4FUN

"The FUture of FUlly integrated human exposure assessment of chemicals: Ensuring the long-term viability and technology transfer of the EU-FUNded 2-FUN tools as standardised solution"

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Deliverable D6.5: Training material for 4FUN Schools

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Task	Task T6.2: Development of dissemination and training materials
Revision	

Project co-funded by the European Commission under the Seventh Framework Programme (FP7)		
Dissemination Level		
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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1 Introduction

The MERLIN-Expo tool, designed as a prototype during the EU-FP6 funded 2-FUN project, is a new improved and standardised solution for integrated assessment of human exposure to chemical developed during the 4FUN project.

Within the context of Work Package 6, a training programme aimed to potential users of MERLIN-Expo was prepared (Deliverable 6.6). This programme includes a full package of materials designed for face-to-face training and for an online course.

The aim of this report is to present the list of all materials produced within the WP6 including the link to each resource.

2 Training materials

The training material produced within WP6 includes:

- For the face-to-face training courses:
  - Lecture presentations (downloadable as PowerPoint or PDF)
  - Exercises (downloadable as Word document and as MERLIN-Expo project files)
- For the online course:
  - Videos tutorials (online)
  - Exercises (online quiz)

2.1 Training materials produced for the face-to-face courses

In the table below, all the training materials that have been produced for the workshops have been listed. In many cases, the material has been improved as we gained experience. The best version of each of the documents and presentations has been highlighted and marked in bold.

Course	Materials available	File names	Link to resource
Regulatory Workshop Paris March 2015	**Lecture Presentations:**	presentations.zip	http://merlin-expo.4funproject.eu/learn/training-events/workshop-paris-march-2015-materials/
	Lect.1 – Welcome	1 - Welcome	
	Lect.2 - General Introduction	2 - P Ciffroy - General_introduction	
	Lect.3 - Intro to GUI of MERLIN-Expo	3 - Boris - Introduction to the GUI of MERLIN-Expo	
	Lect.4 - MERLIN-Expo regulatory decision making	4 -F Verdonck – MerlinExpo Regulatory Decision Making	
	Lect.5 - Overview of case study work	5 - P Ciffroy - Overview of case study work	
	Lect.6 - Belgian case study	6 - P Ciffroy Belgian case study	
	Lect.7 - Ebro river basin case study	7 - Zoran Presentation_WP5 Paris_Zoran	
	Lect.8 - Venice lagoon case study	8 - Elisa G - Introduction_CS2_	

		Venice_25.03.2015	
	Lect.9 - The Human Model	9 - Celine B - MERLIN-Expo_HumanModel_training	
	Case Studies:		
	Case Study 1 - Transport in river scenario	1 - Case study package.zip	
	Case Study 2 - Exposure to PCB's in Venice lagoon	2 - Case study package.zip	
	Case Study 3 - Scenario: Benzo(a) pyrene in Seine watershed	3 - Case study package.zip	
	Case Study 4 - Uncertainty and sensitivity analysis.	4 - Case study package.zip	
Scientific workshop Belgrade April 2015	**Lecture Presentations:**	Presentations.zip	http://merlin-expo.4funproject.eu/learn/training-events/belgrade-workshop-materials/
	Lect.1 – Welcome	01 - Welcome	
	Lect.2 - Management challenges in water sector in developing countries- Serbian and regional experience	02 - Merlin_Expo_2015_Water_Management_Chalanges	
	Lect.3 - A general Intro to the MERLIN-Expo tool	03-General_introduction_JB	
	Lect.4 - Intro to GUI of MERLIN-Expo	04 - Introduction to the GUI of MERLIN-Expo - printable 04 - Introduction to the GUI of MERLIN-Expo	
	Lect.5 - Transport in river scenario (case study 1)	05 - Case study 1 introduction	

	Lect.6 - Overview of case study work	06 - Overview of case study work	
	Lect.7 - Ebro river basin (case study 2a)	07 - Case Study 2a - Ebro river	
	Lect.8 - Modelling historical heavy metal contamination (case study 2b)	08 - Case Study 2b - Building conceptual model	
	Lect.9 - Exposure to PCB's in Venice lagoon (CS 2c)	09 - Case Study 2c - Venice lagoon	
	Lect.9a - Possible applications of MERLIN-Expo	09a - the possible applications of MERLIN-Expo	
	Lect.10 - The human model	10 - MERLIN-Expo_HumanModel_training	
	Lect.11 - Documentation and training materials for MERLIN- Expo	11 - Documentation and training materials for the tool	
	Lect.12 - Scenario: Benzo(a) pyrene in Seine watershed (case study 3)	12 - PBPK_case_study	
	Lect. 13 - Uncertainty and sensitivity analysis	13 - Uncertainty Sensitivity Introduction	
	Lect.14 - Practical session (case study 4)	14 - Practical session_CS 4_ Introduction Uncertainty & Sensitivity	
	Case Studies:		
	Case study 1 - Transport in river scenario	Case Study 1.zip	
	Case study 2a - Ebro		

