

Towards a consensus on industrially contaminated sites policy priorities and response

COST Action IS1408
Industrially Contaminated Sites and Health
Network (ICSHNet)

Report of the fourth Action Plenary Conference

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ABSTRACT

Based on current available estimates, almost 1.5 million deaths per year in the WHO European Region are attributable to environmental risks that could be avoided and/or eliminated. Industrially contaminated sites in particular, represent a major environmental health issue, as they embrace many risk factors including air, water, soil and food chain contamination, hazardous chemicals and wastes. COST Action on Industrially Contaminated Sites and Health Network (ICSHNet) since 2015 has been greatly contributing to consolidate the awareness and policy profile of contaminated sites towards the implementation of the World Health Organization European Environment and Health Process commitments and transition to the Sustainable Development Goals framework. Aiming to share and improve understanding of these experiences, available evidence and policy needs, the fourth ICSHNet COST Action Plenary Conference was organized and held in Bonn, Germany, 20-22 February 2018. This report outlines the key points and recommendations made by ICSHNet members and meeting participants in relation to this objective.

Keywords

INDUSTRIAL CONTAMINATED SITES
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COST is a funding agency for research and innovation networks. COST Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation (www.cost.eu).

This report describes the activities carried out during the fourth ICSHNet COST Action Plenary Conference, and Working Group, held in Bonn, Germany, 20-22 February 2018, and co-organised with WHO Regional Office for Europe. The programme and list of participants are reported in the annexes. The COST Action and WHO Regional Office for Europe are most grateful to all participants who shared their knowledge, experiences and views.

The report was compiled by Dovile Adamonyte, member of the European Environment and Health Youth Coalition and the COST Action, on the basis of oral and written contributions from participants. Chairpersons and meeting participants provided invaluable support to the draft and finalization of the report.

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Acronyms

AQ	Action Questionnaire
COST	European Cooperation in Science and Technology
ECEH	WHO European Centre for Environment and Health
ECI	Early Career Investigators
EHP	European Environment and Health Process
E-PRTR	European Pollutant Release and Transfer Register
FP	Framework Programmes for Research and Technological Development
ICS	Industrially contaminated sites
ICSHNet	Industrially Contaminated sites and Health Network
SDG	Sustainable Development Goal
SC	Societal Challenge
UNECE	United Nations Economic Commission for Europe
WHO	World Health Organization Regional Office for Europe
WG	Working Groups

Executive summary

Based on current available estimates, almost 1.5 million deaths per year in the WHO European Region are attributable to environmental risks that could be avoided and/or eliminated (1).

Building on previous experiences and on available evidence and policy needs, the COST Action IS1408 on ICS and Health Network (ICSHNet)¹ since 2015 has been greatly contributing to consolidate the awareness and policy profile of contaminated sites as a public health priority in Europe.

Several aspects contribute to make industrially contaminated sites (ICS) a relevant public and environmental health issue. Characterizing the overall impacts of industrialized areas is a challenging task, due to several factors often related each other which include:

- heterogeneous hazards and chemical mixtures affecting several environmental matrices (soil, air, water, and food chain);
- multiple agents from multiple sources;
- close contiguity of industrial settings to urban areas, often densely populated and therefore with expected high impacts;
- multiple aetiology of most potentially related diseases;
- difficulty in gathering quantitative exposure estimates (2-3).

Another distinctive feature, shared by many contaminated sites, is that they often involve marked health inequalities. These sites, being in general not attractive residential areas, tend to be inhabited by people of lower socioeconomic level and deprivation gradients are often seen around contaminated sites. Given the concurrence of multiple contaminants, the social disadvantage, and additional burden imposed at the individual level by unhealthy lifestyles, contaminated sites can sometimes be seen as hotspots of generally bad environment and health, where pressures on health from different sources can produce peaks of bad health, in otherwise healthy populations (2).

Within the adoption of Ostrava Declaration on Environment and Health (hereinafter - Ostrava Declaration), 53 Member States of the WHO European Region committed themselves to develop National Portfolios for Action on Environment and Health in seven priority areas, where waste and ICS are included (4). Preventive Actions in ICS need to be broad, coherent, coordinated and based on evidence. At the same time the National Portfolios should be developed taking into account the progress already achieved at country level, or could be achieved by focusing on strengthening the implementation of other global and regional commitments included under the 2030 Agenda for Sustainable Development (5).

The overall objective of the fourth Action Conference was to respond to questions regarding relevant available contaminated sites evidence, experiences, resources and proactive approaches compelling enough to undertake the actions in the Ostrava Declaration in various dimensions, e.g. economic, social, health.

The Conference of the ICSHNet resulted in clear and actionable conclusions and recommendations on how to underline the relevance of industrially contaminated sites for public health. Major identified actions include the need:

¹ The ICSHNet COST Action runs from April 2015 to April 2019; Information on the Action at <https://www.icshnet.eu/>

- É to carry out an Action survey among participating countries through of an *ad hoc* Action Questionnaire (AQ) aimed at identifying needs and priorities among participating countries, evaluating availability and quality of data and information, research tools and communication experiences in ICS.
- É To promote, through activities of the working groups (WG) of the Action, the analysis of scientific literature on available and suitable research methodologies and approaches for the assessment of population exposure to industrial chemicals and related health impact, and strategies of risk governance and communication in ICS.
- É To contribute to the Ostrava agenda efforts, providing guidance documents drawing on established methodologies and successful case studies, technical and scientific exchanges on good practices between countries.

Introduction

The environmental and health effects of industrial contamination have been studied by the international scientific community for many decades (6). Distinct research initiatives on the health impact of contaminated sites have provided considerable evidence, however data are sparse, and assessments have seen a fragmentation of objectives and methods. It is therefore urgent to promote coordination and collaboration between researchers and risk managers to identify common strategies at European level to deal with this issue more systematically.

Key facts (7):

- There is some evidence that higher-than-normal risk of cancer, respiratory disease and adverse reproductive outcomes has been found in people living near landfills and old-generation incinerators; while the evidence is not conclusive, negative health outcomes from these exposures can be minimised.
- Air emissions of carbon dioxide and air pollutants have measurable health impacts, costing between €4663 per ton of disposed waste, depending on the technology used.
- About one quarter of approximately 350 000 known contaminated sites in EEA countries are due to waste or hazardous waste.

