

## 3<sup>rd</sup> Workshop

# Estimating initial pesticide emission fractions for use in life cycle assessment

Saturday, 29 August 2015

08:00 – 19:00 CEST

Hotel Mercure Bordeaux Centre, 5 Rue Robert Lateulade, Bordeaux, France  
(back-to-back with the life cycle management (LCM) 2015 conference)

### Organizers

Technical University of Denmark (Peter Fantke, chair; Christine Molin, co-organization), IRSTEA (Ralph Rosenbaum, co-chair), Quantis (Xavier Bengoa/Violaine Magaud, organization), and the EU FP7 project Tox-Train (<http://toxtrain.eu>)

### Participants

Close to 40 international experts working with/on life cycle assessment (application or method development), or representing pesticide producers, users, researchers, or regulators. See attached list.

### Costs

Participation is free of charge, lunch and coffee breaks are included. The workshop is kindly co-sponsored by the French Environment and Energy Management Agency (ADEME).

## Introduction

A practical challenge in life cycle assessment (LCA) for comparing the environmental performance of pesticide application in conventional, organic or integrated farming is to **quantify the pesticide amount emitted to the environment** (off-field), while only the amount applied to the agricultural field (on-field) is known.

To provide a recommended and operational solution, two expert workshops (May 2013, Glasgow/UK, and May 2014, Basel/CH) were organized with together 57 specialists representing industry, government, and academia from 21 countries and 4 continents. Consensus was reached and published open access (Rosenbaum et al. 2015, <http://dx.doi.org/10.1007/s11367-015-0871-1>) on **qualitative recommendations for emissions (on-/off-field) and impact assessment**.

## Overview of current consensus effort progress

After the Basel workshop, follow-up work focused on how to **consistently model the fractions of applied pesticides that enter air, water, soil, and agricultural crops** as emissions. Specific **follow-up tasks** have been further discussed with extensive input from several contributors and will be discussed in Bordeaux. Focus of the follow-up work was on defining a list of pesticides, crop classes, pesticide application scenarios, and climate-soil combinations per crop class for which emission fractions will be calculated, defining the emission results structure, and refining/adapting and testing the modeling framework.

As next step, the preliminary outcome of the follow-up work along with a draft spreadsheet of emission fractions for a selected set of pesticide-crop-climate-soil combinations will be distributed and discussed at our **final consensus workshop back-to-back with the LCM 2015 conference in Bordeaux on 29 August 2015** organized by the Technical University of Denmark (DTU), IRSTEA, and Quantis. Workshop goal is to **reach agreement** on (a) the modeling framework, (b) the set of default scenarios to be recommended for LCA, and (c) the format of the emission results along with associated data requirements for implementation into current LCA software. For this workshop, expertise from LCA practitioners, pesticide fate modelers, industry, and LCI database developers will be present.

## Overall objectives

To estimate and agree on recommended **default emission fractions to environmental media via initial pesticide distribution**. More specifically, to discuss how to consistently model in life cycle assessment (LCA) the fractions of applied pesticides reaching air, surface freshwater, soil, and agricultural crops as emissions. We will thereby target the feasibility to implement these applied pesticide fractions along with associated data requirements into current LCI databases and aim at publishing the modeling framework and emission fraction results in peer-reviewed journals as open access articles.

## Expected results and outcomes

**LCI DATABASE INPUT: Recommended pesticide emission fractions** will be made available for inclusion in current **LCI databases** in collaboration with the LCI database developers. Emission fractions will be defined for soil (on-field and off-field), surface freshwater (off-field), and air (on-field and off-field) along with fractions reaching the crop surface (on-field) for pre-defined scenarios reflecting different combinations of pesticide (class), crop-class, climate zones/regions (aiming to cover all relevant zones, e.g. temperate and tropical), soil units, and application characteristics (good agricultural practice and typical practice, application method per pesticide target class and crop class, etc.).

**PUBLICATIONS:** Two scientific open access publications will form the basis of the consensus effort recommendations for LCA and are expected to be submitted early 2016. (1) The **technical modeling framework** and the **detailed pesticide emission fractions** will be submitted to a peer-reviewed journal mostly based on the follow-up work conducted between May 2014 and August 2015. (2) The **consensus process and recommendations** since Glasgow, and the **recommended pesticide emission fractions** for inclusion in LCI databases will be submitted to The International Journal of Life Cycle Assessment based on contributions from participants of both workshops in Basel 2014 and Bordeaux 2015.