	River Case study 2b - Building conceptual model Case study 2c - Venice lagoon Case study 3 - PBPK Case study 4 - Uncertainty and sensitivity analysis	Case Study 2a.zip Case Study 2b.zip Case Study 2c.zip Case Study 3.zip Case Study 4.zip	
Short Course, SETAC Barcelona May 2015	**Lecture Presentations:** Lect.1 - General Intro to MERLIN-Expo Lect.2 - Intro to GUI of MERLIN-Expo Lect.3a - Overview of case study work Lect.3b - Ecological and Human exposure to POPs in the Venice lagoon (CS 1) Lect.4a - The human model Lect.4b - Scenario: Benzo(a) pyrene in Seine watershed (PBPK case study 2) Lect.5 - Uncertainty and sensitivity analysis / Theory Lect. 6 - Uncertainty and sensitivity analysis / application (Case study 3)	Lectures.zip Lecture 1- P Ciffroy - General_introduction (editted) Lecture 2 - Boris - Introduction to the GUI of MERLIN-Expo-printable Lecture 3a - Elisa - Overview of case study work Lecture 3b - Elisa - Ecological and Human Exposure to POPs in the Venice lagoon Lecture 4a - James - MERLIN-Expo_HumanModel_training Lecture 4b - James - PBPK_case_study Lecture 5 - Philippe - Theory Lecture 6 - Philippe - Application	http://merlin-expo.4funproject.eu/learn/training-events/barcelona-setac-materials/

	Case Studies: Case study 1 - POPs in the Venice lagoon Case study 1b -heavy metals (extra practice exercise) Case study 2 - PBPK model Case study 3 - Uncertainty and sensitivity analysis	 1- Case Study Venice 1b- Case Study heavy metals 2- Case study Seine – PBPK 3- Case Study River - Uncert. & Sensit.	
JRC Workshop Ispra May 2015	**Lecture Presentations:** **Day1** Lect.1a – Introduction Lect.1a – Introduction Lect.2 – Introduction to the GUI Case study 1 Lect.4 – Regulatory-Benchmarking Lect.5a – Overview of case studies Lect.5b – Heavy Metal Contamination Lect.5d – Ebro river Lect.5e – POPs Venice lagoon Case Study 2 - Venice Case Study 2b – Metal Flanders CS2b	MERLIN-Expo Training_JRC.zip 1_a_Lecture_Ciffroy_Introduction 1_b_Lecture_Fait_Introduction 2_Lecture_Alfonso_Introduction to the GUI 3_Practice_Alfonso_Case Study1 4_Lecture_Fait_Regulatory-Benchmarking 5_a_Lecture_Ciffroy_Overview of case studies 5_b_Lecture_Ciffroy_Heavy Metal Contamination 5_d_Lecture_Ciffroy_Ebro river 5_e_Lecture_Giubilato_POPs Venice lagoon 6_Practice_Giubilato_Venice CS2 CaseStudy2_Venice.zip 7_Practice_Metal_Flanders CS2b CaseStudy2b_Metal_Flanders CS2b.zip	http://merlin-expo.4funproject.eu/learn/training-events/jrc-materials/

	Day2 Lect.1 – Introduction to PBPK Case study 3 – Human Food Chain Lect.3 – Uncertainty and sensitivity analysis Case study 4 – Uncertainty and sensitivity analysis	 1_Lecture_Ciffroy_PBPK 2_Practice_Ciffroy_Human Food Chain CS3 CaseStudy3_PBPK.zip 3_Lecture_Ciffroy_UA SA 4_Practice_Ciffroy_UA SA CS4 CaseStudy4_UA_SA.zip	
Cremona Summer School 2015 Cremona June 2015	**Lecture Presentations: Day1** Lect 1 - Introduction to the course and course objectives Lect 2 - Integrated risk assessment Lect 3 - Overview of legislation for risk assessment Lect 4 - Human exposure modelling: innovative issues and standard documentations Practical Session: MERLIN-Expo tool: general overview and simple demonstration of the software **Day2** Lect 4 - Occurrence of pharmaceuticals in Iberian rivers: prioritization and modeling Lect 5 - General overview of three case studies: emerging and priority contaminants in the Ebro river (Spain);	MERLIN-Expo_Cremona2015_all.zip 1.General Introduction 2.Roth_Lectures 3.Gilioli_Lectures 4.Ciffroy_Lecture 5.Alfonso_Practical Instructions to the lead poisoning example 1.Barcelo_Ginebreda_Lecture 2a.Banjac_Lecture 2b.Bierkens_Lecture 2c.Giubilato_Lecture	http://merlin-expo.4funproject.eu/learn/training-events/summer-school-cremona/