Objectives of the meeting

The overall objective of the COST Action conference was to respond to questions regarding relevant available contaminated sites evidence, experiences, resources and proactive approaches compelling enough to undertake the actions in the Ostrava Declaration in various dimensions - environmental, economic, social, and health-related.

As major tool to reach the above goals, it was expected to discuss and agree on a Consensus Statement about contaminated sites and health. Such statement was meant to be taken to the full group of the 53 WHO European Region Member States and presented during the Eighth WHO European Environment and Health Process (EHP) Task Force meeting, 20-21 March 2018 in Bonn.

Setting the scene: the Action meets the European Environment and Health Process

The COST Action on ICSHNet brings together 33 of the 53 Member States and aims at establishing and consolidating a European Network of experts and relevant institutions, and developing a

common framework for research to respond to the health implications of industrially contaminated sites.

The networking activities carried out within the COST Action, in close collaboration with WHO Regional Office for Europe (WHO), contributed to the inclusion, for the first time, of contaminated sites as a priority area in the Ostrava Declaration, which was adopted in the Sixth Ministerial Conference on Environment and Health.

The Ostrava Declaration includes a commitment towards:

í preventing and eliminating the adverse environmental and health effects, costs and inequalities related to waste management and contaminated sites, by advancing towards the elimination of uncontrolled and illegal waste disposal and trafficking, and sound management of waste and contaminated sites in the context of transition to a circular economy (cf. Ostrava Declaration, para. 12).

Interested Member States will address the topic in the coming years and consider it when developing their National Portfolios.

Follow-up meeting of the Students of Thessaloniki school

The training school "Environmental health in industrially contaminated sites" was one of the milestones of this Action, created to strengthen the in-country capacity to respond to the environmental health challenges posed by ICSs, through the training of early career investigators (ECI). These researchers are essential to the success of this Action and for spreading knowledge methods through different scientific communities in the future.

The aim of this training course was to strengthen in-country capacity to respond to the environmental health challenges posed by ICSs by creating and assisting a European "cohort" of investigators dealing with industrial contamination and population health issues. The course aimed to provide these researchers with a scientific basis on knowledge of methods along with risk and uncertainty of the research, also matched to practical skills for evaluating the health effects and impact of industrially contaminated sites.

The target audience were ECI, PhD students, and researchers from government agencies and research institutes of health or environment, university departments, and other sectors related to industrial contamination and health.

The selected students participating represented a wide geographic spread, ensuring a uniform distribution across the ICS Network countries. 25 out of 33 countries involved in the Action identified candidates to participate in the training.

A total number of 46 trainees, well balanced by gender (54 per cent females), with an age range of 24 to 56 years, attended the school.

The Thessaloniki school learning experience emphasized an obvious need of capacity building. The burden of issues related to ICS is substantial and yet there is a great need in most countries to continue tackling these issues. Training is one of the main priorities in capacity building and is essential to address such issues. The training part of the ICSHNet held in Thessaloniki was developed specifically to support and facilitate countries dealing with environmental health issues of ICS to develop their expertise and be more effective. The training course proved successful and provided trainers with tools to better address these issues. Even more, it will further contribute to improving and strengthening training materials.

Progress with the Action Questionnaire

One of the major objectives and tasks of the COST Action is to assess the availability and quality of information on population, environmental and health data, research tools, and communication strategies that have been or are being applied in ICS in all participating countries.

To this purpose an Action Questionnaire (AQ) has been designed to identify information needs and research gaps in a sample of ICS identified by Action countries.

The other major parallel task of the Action is to review and identify research tools and sound methodologies available to face environmental health issues in ICS.

Integrating the information obtained with the AQ with the knowledge learned on suitable methodologies will facilitate the identification of a range of different approaches for characterizing the potential impacts on health in ICS that can fit to the data and resources available in different regions and ICS scenarios across Europe.

The AQ is conducted by using the online template applied to the entire list of 100 ICS previously identified and reported by members of the COST Action.

This online survey consists of 84 questions organised in eight sections: industrial activities operating at the site, main contaminants, population, exposure, health data, health studies, communication strategies, and references available. The mentioned groups of topics correspond to the activities of the four WGs the Action is composed by.

It is expected that members of Action will submit the AQ in April 2018.

The policy agenda in industrially contaminated sites and health: perspectives and opportunities

The objective of the session was to discuss perspectives and opportunities of efficient awareness and policy profile of contaminated sites consolidation as a public health priority in Europe.

Contaminated sites in the Ostrava agenda

The EHP, steered by ministerial conferences, supports the Member States and convenes partners and stakeholders to scale up and guide interventions addressing environmental determinants of health.

The Annex 1 of the Ostrava Declaration includes the following two general objectives:

- preventing and eliminating potential adverse health impacts from waste management practices and contaminated sites;
- supporting the transition to a circular economy using the waste hierarchy as a guiding framework to reduce and phase out waste production and its adverse health impacts through reduction of the impact of substances of greatest concern;

and offers some examples of actions, such as:

- assess the extent of the most important waste management activities, compile a national inventory of contaminated sites and their likely emissions and human exposures, promote monitoring, and develop a response action plan;
- identify priority sites for remediation/phasing out based on health impacts, starting from national inventories of landfills, obsolete waste facilities and contaminated sites;
- adopt regulatory mechanisms implementing the polluter-pays principle and extended producer responsibility;
- engage the health sector in the development of policies related to waste management at national and subnational levels, especially hazardous waste management;
- enhance capacities at national and subnational levels to assess impacts and manage risks to health from waste, contaminated sites and improperly recycled materials;
- support and develop partnerships to promote the exchange of experience, the strengthening of capacities and the uptake of the best available technologies;
- promote exchange of best practices, including local and pragmatic approaches to preventing contamination from hazardous substances in the circular use of resources;
- increase public awareness of the importance of sustainable waste management, circular economies and responsible consumption, including through education initiatives addressing children and youth and targeted communication.

Moreover, with the adoption of Ostrava Declaration Member States commit themselves to develop National Portfolios in seven priority areas, waste and ICS. Actions in ICS need to be broad, coherent, coordinated and based on evidence. At the same time the portfolios should take into account the progress already achieved at country level, or could be achieved by focusing on strengthening the implementation of other global and regional commitments, including under the 2030 Agenda for Sustainable Development.