**AGENDA**

08:00 - 08:30	<i>Arrival of participants, tea/coffee</i>
08:30 - 08:45	Welcome
08:45 - 09:30	Overview of the consensus effort, current progress, and workshop
09:30 - 10:30	Estimating initial pesticide emission fractions: Overview of draft results, incl. Q&A (Chairs: Tim Grant/Teunis Dijkman)
10:30 - 11:00	<i>Tea/coffee break</i>
11:00 - 13:00	Plenary discussion: modeling framework – data and methods (Chairs: Peter Fantke/Thomas McKone)
13:00 - 14:00	<i>Lunch break (all participants are invited to a buffet)</i>
14:00 - 15:30	Conclusions and agreement on the modeling framework – data and methods
15:30 - 16:30	Plenary discussion: operationalization for LCA (Chairs: Ralph Rosenbaum/Sébastien Humbert)
16:30 - 17:00	<i>Tea/coffee break</i>
17:00 - 18:00	Conclusions and agreement on operationalization for LCA
18:00 - 19:00	Wrap up and outlook
19:00	<i>Closure of the workshop</i>
20:00	<i>Common dinner upon agreement on location (not included in workshop fee)</i>

**List of Participants**

<b>Name</b>	<b>Organisation</b>	<b>Country</b>
Alessandra Fusi	Università degli Studi di Milano	Italy
Assumpcio Anton	IRTA	Spain
Benoît Gabrielle	AgroParisTech	France
Carole Sinfort	ELSA / IRSTEA	France
Cécille Bulle	Université du Québec à Montréal (UQAM)	Canada
Christel Renaud-Gentié	Groupes ESA	France
Claudine Basset-Mens	CIRAD	France
Dirk Rautmann	Julius Kühn-Institut (JKI)	Germany
Gildas Mevel	InVivo AgroSolutions' LCA	France
Gregor Wernet	Ecoinvent Centre	Switzerland
Helene Cruypenninck	Life Cycle Strategies	Australia
Ioanna Boudouris	InVivo AgroSolutions' LCA	France
Ivan Viveros Santos (*)	CIRAIG	Canada
Jan Schoeneboom	BASF	Germany
Jennifer Davis	SP Technical Research Institute of Sweden	Sweden
Jonathan Marks-Perreau	Arvalis	France
Marguerite Renouf	University of Queensland	Australia
Maria Nordborg	Chalmers University	Sweden
Mike Sauder	DuPont	USA
Montse Núñez-Pineda	IRSTEA	France
Mwema Felix (*)	Tropical Pesticides Research Institute	Tanzania
Olivier Jolliet (*)	University of Michigan	USA
Peter Fantke	Technical University of Denmark (DTU)	Denmark
Philippe Roux	ELSA / IRSTEA	France
Pierre Naviaux	Comité interprofessionnel du vin de Champagne (CIVC)	France
Ralph Rosenbaum	IRSTEA	France
Sandra Eady	CSIRO	Australia
Sébastien Humbert	Quantis	Switzerland
Serenella Sala	EC-JRC	Italy
Stefan Reichenberger	Dr. Knoell Consult.	Germany
Sylvie Dauguet	CETIOM	France
Teunis Dijkman	Technical University of Denmark (DTU)	Denmark
Tom McKone	Lawrence Berkeley National Laboratory	USA
Thomas Nemecek	Agroscope	Switzerland
Tim Grant	Life Cycle Strategies	Australia
Urs Schenker	Nestlé	Switzerland
Vincent Colomb	ADEME	France
Violaine Magaud	Quantis	Switzerland

(\*) Attending remotely

## Location and Access

The [Hôtel Mercure Bordeaux Centre](#) is located at 5 Rue Robert Lateulade, Bordeaux, France. Access via:

**Car:** From Paris on the A10 (E05): head toward Mérignac airport. Then take exit 11B (Bordeaux Centre Ville and Mériadeck). From Toulouse or Bayonne: see above instructions. From Saint-Jean train station: take bus no. 7 or 8, get off at Place Gambetta and walk to Mériadeck. From Mérignac airport: follow signs for Bordeaux Centre and then Mériadeck. The hotel is behind the Mériadeck shopping center.

### Access from the SNCF train station (2 options):

- a) Tram, line C towards Porte de Bourgogne, then line A, stop at Mériadeck (15 minutes total)
- b) Bus, line 16, stop Galerie des Beaux Arts (15 minutes total)

### Access from Bordeaux airport:

- a) Taxi (approx. 20 min)
- b) Public transport: Bus, line 1, towards Quinconces. Stop at Manège



**More information:** <http://www.mercure.com/gb/hotel-1281-mercure-bordeaux-centre-hotel/location.shtml>

**Need support?** Please contact:

Violaine Magaud (violaine.magaud@quantis-intl.com) or Christine Molin (mobile: +4521229809, cmol@dtu.dk)