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# HEALS

Health and Environment-wide Associations  
based on Large population Surveys

FP7-ENV-2013- 603946

<http://www.heals-eu.eu/>

## **Deliverable 18.3 - External training plan and material**


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## 1 Introduction

Assessing individual exposure to environmental stressors and predicting health outcomes implies that both environmental exposures and epi/genetic variations are reliably measured simultaneously. HEALS (Health and Environment-wide Associations based on Large population Surveys) brings together in an innovative approach a comprehensive array of novel technologies, data analysis and modeling tools that support efficiently exposome studies (<http://www.heals-eu.eu/>). This report contributes to work package 18 (Training on HEALS methodology and tools), task number 3 (External training, workshops and material), and is part of Stream 6 (Dissemination/Training and Knowledge Transfer / Drafting of Guidelines).

Within the task 18.3 of the HEALS project, key results of the project were made available for an academic audience. External trainings were realized. For sustainable effects, training materials was compiled and provided with an open access. A continuous update is a component of task 18.3.

The objective of the report is to serve as a guide to give an overview about the external training activities already completed and upcoming as well as about the training materials available. An academic audience should use this report to find issue-specific external training materials of the HEALS project. Also, this report provides an overview about how to use the available materials.

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## 2 Audience of external trainings and training materials

External trainings and training materials are designed for an academic audience. The aim is to train exposome and other researcher interested in using the methods and tools developed within the project as well as to use the products and knowledge gained through the project activities. The external training program is also aimed at capacity building for HEALS young scientists. Dissemination is the key to provide information about the project. The trainings are used to raise awareness of the scientific community of the HEALS results.

## 3 External training plan

This deliverable contains a detailed training plan, what was developed during the first half of the project. The flexible plan was continuously adapted to project developments and findings and includes diverse topics like training on HEALS concepts and methodology, training on use of biomarkers batteries in combination with -omics techniques in unravelling the exposome, and training on the use of the HEALS paradigm and analytical/computational tools.

Table 1 contains the training plan including realized trainings, their topics, time and place, as well as upcoming events. To address the needs of end consumers, the trainings were evaluated to improve upcoming events. Evaluations will also be done during the upcoming events. The trainings are used to enable a constant communication and commitment with potential users of the HEALS results.

The HEALS website (<http://www.heals-eu.eu/index.php/more/training-schedule/>) also hosts a plan of (internal and) external trainings. The training schedule is continuously updated. Thus, dates, places, and topics are available for the interested public.


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Table 1: Timeline of external training events


Month	Month / Year	Date	Host	Place	Theme
12	Sep 2014	15-17.09.2014	IOM	Edinburgh (UK)	<a href="#">Recent advances in the environmental pressure and health outcomes associations</a> <sup>1</sup>
30	Mar 2016	05.2015	UNIVBRIS/ KCL	London (UK)	Modelling external exposure
36	Sep 2016	14.-16.09.2016	CSIC	Barcelona (Spain)	State of the art in exposome research. Exposome research in children (embedded as Session 17 of the 8th <a href="#">International Conference on Children's Health and the Environment</a> ) <sup>2</sup>
48	Sep 2017	23.-25.10.2017	LMU	Venice (Italy)	<a href="#">How relevant is HEALS – stakeholders, NGOs and journalists</a> <sup>3</sup>
49	Oct 2017	<i>Upcoming</i>	AUTH	Thessaloniki (Greece)	Innovative tools for evaluating association between exposure and health's effects
56	Mar 2018	<i>Upcoming</i>	AUTH	Paris (France)	International conference "Linking exposome to human health"
56	Mar 2018	<i>Upcoming</i>	UPMC	Paris (France)	Scientific advances on environmental stressors and health outcomes (Final training workshop – to be organised as satellite event of the HEALS final conference – Task 19.4)
58	May 2018	<i>In process of planning</i>	URV	Barcelona (Spain)	Sommer School
N.N.	N.N.	<i>In process of planning</i>	TNO and others	Amsterdam (The Netherlands)	HEALS SLAM – innovative workshop to attract young European researchers

<sup>1</sup> Access: <http://www.heals-eu.eu/index.php/edinburgh14/>

<sup>2</sup> Access: <http://inchesnetwork.net/wp-content/uploads/2016/05/conference-programme.pdf>

<sup>3</sup> Access: <http://www.heals-eu.eu/index.php/heals-annual-2017/>



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## 4 External training materials

Selected training materials of the external training events organized by the HEALS consortium are available with an open access. Thus, the participants of the trainings are able to recheck the content of the training as well as of other trainings. Additionally, interested people who were not able to participate can use the materials.

### 4.1 Criteria for the preparation of external training materials

The external training materials of the HEALS project was prepared/selected according to the following criteria: The external training materials

- could be written text (e.g., journal papers), presentations, videos, photos, diagrams, figures, etc.,
- are self-explanatory / contain enough information to understand the content,
- contain the name of the copyright holder,
- include information about references used,
- may contain overall ideas without background information (general material) or includes details (specific material)

### 4.2 Overview of training materials

A fundamental part of the external training activities is performed online via the HEALS website<sup>4</sup> and the HEALS data platform<sup>5</sup>. The HEALS data platform summarizes all materials available. Thus, links to the HEALS website are embedded. The HEALS website contains a button to the HEALS data platform. Thus, the interested visitor of the HEALS website has access to the training materials on the HEALS data platform.