Circular economy and industrially contaminated sites

Circular economy is a useful concept to contribute to analysis of sources of contamination at ICSs. Health implications of circular economy is a developing area that has knowledge gaps. However, it

is a useful concept to frame known and potential linkages between ICS, environment and health and thus contribute towards integrated assessment of the impacts on public and occupational health in contaminated areas.

The report on circular economy and ICS topic is being developed and it seeks to develop linkages of circular economy to sustainable development goals, environmental impacts, human health and wellbeing and distributional issues, especially understanding impacts on vulnerable groups.

It is important to address causes of contamination for the identification of policies, plans and actions.

Industrial emissions: overview of the European Pollutant Release and Transfer Register

The European Pollutant Release and Transfer Register (E-PRTR) is the Europe-wide register that provides easily accessible key environmental data from industrial facilities in European Union Member States and in Iceland, Liechtenstein, Norway, Serbia and Switzerland. It replaced and improved upon the previous European Pollutant Emission Register.

The new register contains data reported annually by more than 30,000 industrial facilities covering 65 economic activities across Europe.

For each facility, information is provided concerning the amounts of pollutant releases to air, water and land as well as off-site transfers of waste and of pollutants in waste water from a list of 91 key pollutants including heavy metals, pesticides, greenhouse gases and dioxins for years 2007 onwards. Some information on releases from diffuse sources is also available and will be gradually enhanced.

The register contributes to transparency and public participation in environmental decision-making. It implements for the European Community the UNECE (United Nations Economic Commission for Europe) PRTR Protocol to the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters².

The environment and health EU research agenda

Environment and Health EU Research Agenda on a basis of Horizon 2020 Work Programme for research and Innovation 2018-2020 provides a wide range of research opportunities. For instance, by coupling research and innovation, Horizon 2020 is helping to emphasise on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

Environment and health research is funded by several societal challenges: health, food security, climate action, industrial leadership and nanotechnologies.

In the past years, from 1998 till 2016, more than 360 projects received over a billion euros from Framework Programmes (FP) for Research and Technological Development (FP5, FP6, FP7) and Horizon 2020 Work Programme for research and Innovation. It should be noted, that 1190 institutions from 68 countries worldwide participated in FP7. The research covered different topics, starting with chemicals, nanomaterials, air and water pollution, noise, pathogenic agents, radiation, climate change, exposure to green/blue spaces, urbanisation and ending with lifestyle and socio-

² European Pollutant Release and Transfer Register (<http://prtr.ec.europa.eu/#/home>)

economic and behavioural determinants. Wide variety of instruments and interventions have been used to reach the goals of the programmes: epidemiological studies to identify risk factors; life-course epidemiology; detection and monitoring of determinants; testing health impact assessment; interventional studies, mitigation, guidance, co-benefits; exposure assessment ó exposome; coordination and support actions; foresight.

For the short and medium term planned activities of Horizon 2020, the focus was increased for the environment and health research under Societal Challenge (SC) 1 which calls for activities considering support to regulations and risk assessment (þ50M), identifies environmental and lifestyle risk factors contributing to burden of diseases (±þ50M) and sets the research agenda of the future (þ2-3M) which is open from 2018. In addition to this, calls for proposals in 2018-2019 of other parts of Horizon 2020 are foreseen as well:

- SC2: Integrated health approaches and alternatives to pesticide use (þ15M)
- SC4: InCo flagship on reduction of transport impact on air quality (þ30M)
- SC5: Climate impacts on health in Europe (þ20M)
- SC5: Visionary and integrated solutions to improve well-being and health in cities (þ43M)
- Industrial Leadership ó nanotechnologies (þ30M):
 - Risk governance of nanotechnology
 - Nanoinformatics: from materials models to predictive toxicology and ecotoxicology
- Safe by design, from science to regulation: metrics and main sectors (þ28M)

Considering long term future activities no radical changes are foreseen for the preparation for the Framework Programmes for Research and Technological Development (FP9).

Environment and health policy frameworks provide a wide range of research opportunities. For instance, by coupling research and innovation, Horizon 2020 is helping to emphasise on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

The German experience with remediation of industrially contaminated sites

Since 1984 in the inner city of Stuttgart about 100 volatile chlorinated hydrocarbons (CHC) contaminated sources have been investigated and partly remediated so far. There are 700 additional potentially contaminated sites documented. CHC chemicals were applied as solvent agents mainly in the mechanical engineering and electrical industry as well as by dry cleaners. Although the application stopped, the pollution is still remaining in the groundwater.

Aiming to sustainably improve the groundwater quality in Stuttgart's city area and to ensure a permanent protection of Stuttgart's mineral springs, the MAGPlan (öManagement plan to prevent threats from point sources on the good chemical status of groundwater in urban areasö) project was developed.

MAGPlan project applied the concept of šIntegral management of contaminated sitesö. It focused on the spatiotemporal analysis of CHC migration and the associated degradation and transformation processes between the contamination sources and the mineral springs and spas. Due to the complex hydrogeological conditions, new and advanced investigation strategies and methods were used which, in combination, allowed for multiple lines of proof. The overarching principle is an iterative-adaptive approach with gradual improvement of the level of knowledge.

The results of the integral investigation of the groundwater and the contaminated sites and the measures required to ensure a good groundwater status are summarized in the groundwater management plan. In reports, maps, data bases, and with a computer-based visualization tool, it provides the basis for an optimal treatment of CHC contaminants in groundwater. The management plan sets priorities for contaminated site remediation. The numerical transport model provides the opportunity to analyze different remediation scenarios for individual sites and to make predictions of future contaminant migration. Sites with a particularly high remediation priority can be identified. Furthermore, interactions between contamination sources and receptors in the project area can be included in the risk assessment and the evaluation of the sites.

The remediation feasibility study as part of the groundwater management plan describes the measures to be taken in order to achieve the remediation targets. For those sites with high priority, additional investigation and remediation efforts will be developed. Through the contribution of political committees, the groundwater management plan has received a binding character. The Stuttgart City Council acknowledged the implementation and financing of the groundwater management plan developed in MAGPlan on 1st July 2015. The strategy of integral contaminated site management will function as an important guideline and a trend setting component for groundwater protection in Europe and Stuttgart in future. They were published by extensive dissemination activities among experts and also in Stuttgart's public. The public relation activities ask for understanding of the necessary activities and try to encourage persons concerned to fight against deficits of groundwater quality in the same way. Hence the project contributes an important part to implement the directive 2000/60/EC (Water Framework Directive) of the European Union.

