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**First International Training School**  
**on**  
***Environmental health in industrially contaminated sites***  
**COST Action IS1408**  
***Industrially Contaminated Sites and Health Network (ICSHNet)***  
***Aristotle University of Thessaloniki (Thessaloniki, Greece)***  
***Research Dissemination Center (KEDEA)***  
***7-10 February 2017***

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## Overview

The COST Action Industrially Contaminated Sites and Health Network (ICSHNet), was launched in 2015, and currently involving researchers and experts from 32 Countries.

A training school for early career investigators is one of the milestones of this Action, created in order to strengthen in-country capacity to face the environmental health challenges posed by Industrially Contaminated sites (ICSs). Early-stage researchers are key to the success of this Action by spreading knowledge methods through different scientific communities. The Training course aims to give them a good understanding of risk and uncertainty matched to a set of practical skills in facing the environmental health issues related to how to evaluate the health impact of industrially contaminated sites.

The course will aim to introduce students to the practice of exposure assessment, epidemiology and health impact assessment as applied to ICSs. Experts from these different disciplines will provide the teaching, and it is expected by the end of the course that participants will be able to interact and communicate with experts in all these areas.

## Objectives of the training school:

- To provide key principles and methods to deal with environmental health issues of industrially contaminated sites
  - **How to examine the exposure and health profile of populations affected by ICSs**
  - **How to estimate the health impact of living on or near to ICSs**
  - **How to identify public health priorities for research and preventive actions**

## Description

**Training school coordinator:** Tony Fletcher, Public Health England, UK

**Language:** English

**Location:** Aristotle University of Thessaloniki (Thessaloniki, Greece)

**Period:** 7-10 February 2017

## Outline of the Course:

Day 1. Plenary meeting, lectures as part of training, and students get together

Day 2. Course: Epidemiology

Day 3. Course: Exposure assessment

Day 4. Course: Health Impact Assessment (HIA)

## Group Work

Group work exercises will be organised in the **Foyer (floor -1)**. Students will work approximately in group of 6 with the tutors circulating among them.

## Posters

In this course all participants are invited to bring a poster to share some experience on Industrially contaminated sites (ICS) in their country. Thus we can learn from each other and discuss together how best to respond to these different situations. The posters could summarise an ICS situation from specific country/area. It could be describing some specific local ICS example or an overview of the number of different types or solutions (ICS description); it could describe an exposure investigation of ICS, perhaps with some measurements (ICS exposure); it could describe an epidemiological study of people living near ICS (ICS epidemiology); it could describe the estimated risk or number of diseases in an ICS exposed population (ICS health impacts). These will be put up so all course participants can see them, then on each day we will have a session discussing some exposure or health aspects of relevant posters.

We have space for poster approximately A0 size that is about 800mm wide and 1200mm high. If you have one ready perhaps from a recent conference (in English) you may bring that, or you can prepare one and bring it, or some smaller poster sheets can be assembled in the A0 space available.

Posters will be shown up all 3 days on the **Mezzanine floor**.

# Program

## 7 February – Plenary Conference

**08:30 Registration** (Main entrance) & **Welcome Coffee** (Mezzanine floor)

### Morning Session (Conference Hall II, level -1)

**09:00 Welcome Address**

**09:30 The Action's environmental health challenges** (Chair G. Leonardi, PHE, UK - Action vice-Chair)

- **ICSs, a valid category for epidemiological research, or for PH action?**  
*M. Kogevinas, ISGlobal, Spain*
- **When is epidemiologic research a helpful response to environmental pollution and when is it not?**  
*D. Savitz, BU, USA*
- **Facing the complexity of HIA in ICSs: the exposome paradigm**  
*D. Sarigiannis, AUTH, Greece*

**11:00 Coffee Break** (Mezzanine floor)

**11:30 Research and health policy tools** Chair, Marco Martuzzi, WHO, Germany

- **The European Information Platform on Chemical Monitoring (IPChem): extension of the human biomonitoring module and possible contribution to the ICSHNet COST Action**  
*S. Dalla Costa and A. Paya Perez, EC - JRC, Italy*
- **The contribution of human biomonitoring in the assessment of exposure and biological effects in populations living in ICSs**  
*G. Schoeters, VITO, Belgium*
- **Facing the challenges of communication in ICSs: do's, don'ts, traps.**  
*Ilse Loots, UA, Belgium*

**13:00 Lunch** (Mezzanine floor)

### Afternoon Session (Conference Hall II, level -1)

**14:00- 16:00 The Greek ICS case-study of Gold mining: a reality check for the COST Action in dealing with stakeholders**

*Chairs, J.F. Viel, UR, France and D. Sarigiannis, AUTH, Greece*

*Stakeholders involved in the arena present their views on the social, occupational, industrial, environmental and public health issues*