**All external training materials of the HEALS project is freely available here:**


[https://heals.vtt.fi/heals/folder/show/folder\(kvjux5dupcx0kg0r6zypyc8b92\)](https://heals.vtt.fi/heals/folder/show/folder(kvjux5dupcx0kg0r6zypyc8b92))

The following subject-specific subfolder on the HEALS data platform categorizes the training materials:

- Welcome
- Bioinformatics
- Enviromics
- Environment-wide association studies (EWAS)

<sup>4</sup> Access: <http://www.heals-eu.eu>

<sup>5</sup> Access: [https://heals.vtt.fi/heals/folder/show/folder\(kvjux5dupcx0kg0r6zypyc8b92\)](https://heals.vtt.fi/heals/folder/show/folder(kvjux5dupcx0kg0r6zypyc8b92))

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- Exposome
- Human exposure
- Human biomonitoring (HBM) and –omics
- Internal dose modeling
- Sensor technology
- Others
- Further reading

These central headings are the focus areas<sup>6</sup> of the project and defined on the website. The focus areas are used to categorize the materials. Thus, it is easy for the user to find the materials of a certain topic.

Two of the folders named above have an overlapping character. The “Welcome”-Folder contains general information about the HEALS project. Included is, e.g., a welcome letter for users of the training materials, a link to the welcome letter<sup>7</sup> of the HEALS website the project overview<sup>8</sup>, and the scientific strategy<sup>9</sup>. The folder “Further reading” contains links to the following exemplary materials:

- Deliverables<sup>10</sup>: PDFs of all finalized deliverables are freely available on the website;
- Publications<sup>11</sup>: Open access publications resulted from HEALS are available on the platform Zenodo;
- Newsletter<sup>12</sup>: Besides sending the HEALS newsletter by email to stakeholders, there is a public access on the HEALS website.
- Training schedule<sup>13</sup>: The website informs the public about the realized and upcoming trainings.
- Videos/webinars<sup>14</sup>: Short video clips were produced, in which HEALS partner describe basic concepts (like the exposome) in easy language.

The content is continuously updated.

In general, the training material is available in English. However, training materials in other languages are not excluded. For example, a presentation about “Guidelines of biomarkers of exposure”<sup>15</sup> is currently available in English and German.

<sup>6</sup> Access: <http://www.heals-eu.eu/index.php/focus-areas/>

<sup>7</sup> Access: <http://www.heals-eu.eu/index.php/welcome-letter/>

<sup>8</sup> Access: <http://www.heals-eu.eu/index.php/project/>

<sup>9</sup> Access: <http://www.heals-eu.eu/index.php/strategy/>

<sup>10</sup> Access: <http://www.heals-eu.eu/index.php/deliverables/>


<sup>11</sup> Access: <http://www.heals-eu.eu/index.php/publications> and <http://zenodo.org/collection/user-heals>

<sup>12</sup> Access: <http://www.heals-eu.eu/index.php/category/newsletters/>

<sup>13</sup> Access: <http://www.heals-eu.eu/index.php/more/training-schedule/>

<sup>14</sup> Access: <http://www.heals-eu.eu/index.php/more/videos/>

<sup>15</sup> Access: [https://heals.vtt.fi/heals/folder/show/folder\(k038mw69j5vnky3qqsllys90gjb\)](https://heals.vtt.fi/heals/folder/show/folder(k038mw69j5vnky3qqsllys90gjb))

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### 4.3 How to use the training materials

The reader should use the external training materials to learn more about HEALS and to understand the importance of this research project for the public health in the European Union. The materials inform the reader about fundamental concepts and terms important for HEALS as well as about the HEALS concept, methods and tools.

The reader should use these materials

- for self-study,
- to learn more about the HEALS project,
- to learn more about the topics included,
- to cite the materials (if appropriate),
- to find further literature,
- to teach students,
- for inspiration of future research,
- to contact the author/the HEALS consortium for further questions,
- for recommendations to other people interested (e.g., students).

The reader is guided by the categories described in 4.2 to find the information of interest. There is a description available for every document uploaded. Additionally, the training materials are categorized as “basic training” or “special training” in the description of the files. Thus, it is easier for the reader to find information suitable to his or her own expertise.

### 4.4 Dissemination of external training materials

The HEALS data platform and the HEALS website are the channels used to distribute training materials. Information about upcoming events relevant to HEALS are communicated by the HEALS partners to the stakeholders, e.g., by using social media. Thus, externals are informed regularly about the training materials. The newsletter reaches a large number of stakeholders as listed on the HEALS stakeholder list. In the next HEALS newsletter, an article about the external trainings will appear. The HEALS newsletters are also available on the HEALS website.

## 5 Conclusions for HEALS

Extensive and informative materials were so far developed within the project. The external trainings aim on sharing the HEALS knowledge with an academic audience. Appropriate materials is available and the HEALS website and data platform were identified as most important communication channels to make possible a knowledge transfer from the HEALS partners to the academic network.

Training material will continuously be collected in future events to provide extensive information for external users. The open access approach of training materials as well as the understandability benefits the usefulness of results originated in HEALS.