Therefore, the communication strategy was developed. The strategy aimed at periodic information of target groups; raising of public awareness for groundwater protection; improvement of the acceptance for necessary actions and strengthening the individual responsibility. The overview of environmental risk communication is provided in the Box 1.

Box 1. Overview of environmental risk communication

- Communication strategy was based on the requirements of the LIFE Commission for project work. It states in detail the objectives and content as well as the formal framework (places, deadlines) of MAGPlan media. Most relevant communication tools were project's website, site visits, video's, construction signs, newsletters, informative give-aways (i.e. bags, pens, notepads, USB sticks), final conference. Interested citizens were informed about the project with the aid of flyers. The specially designed MAGPlan folder offered the possibility to collect different media.
- Stakeholders involvement ó mainly experts and public authorities. Therefore, based on the "quiz duel idea" the microsite (www.grundwasser-quiz.de) addresses the youth target group ó challenging young people to test their groundwater knowledge. An info screen campaign youth microsite at Stuttgart's stations was used to reach the pupil target group using public transport during core hours. By using listed communication activities, the trust was well gained and maintained among public.
- Risk perception ó due to efficient and transparent awareness raising on high level of water quality, inhabitants felt low concern for the risk itself.
- The afterlife communication plan makes sure that the project results are communicated after the end of MAGPlan (September 2015). It comprises the targets, the target groups, the messages and the appropriate communication channels.

The European Union co-financed the project, running from 2010 to 2014. 50 per cent of the total costs are subsidies by the EU program LIFE. The other half is taken over by the City of Stuttgart and the Federal State of Baden-Württemberg.

Discussion

Participants discussed the need for a clearer definition of the transparent and active citizen participation. In case of planning to implement a similar project in other COST Action countries there is a need to give more attention to geographical and industrial diversity.

Towards a consensus on industrially contaminated sites policy priorities and response

Rationale

In Europe, earlier industrialization and poor environmental management practices have left a legacy of thousands of contaminated sites. Past and current industrial activities can cause local and diffuse contamination, to such an extent that it might threaten human health of resident populations, especially in vulnerable subgroup. Moreover, health, environment, and social aspects are strongly interconnected, local communities are often alarmed, and both scientists and policy makers have expressed concern.

Building on available evidence and policy needs, the COST Action (and previous work lead by WHO) has greatly contributed to consolidate the awareness and policy profile of contaminated sites as a public health priority in Europe.

Multi-centric epidemiological investigation: experience and vision of Santé Publique France

Characterizing the health risks and awareness raising of contaminated sites is a complex exercise. Answers to questions linked to remediation and compatibility of the human activities regarding the contamination as well as impact on human health of the contamination might contribute to define effective remediation and preventive actions.

Aiming to answer the question linked to remediation and compatibility of the human activities regarding the contamination it is needed to perfectly know the composition of the contamination sources and target remediation values that depends on the soils uses by the population (recreational or professional occupation). These values are currently estimated using the quantitative risk assessment approach. This methods consists in defining the major exposure routes and, thereby, the best remediation options to remediate the considered situation. Remediation of contaminated sites based on this method is of real importance as it will provide a real and immediate benefit regarding the exposure of the population in contact with the considered site.

However, this approach, based on environmental contamination, modelling and toxicological consideration does not answer to the second question, i.e. the actual impact of a contaminated soil on human health.

To explore the impact on human health of the contamination, epidemiological studies are appropriate tools. Different approach such as biomonitoring, morbidity or mortality studies are often carried out. Beyond the health impact, defining the determinants of such impact is also important to set up preventive actions for the population. However, conclusive answers are often difficult to give when considering a given site of restricted area. This is due to several

methodological difficulties such as limited number of population, etiology of the health indicators that might include other risk factor than environment, and characterization of the exposure of the population that needs to be robust, especially with time as a pathology might appear several decades following an exposure.

To answer these limitations, *Santé Publique France* decided to launch a feasibility study for a multi-centric epidemiological investigation gathering different sites accordingly to their emissions.

Policy decision making based on health risk assessment

The following list of suggestions for a health risk assessment of contaminated sites related to policy decision making should be implemented through several steps, considering the participation and contribution of stakeholders, researchers, risk managers, citizens and policy makers in the whole process:

- **Evaluation of determinants and risk factors impacting health in contaminated sites.** The additional effort is needed to be performed in order to carry out studies with adequate design to investigate the interaction between environmental and **SES** as well as life style risk factors; strengthen knowledge on chemical mixtures (8); develop cumulative risk assessment methods and tools, accompanied by cases-studies (9).
- **Quantitative measure of vulnerability.** An adequate post-hoc feedback to refine the ex-ante definition is needed. Also it is important to incorporate the knowledge from studies on markers of exposure, especially early markers on physiological changes or damage to health in environment and health studies.
- **Evaluation of environmental data.** Towards finding collaboration agreements among policy makers and researchers it is essential to define the consensus concerning the significance of data and capacity of results for research and public health decisions. Therefore, while the development of further scientific evidence is being ensured, it is important to use available results. For instance, Italy has numerous epidemiological studies with ecological and etiological design and biomonitoring surveys have been carried out in contaminated sites, and in many of them evidences are considered enough for recommendation for public health actions.
- **Compilation of quantitative exposure estimates.** It is important to ensure not only the separation of main sources of exposure to facilitate the ability to cope, but also study interactions among different sources of exposure as well the further evaluation of contaminants and pathways.
- **Consideration of **SES** and environmental justice.** The experience of SENTIERI (*Studio Epidemiologico Nazionale dei Territori e degli Insediamenti Esposti a Rischio da Inquinamento*) study confirmed that confounding effects is often site-specific.

Latest legal framework of contaminates sites and Sustainable Development Goals

Over the past decades the European Union has put in place a broad range of environmental legislation. As a result, air, water and soil pollution has significantly been reduced. Chemicals legislation has been modernised and the use of many toxic or hazardous substances has been restricted. Today, EU citizens enjoy some of the best water quality in the world and over 18% of EU's territory has been designated as protected areas for nature.

However, many challenges persist and these must be tackled together in a structured way.

The 7th Environment Action Programme (10) will be guiding European environment policy until 2020. In order to give more long-term direction it sets out a vision beyond that, of where it wants the Union to be by 2050:

"In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decoupled from resource use, setting the pace for a safe and sustainable global society."