**16:00 Coffee Break** (Mezzanine floor)

**16:15 Panel discussion: industrially contaminated sites – what beyond complexity?**

*Chair, T. Fletcher, PHE, UK*

**Contributions:** *M. Kogevinas, ISGlobal, Spain; D. Savitz, BU, USA; Ilse Loots, UA, Belgium; S. Dalla Costa, EC - JRC, Italy; M. Martuzzi WHO, Germany; F. Forastiere, DELR, Italy*

**Closure** *I. Iavarone, ISS, Italy, G. Leonardi, PHE, UK*

**17:30 - 18:00 Intro to the Action training school – students and trainers get to know**

*Chair, R. Pasetto, ISS, Italy*

## Wednesday 8 February – Epidemiology (Conference Hall III, level -1)

**Coordinator,** Tony Fletcher, Public Health England, UK

**Aims:** Introduce epidemiological principles, choice of study designs, eg individual vs ecological approach; use detailed example of SENTIERI studies in Italy. Present and discuss relevant applications, case studies, examples, paying attention to feasibility, and interpretation of results.

Session	Time	Title	Description	Trainers
1	9.00 – 9:30	Introduction to epidemiology	Welcome, intro to epidemiology as relevant to ICS, the range of design options	Tony Fletcher
2	9:30 – 10:00	ICSs	Defining the issue	Ivano Iavarone
3	10:00-10:45	Evidence of harm from ICS	Synthesising, integrating and replicating epi data on ICS	Francesco Forastiere
<i>Break 30' – Mezzanine floor</i>				
4	11:15-12:15	Descriptive Epi in ICS	The SENTIERI approach: combining epidemiology evidence and population health profiles in ICSs	Roberto Pasetto
5	12:15-13:00	Student poster session 1	Presentation and review of posters from student participants, with focus on health studies	All
<i>Lunch 1h – Mezzanine floor</i>				
6	14:00 – 14:45	Sources of data	Studies examples: geographic, survey and cohort data, risks and rates and impacts	Carla Ancona
7	14:45 – 15:30	Practical 1.1 Data analyses	Group work: Understanding example results – analyses and interpretation	Ariana Zeka
<i>Break 30' – Mezzanine floor</i>				
8	16:00-16:45	Further epidemiology	Reviewing evidence, synthesising from multiple studies, assessing quality, including confounding	Tony Fletcher
9	16:45 – 17:30	Practical 1.2 Study options	Group work: Given a scenario choosing the best epidemiology design	All
10	17:30-17:45	Conclusion of the day		Tony Fletcher

## Thursday 9 February – Exposure Assessment (Conference Hall III, level -1)

**Coordinator,** Kees de Hoogh, Swiss Tropical and Public Health, Switzerland

**Aims:** Describe methods and tools for environmental exposure assessment relevant for industrially contaminated sites, covering all pathways, including validation of exposure by e.g. biomonitoring. To give students hands-on software experience (open source) to perform an exposure assessment (EA) in a case study setting. To discuss and share experiences with the students and come up with solutions solving some of the problems faced.

Session	Time	Title	Description	Trainers
1	9.00 – 9:45	General principles of environmental exposure assessment (EA)	Definition of exposure, why does it matter, Understand principles of EA the link to Environmental Epidemiology (EE). Cumulative measures and mixtures. Difference between measuring and modelling. Exposure misclassification. Use of Geographic information system (GIS)	Kees de Hoogh
2	9:45 – 10:30	Assessing exposure in ICS for epidemiology, risk assessment and health impact assessment (HIA)	Understand role of Exposure assessment for epidemiology & HIA. Identification of major compounds relevant to industrial processes. Environmental Multimedia processes – media exchange. Temporal and spatial exposure scales	Denis Sarigiannis
<i>Break 30' – Mezzanine floor</i>				
3	11:00 – 11:45	The use of GIS in exposure modelling	Short introduction to GIS. What can GIS do in terms of exposure assessment. Examples of GIS functionality – i.e. proximity, buffering.	Kees de Hoogh
4	11:45-12:30	Student poster session 2	Presentation and review of posters from student participants, with focus on exposure assessment	All
<i>Lunch 1h - Mezzanine floor</i>				
5	13:30 – 15.00	Practical 2.1	Introduction to the open source software INTEGRA: Multi-pathway exposure upon environmental release of toxic substances (persistent and non-persistent compounds) and expected biomonitoring levels	Spyros Karakitsios, Kees de Hoogh
<i>Break 30' - Mezzanine floor</i>				
6	15:30 – 16:15	The use of human biomonitoring in exposure assessment	Strengths and limitations of human biomonitoring studies (HBM) to evaluate environmental exposure situations. Selecting a study design for HBM studies. Using questionnaire data and environmental data in combination with HBM data. Interpretation of HBM data at the group level and at individual level	Greet Schoeters
7	16:15 – 17:30	Practical 2.2	Use INTEGRA to run through case study	All
8	17:30 – 18:00	Conclusion of the day		Kees de Hoogh

## Friday 10 February – Health Impact Assessment (Conference Hall III, level -1)

**Coordinator,** Marco Martuzzi, World Health Organization, Bonn – Germany

**Aims:** Describe rationale, objectives, methods and tools for assessments of the health impacts of environmental risk factors and determinants relevant for industrially contaminated sites. Present and discuss relevant applications, case studies, examples, paying attention to feasibility, inequalities and environmental justice, interpretation of results.