	historical heavy metal contamination (Belgium); ecological and human exposure to POPs in the Venice lagoon (Italy) Lect 6 - QSAR Models Practical Session: food web modelling in the Venice Lagoon **Day3** Lect 7 - Pesticide risk assessment and characterization in food. The European Approach **Day4** Lect 8 - Transfer and fate of contaminants on the environment Practical Session: Transfer of a contaminant in a river Lect 9 - Theory of PBPK modelling Practical Session: Predicting contaminant concentrations in human tissue using the MERLIN-Expo tool **Day5** Lect 10 - Uncertainty analysis/ sensitivity analysis Practical session: Uncertainty/sensitivity analysis of a simple case study	3.Benfenati_Lecture 4.Giubilato_Practice Practice_Afternoon.zip Brancato_EFSA_Expo_2015 1.Ciffroy_Lecture 2.Ciffroy_Practice Practice_Morning.zip 3.Bois_Lecture 4.Brochot_Lecture 4.Brochot_Practice Practice_Afternoon.zip 1.Saltelli_Lecture 2.Ciffroy_Practice Practice_Morning.zip	
Stakeholder workshop Brussels Sep 2015	**Audio-visual presentations** 1) The MERLIN-Expo tool – General Presentation (P Ciffroy). 2) The MERLIN-Expo	Online resourse.	http://merlin-expo.4funproject.eu/learn/training-events/stakeholder-workshop-brussels/

	training programme (G Fait, J Garratt). 3) Standardisation CEN Workshop Agreement (A Altenpohl-Steurer). 4) Benchmarking in the Regulatory Decision-Making (F Verdonck, T De Wilde).		
MERLIN-Expo Barcelona Workshop Barcelona Sep 2015	**Lecture Presentations:** Welcome Lect.1 – Introduction Lect.2 – Introduction to the GUI Case Study 1 – Lead poisoning Lect.3 – Regulatory-Benchmarking Case study 2 Lect.4 – Introduction to PBPK Case study 3 – PBPK model Lect.5 – Uncertainty and sensitivity analysis Case study 4 – Uncertainty and sensitivity analysis	Presentations_Barcelona.zip 00_Welcome 01_General_Introduction 02_Introduction to the GUI of MERLIN-Expo CaseStudy1_Lead 03_ Regulatory-Benchmarking CaseStudy2a_Ebro river CaseStudy2b_ Venice Food Web 04_PBPK CaseStudy3_PBPK model 05_Uncertainty CaseStudy4_Uncertainty	http://merlin-expo.4funproject.eu/learn/training-events/barcelona-workshop-22-september-2015/

2.2 Training materials produced for the online training course

The on-line training course: "The Future of Environmental and Human Health Exposure Modelling of Chemicals" is hosted in the OpenTEA platform and is designed to familiarise the user with the new MERLIN-Expo tool by completing a number of modules.

http://www.opentea.eu/en/e-learning/courses-The-Future-of-Environmental-and-Human-Health-Exposure-Modelling-of-Chemicals.10/

The videos tutorials are also available at http://merlin-expo.eu/learn/tutorials/

In the table below, all training materials that have been produced for the online course have been listed by module and including the direct link to corresponding resource.

Platform	Course	File Name	Link to resource
OpenTEA	Module 1	A General Introduction to MERLIN-Expo	http://media.facilia.se/4fun/training/camtasia/introduction/introduction_player.html
	Module 2	General Principles of e-fate, exposure, risk assessment and modelling	http://media.facilia.se/4fun/training/camtasia/Intro_to_Gen_Principles/Intro_to_Gen_Principles_player.html
	Module 3	Introduction to the Graphical User Interface of MERLIN-Expo	http://media.facilia.se/4fun/training/camtasia/user_interface/MERLIN-Expo%20user%20interface_player.html
	Module 4	The River Model	http://media.facilia.se/4fun/training/camtasia/River_Model_Tutorial/River_Model_Tutorial_player.html
	Module 5	The River Transport Model	N/A
	Module 6	The Human Model – A physiologically based toxicokinetic model	http://media.facilia.se/4fun/training/camtasia/HumanIntakeModel_Tutorial/HumanIntakeModel_Tutorial_player.html
	Module 7	The Soil Model	http://media.facilia.se/4fun/training/camtasia/soil_model/soil%20model%20tutorial_player.html
	Module 8	The Fish Model	http://media.facilia.se/4fun/training/camtasia/Fish_Model/Fish_Model_2_player.html
	Module 9	The Fruit Tree Model	http://media.facilia.se/4fun/training/camtasia/Fruit_Tree_Model/Fruit_Tree_Model_player.html

3 Conclusion

Developing training material for the face-to-face trainings and for the online course was a long and demanding process but resulted in the production of high quality materials thanks to the great commitment of the partners to this task.