Moreover, the draft resolution on managing soil pollution to achieve Sustainable Development (11) encourages:

õ Member States to undertake necessary measures at national, and as appropriate regional levels, to among others, formulate new and strengthen existing strategic interventions, policies and legislation, aimed at setting norms and standards to prevent, reduce and manage soil pollution.ö

Institutional and professional perspectives towards implementation of Ostrava Declaration in Estonia

The commitments made by Member States of WHO European Region in Ostrava give political support and encouragement to strengthen environment and health capacities at the national and regional level by developing National Portfolios.

Actions on contaminated sites can be conceived and carried out with different aims. The compilation of national inventory of contaminated sites and their likely emissions and human exposures support the promotion of monitoring, and development of response action plan. Therefore the Estonian experience with the oil shale contamination shows that the enhancement of human capacities at national and subnational levels to assess impacts and manage risks to health from waste, contaminated sites and improperly recycled materials, is a key step towards successful interventions.

Furthermore, due to efficient implementation of EU legislation, waste management in Estonia is well organized. Some gaps in the medical waste management were recognized though, e.g. lack of intersectorial collaboration between environment and health sectors.

Tackling risks linked to industrial contamination

In some countries of Eastern Europe the industrialization processes during the former communist regime and the associated scarce environmental management practices have resulted in many contaminated sites.

Similar to the situation observed in the developed countries, the past and current industrial activities can cause different degrees of contamination in Eastern European countries which can ultimately affect the health of the population exposed to these hazards, particularly the vulnerable subgroups including children, older people and especially the low socioeconomic and minority categories which are prone to a substantially higher level of exposure to industrial contamination compared with the rest of the population.

Health inequalities between different populations and within different categories of the same population primarily relate to inequalities of health information.

Furthermore, as it has been convincingly argued, health, environment, and social aspects are closely linked, but there is need for robust research involving up-to-date scientific methods in order to assess the health impact of contaminated sites in different segments of the populations in Eastern European countries.

Good examples and best international practices from the Western European countries should be employed. Overall, there is a need for international coordination and collaboration in order to establish common strategies to tackle the issue of industrial contamination as effectively and efficiently as possible.

Conclusions and way forward

Available evidence on the health impact of industrially contaminated sites, if somewhat sparse, is rich and provides strong indications of the significant role that these sites play on people living in their vicinity. Unsurprisingly, given the heterogeneous nature of the risk factors involved mentioned above, many different health effects have been documented, including mortality, morbidity, hospital admissions, reproductive outcomes.

The issue of human health in industrially contaminated areas is best addressed with a strong sustainability perspective, taking into account, on the one side, the evidence on health effects and impacts, but considering the broader context of environmental and ecosystem health, as well as the economic and social environment including the occupational opportunities that arise from industrial activities. All of this requires an intersectoral approach, and has to be seen as a part of a social negotiation, where the legitimate needs and aspirations of vulnerable groups, residents, workers, investors and business are taken into account, in a fair process.

The Fourth Plenary Conference of the ICSHNet resulted in clear and actionable conclusions and recommendations on how to underline the importance as well as relevance of industrially contaminated sites for public health:

- By carrying out the survey by means of the AQ, it is expected to further collect and evaluate available data, tools and experiences in ICS.
- By the end of 2018 the working groups of the Action will provide main results gained by developing analysis on available tools and methodologies; health and population data for the health impact assessment; assessment of population exposure to industrial chemicals; and strategies of risk governance and communication in ICS.
- In collaboration with the relevant environmental health agencies, scientists and the community at large to COST Action members commit to further engage in work contributing to the Ostrava agenda efforts, drawing on established methodologies and successful case studies, and promote stronger technical and scientific exchanges on good practices between countries.
- The fifth and final Plenary Conference of the ICSHNet Action will take place in Rome, Italy, February 2019.

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MEETING PROGRAMME

**Fourth Plenary Conference COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)
WHO European Centre for Environment and Health (ECEH)
United Nations Campus, Bonn, Germany, 21- 22 February 2018**

20 February – Pre Conference events

ICSHNet afternoon ancillary meetings

16:00 – 17:30 Students of Thessaloniki school meet to discuss new ideas (Room LE 1916)

(Chair: T. Fletcher; Mentors: trainers of the Thessaloniki training school)

17:30 - 19:00 Core Group meeting (Room LE 1712)

21 February – Morning, Plenary Conference (Room LE 1916, 19th floor)

08:30 - 09:00

- **Registration** (Main entrance guardhouse)
- **Welcome coffee** (in front of Room LE 1916)

09:00 Opening and Update

- World Health Organization Regional Office for Europe (*E. Paunovic*)
- ICSHNet Action Chair (*I. Iavarone*)
- Progress with the Action survey (*P. Martin-Olmedo*)

09:30 – 11:00 The policy agenda in Industrially contaminated sites and health: perspectives and opportunities (Chair: *D. Sarigiannis*)

- Contaminated sites in the Ostrava agenda (*M. Martuzzi*)
- Circular economy and industrially contaminated sites (*N. Dale*)
- Industrial emissions: overview of the European Pollutant Release and Transfer Register (*I. Marnane*)
- The environment and health EU research agenda (*M. P. Aguar Fernandez*)
- Discussion

11:00 - 11:30 – Coffee break (in front of Room LE 1916)

11:30 – 12:15 The German experience with remediation of industrially contaminated sites (Chair: *J. Frauenstein*)

The Solvent Risk . industrial contamination in Stuttgart (*H.J. Kirchholtes*)
Projection of a film, keynote presentation and open discussion

12:15 – 13:30 Round table: towards consensus on industrially contaminated sites policy priorities and response (Chair: *G. Leonardi*)

Participants: *S. Denys; F. Bianchi; T. Straßburger; J. Tomasova; G. Burazeri; E. Paunovic.*

13:30 – 14:30 - Lunch (LE, 29th floor, canteen area)

21 February, afternoon Ę Working Group activities

14:30 Ę 15:00 Objectives and goals of WG meetings (Plenary, Room LE 1916)
(I. Iavarone & R. Pasetto)

15:00 Ę 17:30 Working groups 1, 2, 3 and 4 parallel meetings

WG1 Ę Environment and health data (Room 2712, 27th floor)

WG1 Chair P. Martin-Olmedo; Deputy Chair D Sarigiannis

WG2 Ę Methods and tools for exposure assessment - (Room 2116, 21th floor)

WG2 Chair K. de Hoogh; Deputy Chair G. Hoek

WG3 Ę Methods and tools for health risk and health impact assessment (Room 2112, 21th floor)

WG3 Chair O. Hanninen; Deputy Chair C. Ancona

WG4 Ę Risk management and communication (Room 1916, 19th floor)

WG4 Chair R. Pirastu; Deputy chair, I. Loots

16:00 Ę 16:30 Coffee break (in front of Room LE 1916)

17:30 Ę 18:30 Management Committee meeting (Plenary, Room LE 1916)

(Chair: I. Iavarone, G. Leonardi)

19:00 Ę 21:00 Cocktail reception (LE, 29th floor, canteen area)

22 February, morning Ę Working group activities - parallel sessions

09:00 - 09:30 Registration (LE Lobby, Ground floor)

9:30 Ę 13:00 Working groups 1, 2, 3 and 4 parallel meetings Ę continued

WG1 Ę Environment and health data (Room 2712, 27th floor)

WG2 Ę Methods and tools for exposure assessment (Room 2116, 21th floor)

WG3 Ę Methods and tools for health risk and health impact assessment (Room 2112, 21th floor)

WG4 Ę Risk management and communication (Room 1916, 19th floor)

11:00 Ę 11:30 Coffee break (in front of Room LE 1916)

13:00 Ę 14:00 Lunch (LE, 29th floor, canteen area)

22 February, afternoon Ę Plenary session (Room LE 1916)

14:30 Ę 15:30 Debriefs from four working groups (Chair: G. Leonardi)

15:30 Ę 16:30 Discussion, next steps, way forward (Chair: I. Iavarone)

16:30 Close (I. Iavarone, M. Martuzzi)

Annex 2

TOWARDS A CONSENSUS ON ICS POLICY PRIORITIES AND RESPONSE



Fourth Plenary Conference COST Action IS1408 Industrially Contaminated Sites and Health Network (ICSHNet)

WHO European Centre for Environment and Health (ECEH)
United Nations Campus, Bonn, Germany, 21- 22 February 2018

Towards a consensus on ICS policy priorities and response

Background

Based on current available estimates, almost 1.5 million deaths per year in the WHO European Region are attributable to environmental risks that could be avoided and/or eliminated. Building on these data the Sixth Ministerial Conference on Environment and Health calls for urgent actions to address the leading environmental determinants of ill-health, such as air pollution, inadequate water and sanitation services, hazardous chemicals, waste, contaminated sites and climate change (Ostrava, Czech Republic, 13- 15 June 2017)

Industrially Contaminated sites (ICS), in particular, represent a major environmental health issue, as they embrace many risk factor including air, water, soil and food chain contamination, but also hazardous chemicals and wastes.

In Europe, earlier industrialization and poor environmental management practices have left a legacy of thousands of contaminated sites. Past and current industrial activities can cause local and diffuse contamination, to such an extent that it might threaten human health of resident populations, especially in vulnerable subgroup. Moreover, health, environment, and social aspects are strongly interconnected, local communities are often alarmed, and both scientists and policy makers have expressed concern. Distinct research initiatives on the health impact of contaminated sites have provided considerable evidence, however data are sparse, and assessments have seen a fragmentation of objectives and methods. It is therefore urgent to promote coordination and collaboration between researchers and risk managers to identify common strategies at European level to deal with this issue more systematically.

The European industry, like the energy and transport sectors, delivers a complex mixture of benefits and costs to society. In addition to producing goods and services, the sector generates substantial employment, earnings and tax revenues.

Though the environmental performance of European industry has improved in recent decades, the sector is however still responsible for significant amounts of pollution to air, water and soil,

as well as generation of waste (EEA, 2015, *The European environment – state and outlook 2015: synthesis report*). According to recent EEA analysis, the damage costs (relating to harm to human health, crop yield losses and material damage) associated with air pollution released by the 14000 most polluting facilities in Europe are estimated to be at least EUR 329.61053 billion in the five year period 2008–2012. It is estimated that half of the costs occurred as a result of the emissions from just 147, or 1%, of the facilities (*Costs of air pollution from European industrial facilities 2008–2012 an updated assessment, EEA Technical report No 20/2014*).

Several aspects contribute to make industrially contaminated sites one of the most relevant environmental public health issue. First of all, characterizing the overall impacts of contaminated areas is a challenging task, especially. This is linked to several factors often related each other, including: heterogeneous hazards and chemical mixtures affecting several environmental matrices (soil, air, water and food chain); multiple agents from multiple sources, mostly assumed not to interact; close contiguity of industrial settings to urban areas, often densely populated and therefore with expected high impacts; multiple aetiology of most potentially related diseases and difficulty in gathering quantitative exposure estimates.

Another distinctive feature, shared by many contaminated sites, is that they often involve marked health inequalities. These sites, being in general not attractive residential areas, tend to be inhabited by people of lower socioeconomic level and deprivation gradients are often seen around contaminated sites. Given the concurrence of multiple contaminants, the social disadvantage, and additional burden imposed at the individual level by unhealthy lifestyles, contaminated sites can sometimes be seen as ‘hotspots’ of generally bad environment and health, where pressures on health from different sources can produce peaks of bad health, in otherwise healthy populations. In addition society at large obviously benefits from the output of industrial activities, thus introducing an additional dimension of environmental (in)justice. For these reasons, the issue of human health in industrially contaminated areas is best addressed with a strong sustainability perspective, taking into account, on the one side, the evidence on health effects and impacts, but considering the broader context of environmental and ecosystem health, as well as the social environment – including the occupational opportunities that arise from industrial activities. All of this requires an intersectoral approach, and has to be seen as a part of a social negotiation, where the legitimate needs and aspirations of vulnerable groups, residents, workers, investors and business are taken into account, in a non-discriminatory process .

The issue of a European response to the health problems caused by contaminated sites was initially raised in the frame of technical meetings organized by the World Health Organization (WHO) European Centre for Environment and Health). This implied bringing together experts operating across Europe, reviewing existing scientific evidence and methodological options, exploring priorities and identifying topics and goals for collaborative works.

Building on previous experiences and on available evidence and policy needs, the COST Action on Industrially Contaminated Sites and Health Network (ICSHNet) since 2015 has been greatly contributing to consolidate the awareness and policy profile of Contaminated Sites as a public health priority in Europe.

Work in the ICSHNet COST Action

The Action aims at establishing and consolidating a European Network of experts and relevant institutions, and developing a common framework for research and response through conferences, workshops, training and dissemination activities. In particular, the Action Network’s goals are to: clarify knowledge gaps and research priorities; support collection of relevant data and information; stimulate development of harmonised methodology; promote

collaborative research initiatives, and develop guidance and resources on risk assessment, management and communication.

The COST action currently involves about 130 researchers and experts from relevant public health and environmental institutions and universities of 33 countries (<https://www.icsynet.eu/> and http://www.cost.eu/COST_Actions/isch/IS1408).

Among the goals of the COST Action, training is one of the most relevant. A First International Training School on Environmental health in industrially contaminated sites was held in Thessaloniki (Greece) in February 2017 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 aimed 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. https://www.icsynet.eu/wp-content/uploads/2017/02/ICSHNet_Programme-Training_School_3PC.pdf

Another major objective and task of the COST Action is to assess availability of data, research tools, methodologies, information and communication strategies in ICS in all participating countries.

A list of 100 ICS has been selected by participant countries with the objective to evaluate the capacity within and across countries to deal with ICS-related environmental health issues and to identify information needs and research gaps. This will greatly help to reach the COST Action goal to develop guidance and resources on health impact assessment and risk communication in ICS across Europe. the national list of ICS to be selected fulfilled the following criteria:

- **POLICY RELEVANCE.** Sites for which concern was raised by citizens, politicians, environment and health experts, scientists, media and other interested parties.
- **AVAILABLE EVIDENCE.** Sites for which local environmental contamination by industrial activities has been documented as dangerous or potentially dangerous for the possible health effects
- **EXTENT OF EXPOSURE.** Sites involving large or in any case non negligible size of the population directly affected by the contaminations óexposed or potentially exposed in the neighbourhood of the contaminated sites-.

An Action Questionnaire (AQ) has been designed as main instrument to collect information among the selected ICS. The evaluation of needs and priorities as identified by the AQ will concern: 1) availability and quality of information on population, environmental and health data, 2) methods and research tools used for exposure assessment, 3) experiences of health risk and health impact assessments, and 4) risk communication strategies. The above 4 groups of topics correspond to the activities of the 4 Working Groups (WGs) the Action is composed by.

The other parallel activity of the Action WGs is a critical analysis and review of the scientific literature in terms of availability of suitable research strategies and approaches. This activity is the basis to build up a list of tools and sound methodologies to face EH issues in ICS. Contrasting the knowledge developed about needs and priorities of participating countries (results of AQ in the selected list of ICSs) with the knowledge learned about availability of suitable tools and methodologies, will help to reach the final COST Action goal to develop guidance documents on health impact assessment and risk communication across Europe accounting for the heterogeneity of ICSs across countries.

Outcome of the Ostrava Ministerial Conference

The networking activities carried out so far Action, in close collaboration with WHO, contributed to the inclusion, for the first time, of Contaminated sites as a priority area in the Final Declaration of the Sixth Ministerial Conference on Environment and Health (Ostrava, Czech Republic 15 June 2017). The Ostrava Declaration includes a commitment towards

“preventing and eliminating the adverse environmental and health effects, costs and inequalities related to waste management and contaminated sites, by advancing towards the elimination of uncontrolled and illegal waste disposal and trafficking, and sound management of waste and contaminated sites in the context of transition to a circular economy”.

Interested Member States of the WHO Regional Office for Europe (53 of them) will address the topic in the coming years and consider it when developing their “Portfolios for Action”. The Annex 1 to the Declaration includes the following two general objectives:

- *preventing and eliminating potential adverse health impacts from waste management practices and contaminated sites*
- *supporting the transition to a circular economy using the waste hierarchy as a guiding framework to reduce and phase out waste production and its adverse health impacts through reduction of the impact of substances of greatest concern;*

and offers some examples of actions, such as:

- *Assess the extent of the most important waste management activities, compile a national inventory of contaminated sites and their likely emissions and human exposures, promote monitoring, and develop a response action plan.*
- *Identify priority sites for remediation/phasing out based on health impacts, starting from national inventories of landfills, obsolete waste facilities and contaminated sites.*
- *Adopt regulatory mechanisms implementing the polluter-pays principle and extended producer responsibility.*
- *Engage the health sector in the development of policies related to waste management at national and subnational levels, especially hazardous waste management.*
- *Enhance capacities at national and subnational levels to assess impacts and manage risks to health from waste, contaminated sites and improperly recycled materials.*
- *Support and develop partnerships to promote the exchange of experience, the strengthening of capacities and the uptake of the best available technologies.*
- *Promote exchange of best practices, including local and pragmatic approaches to preventing contamination from hazardous substances in the circular use of resources.*
- *Increase public awareness of the importance of sustainable waste management, circular economies and responsible consumption, including through education initiatives addressing children and youth and targeted communication.*

The Bonn meeting

Through presentations, plenary and working group discussions and a round table, the ICSHNet meeting in Bonn addresses questions along the following lines:

- Although rather sparse, is available evidence compelling enough to undertake the actions in the Ostrava Declaration (see below)? If so, which ones seem to be more relevant?
- What has been the experience so far?
- Ideally, we would like to address the issue in a proactive, broadly framed way (for example, considering sustainable production and consumption, circular economy); however, often

environmental and/or health authorities are forced to respond to crises, involving controversy, jobs, angry citizens etc. How could we prevent such crises and move towards a proactive approach?

- The issue cuts across disciplines (epidemiology, toxicology, environmental sciences, etc) and competences (health, environment, industry sectors). Also, stakeholders are many. Are we equipped to undertake cross-sectoral, participatory work?
- To what extent the economic dimension comes into play?

It is hoped, ultimately, that the plenary session of the COST Action conference will agree on a Consensus Statement about contaminated sites and health, expressing a consensus view from the Action. Such statement is meant to be taken to the full group of the 53 Member States, taking advantage of the upcoming meeting of the EH Task Force, scheduled for 20-21 March 2018 in Bonn. A draft consensus statement is shared in advance with the Action Members and panellist of the Round table.

Annex 3

ICSHNET CONSENSUS STATEMENT



Fourth Plenary Conference COST Action IS1408
Industrially Contaminated Sites and Health Network (ICSHNet)
WHO European Centre for Environment and Health (ECEH)
United Nations Campus, Bonn, Germany, 21- 22 February 2018

Consensus Statement on Industrially Contaminated Sites and Health

Preamble

Waste and contaminated sites have been included as a priority in the Declaration of the Sixth Ministerial Conference on Environment and Health (Ostrava, Czech Republic 15 June 2017). The Ostrava Declaration includes a commitment towards

“preventing and eliminating the adverse environmental and health effects, costs and inequalities related to waste management and contaminated sites, by advancing towards the elimination of uncontrolled and illegal waste disposal and trafficking, and sound management of waste and contaminated sites in the context of transition to a circular economy”.

Interested Member States of the WHO Regional Office for Europe will address the topic in the coming years and consider it when developing their “Portfolios for Action”.

The COST Action IS1408 on Industrially Contaminated Sites and Health Network (ICSHNet)³ brings together 33 of the 53 Member States and aims at establishing and consolidating a European Network of experts and relevant institutions, and developing a common framework for research to respond to the health implications of industrially contaminated sites. On occasion of the 4th Plenary Conference of the Action, its Members prepared a consensus statement intended to stimulate further progress on the issue, as follows.

Statement

Members of the COST Action IS1408 on Industrially Contaminated Sites and Health Network:

- Underline the importance and relevance of industrially contaminated sites for public health: notwithstanding important knowledge gaps, available evidence indicates that human and ecosystem health are adversely affected by contamination due to past and current industrial activities including waste disposal.

³ The ICSHNet COST Action runs from April 2015 to April 2019; Information on the Action at <https://www.icsynet.eu/>

- Invite relevant environmental health (EH) agencies, EH scientists and the EH community at large to further engage in work contributing to the Ostrava agenda efforts, drawing on established methodologies and successful case studies, and promote stronger technical and scientific exchanges on good practices between countries.
- Propose that further work is undertaken, and offer support to its implementation, to pursue the following goals:
 - Identify priority sites for remediation in each country, by means of transparent and shared procedures, taking into account human health as a state of complete physical, mental, and social well-being, but also including environmental and occupational, and economic perspectives;
 - Promote collaborative initiatives, and develop guidance and resources through dedicated research, especially addressing the multi-dimensional nature of the issue, i.e. considering the multiple pathways of exposure (soil, water, air, food etc.), integrating relevant disciplines and methods (epidemiology, eco-toxicology, exposure assessment including biomonitoring, markers of early effects, etc.);
 - Promote the development of regulatory frameworks and policies to protect soil (thereby complementing existing legislation on air and water), also in line with the objective of the Seventh European Union Environment Action Programme and with the UN resolution 'Managing Soil pollution to achieve Sustainable Development' adopted by the 2017 United Nations Environment Assembly [UNEP/EA.3/L.14];
 - Undertake a comprehensive assessment of the overall impact on health of contaminated sites in Europe;
 - Consider environmental justice a priority, as the uneven distribution of adverse health effects and impacts frequently affect disadvantaged and vulnerable people (like children) in a disproportionate way, often combined with unequal access to information and evidence, driven by unequal distribution of resources and capacity;
 - Stimulate development of harmonised approaches based on the best available and suitable strategies for research and response, which should be rigorous, open to stakeholders and mindful of local/country needs, priorities, preferences and values; International collaboration will ensure the identification of the most appropriate options for improving comparability between assessments and countries;
 - Ensure that building further evidence and refining it does not result in delaying remedial action where this is appropriate;
 - Undertake appropriate assessment to document public health benefits following remediation;
 - Increase public awareness of the importance of sustainable developments goals (SDGs) and circular economy;
 - Strengthen in-country capacity to face the environmental health challenges posed by contaminated sites, through ad hoc training activities, addressing in particular young generations of researchers, public health professionals, and decision makers;
 - Improve targeted communication initiatives addressing local populations, media and other stakeholders like children and youth; provide guidance on how to transfer scientific evidence into the policy making process.
- Offer a platform for collaboration between interested Member States of the European region and the expert members of the COST Action and the provision of technical assistance.

The COST Action Conference agrees on the opportunity that this document be taken to the meeting of the EH Task Force of the European Environment and Health Process (EHP), scheduled for 20-21 March 2018 in Bonn.

Annex 4

Objectives of working groups' activities

WG1 – Environment and health data

Goals of Working Group 1 for collaborative work include the identification of criteria and requirements to standardize and harmonize the collection and organization of data on environment, health and other characteristics of populations residing in industrially contaminated sites, accounting for needs and priorities across countries.

This represents a crucial propaedeutic basis to address the production of reliable assessments of the health risks and impacts of different sources of pollution in contaminated areas.

WG2 – Methods and tools for exposure assessment

Goals of Working Group 2 for collaborative networking activities concern the identification of needs and priorities across participating countries to evaluate exposures to environmental contaminants in populations residing in industrial areas.

A parallel objective is to review and critically evaluate the available methods and tools and to define recommendations and on how exposure should be estimated to carry out informative health impact assessments in different scenarios.

WG3 – Methods and tools for health risk and health impact assessment

Goals of Working Group 3 for collaborative work concern the identification of needs and priorities on methods and strategies to assess environmental health risks and impacts. A specific objective is to review and evaluate available methodologies on health risk and impact assessments, accounting also for social inequalities. Therefore, the working group aims to identify appropriate tools to carry out comparative analyses on the health impact of ICS within and across countries.

WG4 – Risk management and communication

Working Group 4 aims to evaluate needs and priorities across countries on how to contribute to effective communication with the local population, media and other stakeholders, accounting for different scenarios.

Goals for collaborative networking activities concern the provisions of guidance on risk management and risk communication on environmental health risks in ICS, including the transfer of scientific findings into the policy making process.

Issues of environmental justice should be addressed with a focus on vulnerable subgroups such as children, women and disadvantaged communities.

Working groups' Action plan 2018-2019

Contributor	Activity	Timeline
WG1	Guidance document on how relevant data from ICS (environmental, health and social data) should be collected, validated and organized to carry out impact assessments and analysis of data availability and priorities in participating countries based on the information gathered through the AQ	February 2019
WG2	Reviews for exposure methods and human biomonitoring studies in ICS	February 2019
WG3	Document on ICS risk assessment identified methods	December 2018
WG4	Collection of best practice case studies of activities and policies in the field of industrially contaminates sites risk communication and youth-oriented cases	December 2018