear before the cloud release? Please explain more this chapter.

2. Phrases that has to be rewritten to be more clear to the reader

2.1. Abstract

1) "with knowledge of sampling positions towards the gas source and mean values of concentrations valid for long-term gas sources."

3. What additional information could be added

3.1. Abstract

1) The type of the gas e.g. ethane.

3.2. Keywords

1) "Urban canopy" or "built-up environment".

3.3. Introduction

1) In chapter 1.2.2. please mention the Joint Urban 2003 field experiment where puff releases were performed. Also in some trials of the MUST field experiment puffs were performed.

2) Please mention also the work of Eva Berbekar published in Journal of Hazardous Materials concerning the definition of the dosage-based parameters of puffs.

3) In Table 1 the number of puffs could be added.

4) In order to calculate the arrival time Efthimiou and Bartzis, 2011, Journal of Hazardous Materials have introduced also the radioactive tracer method.

5) Please include also the new work of Andronopoulos et al., 2019, Boundary Layer Meteorology where both the Eulerian and Lagrangian approaches have been examined for puffs.

3.4. Chapter 3

1) Please give the exact height of the human breathing zone.

4. Suggestions

1) First chapter 1.2.2, then 1.2.3. and finally 1.2.1.

2) Between 1.1 and 1.2 a description of the basic problem could be added and what question(s) this dissertation tries to answer that are missing from the literature.

3) Use either "short-term gas leakages" or "short-term gas releases".

5. Corrections

5.1. 1.1.5 Accident

1) Please change "The factory workers warmed" with "The factory workers warned".

5.2. 1.2.3. Wind-tunnel experiments

1) Please change "(e.g. Jaňour 2001; Bezpalcová, 2007 or Chaloupecká, 2012)" with "(e.g. Jaňour 2001; Bezpalcová, 2007; Chaloupecká, 2012)".

5.3. 2.3.3. Dosage method

1) Please change "The second to sixth box plot from the left in Figure 9" to "The second to sixth box plot from the left in Figure 12".

Your sincerely,

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Dr George C. Efthimiou

https://fluenc.gr

https://www.researchgate.net/profile/George_Efthimiou

Tel: +30 2114047973

Mobile: +30 6942964717

e-mail: gefthimiou@fluenc.gr