Session	Time	Title	Description	Trainers
1	9:00 – 9:30	What do we talk about when we talk about HIA	Difference between estimating effects and impacts; different nature of produced knowledge and evidence; changing focus on policy response.	Marco Martuzzi
2	9:30 – 10:15	Risk assessment	Risk assessment: definition, metrics, practices, example	Sarah Dack
3	10:15 – 10:30	Practical 3.1	Students calculate risks and impacts of single risk factors. Real life or fictitious simple examples, workable with hand-held calculators.	Sarah Dack, Marco Martuzzi
<i>Break 30' – Mezzanine floor</i>				
4	11:00-11:45	Integrated HIA and Environmental Burden of Disease (EBoD)	Combining multiple exposures and multiple health outcomes in one analysis. Heterogeneous evidence from systematic reviews	Otto Hanninen, Andrea Ranzi
5	11:45-12:45	Practical 3.2	Students calculate impacts and EBoD, using PCs	Otto Hanninen, Andrea Ranzi
<i>Lunch 1h – Mezzanine floor</i>				
6	13:45 – 14:30	Student poster session 3	Presentation and review of posters, with focus on health impact assessment	All
7	14:30 – 16:00	Intro to R and Practical 3.3	Use PM2.5 simple sheet for introducing R (Practical 1 from Estonia). Application to an ICS case-study - Students calculate risks and impacts in R	Gavin Shaddick, Matthew Thomas
<i>Break 30' – Mezzanine floor</i>				
8	16:30 – 17:00	Continue Practical 3.3	Practical 1 from Estonia Common currencies for HIA (continued). Closing remarks: Tools and resources for HIA. Limitations and perspectives in HIA of ICSS. Inequities, inequalities, environmental justice. Dealing with uncertainty. The policy arena	Marco Martuzzi
9	17:00 – 17:45	Conclusions & evaluation	Evaluations, conclusions, farewell	Tony Fletcher, Kees de Hoogh, Marco Martuzzi

## Trainers and lecturers

- **Carla Ancona**, Department of Epidemiology Lazio Region (DELR), Rome, Italy
  - **Sarah Dack**, Public Health England (PHE), Chilton, United Kingdom
  - **Silvia Dalla Costa**, European Commission - Joint Research Centre (JRC), Ispra, Italy
  - **Kees de Hoogh**, Swiss Tropical and Public Health Institute (STPHI), Basel, Switzerland
  - **Tony Fletcher**, Public Health England (PHE), Chilton, United Kingdom
  - **Francesco Forastiere**, Department of Epidemiology Lazio Region (DELR), Rome, Italy
  - **Otto Hanninen**, National Institute for Health and Welfare (NIHW), Kuopio, Finland
  - **Ivano Iavarone**, Istituto Superiore di Sanità (ISS), Rome, Italy
  - **Spyros Karakitsios**, Aristotle University of Thessaloniki (AUTH), Thessaloniki, Greece
  - **Manolis Kogevinas**, Barcelona Institute for Global Health, ISGlobal, Barcelona, Spain
  - **Ilse Loots**, University of Antwerp (UA), Antwerp, Belgium
  - **Marco Martuzzi**, WHO, European Centre for Environment and Health, Bonn, Germany
  - **Roberto Pasetto**, Istituto Superiore di Sanità (ISS), Rome, Italy
  - **Ana Paya Perez**, European Commission - Joint Research Centre (JRC), Ispra, Italy
  - **Andrea Ranzi**, Arpa Emilia-Romagna, Italy
  - **Dimosthenis Sarigiannis**, Aristotle University of Thessaloniki (AUTH), Thessaloniki, Greece
  - **David Savitz**, Brown University (BU), Providence, RI, USA
  - **Greet Schoeters**, VITO, Mol, Belgium
  - **Gavin Shaddick**, Department of Mathematical Sciences, University of Bath, Bath, United Kingdom
  - **Matthew Thomas**, Department of Mathematical Sciences, University of Bath, Bath, - United Kingdom
  - **Ariana Zeka**, Albanian National Institute of Public Health, Albania
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### Scientific Board of the Training School

Tony Fletcher, Kees de Hoogh, Marco Martuzzi, Ivano Iavarone

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## Training School Venue

AUTH Research Committee  
Research Dissemination Center (KEDEA)  
Aristotle University Campus  
3rd Septemvriou str.  
54636 Thessaloniki, Greece

<http://kedeia.rc.auth.gr/>

For logistic and practical aspects please see the information guide of the Conference

## Venue Map:

