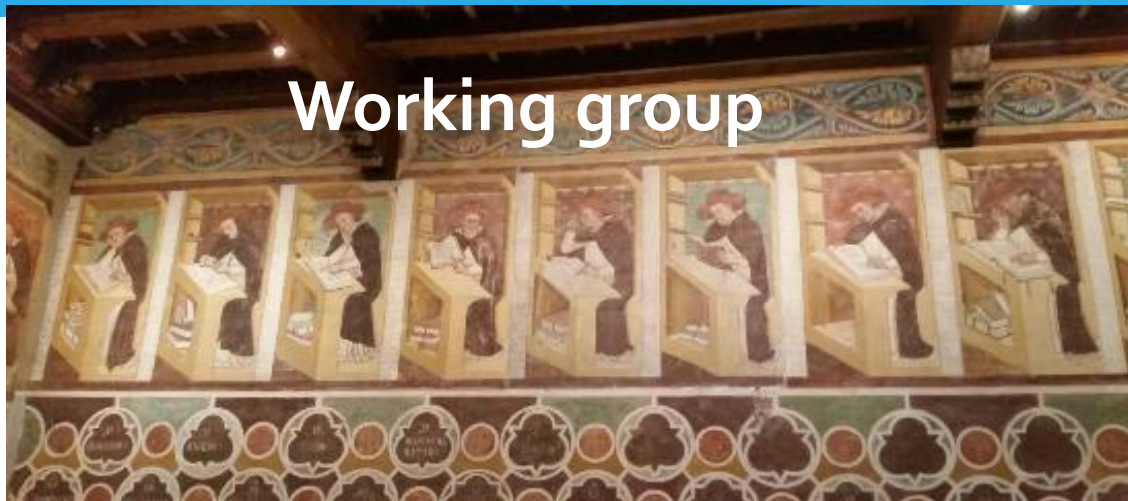


The LIFE PHOENIX Management Guidelines



Stefano Polesello
CNR-IRSA

Working group



- **Veneto Region:** Vanessa Groppi, Paola Favaretto, Gisella Pitter
- **Regional Agency for Environmental Prevention and Protection (ARPAV):** Roberto Lava, Massimo Mazzola
- **Water Research Institute (IRSA-CNR):** Stefano Polesello
- **University of Padua:** Marco Bonato, Laura Guidolin, Laura Tallandini



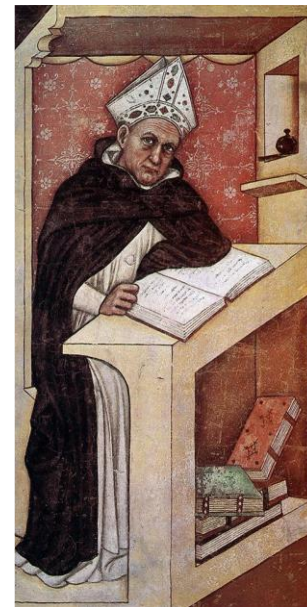
Goals of the LIFE PHOENIX Project

- Implementation of a model of governance of emergencies due to chemical contaminations of the water resources with potential effects on human health
- Focus on persistent and mobile organic compounds (PMOCs), in particular the family of short chain PFAS.

Pillars of the LIFE PHOENIX governance model

- **Structured inter-institutional governance** system based on a permanent Regional Commission for Environment & Health supported by inter-disciplinary expert groups.
- **Integrated information system** for Environment & Health, designed to facilitate and support the risk analysis process regarding environmental risks with a possible impact on human health.
- **Predictive mathematical models** fed with environmental monitoring data to forecast the spread of the pollutants' contamination plume in space and time.

Interinstitutional governance system



Policy makers



Permanent Regional
Commission for
Environment & Health



Scientific and technical
Committees and
Expert Groups

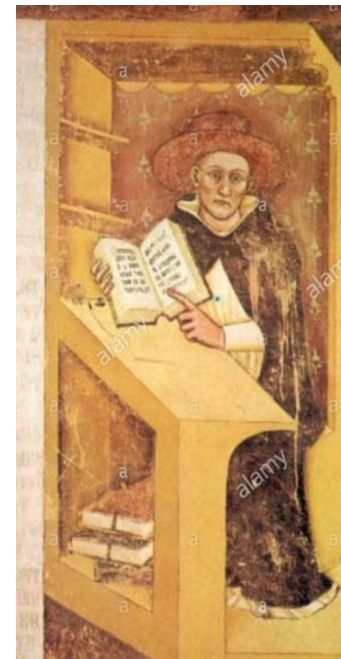
Chiefs of the regional offices responsible for:

- Health Prevention
- Land Protection and Development
- Environment
- Agriculture, Hunting and Fishing
- Legal affairs

- Coordinator of the Regional Commission for Environment & Health
- Representatives from the National Health Institute
- Representatives from the National Research Centre
- Representatives from the Regional Agency for Environmental Prevention and Protection
- Experts from University Departments on Chemical Risk Assessment, Geosciences, Environmental Sciences, Biology, Engineering, Economy

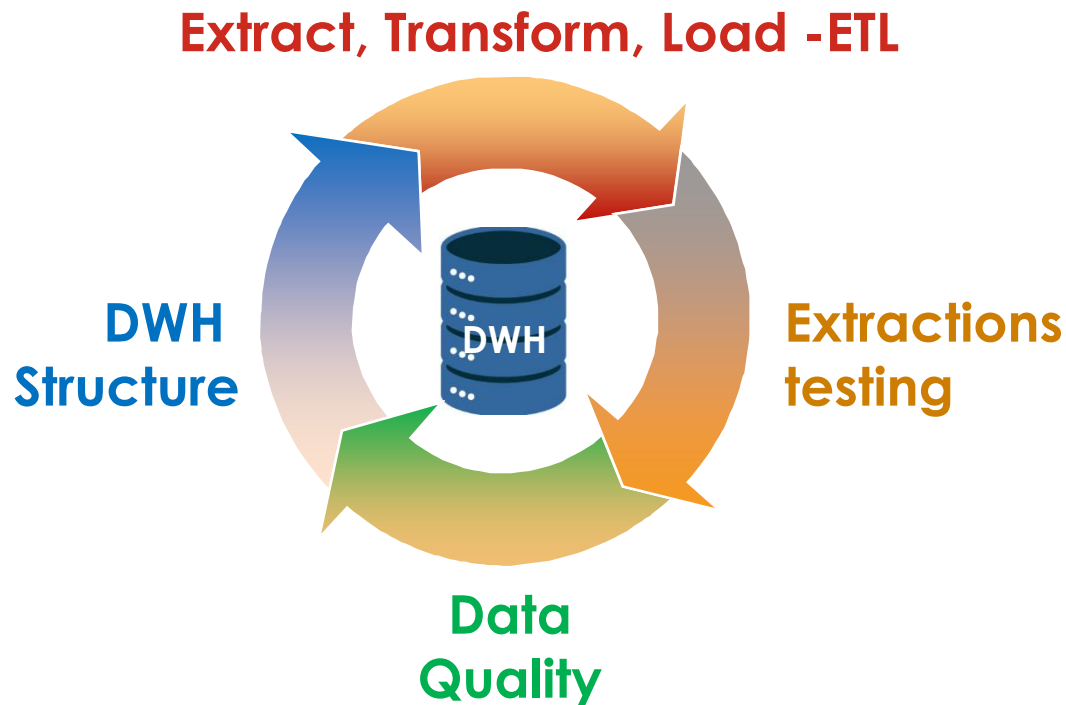
Criteria for governance system

- Identify **which governmental Institutions are responsible** for the prevention and management of different aspects of contamination and which technical agencies could give support to governmental Institutions in implementing the prevention and management plan; here are some examples:
 - Sanitary, Environmental, Agricultural Institutions and agencies
 - Industry and waste disposal Institutions and agencies
 - Statistical and demographic Institutions and agencies.
- Assure that **competencies and roles** of the aforementioned Institutions and agencies are clearly defined.
- Establish **rules and** procedures for assuring a regular and systematic **communication** among members of the PC and between MEPs and PC.



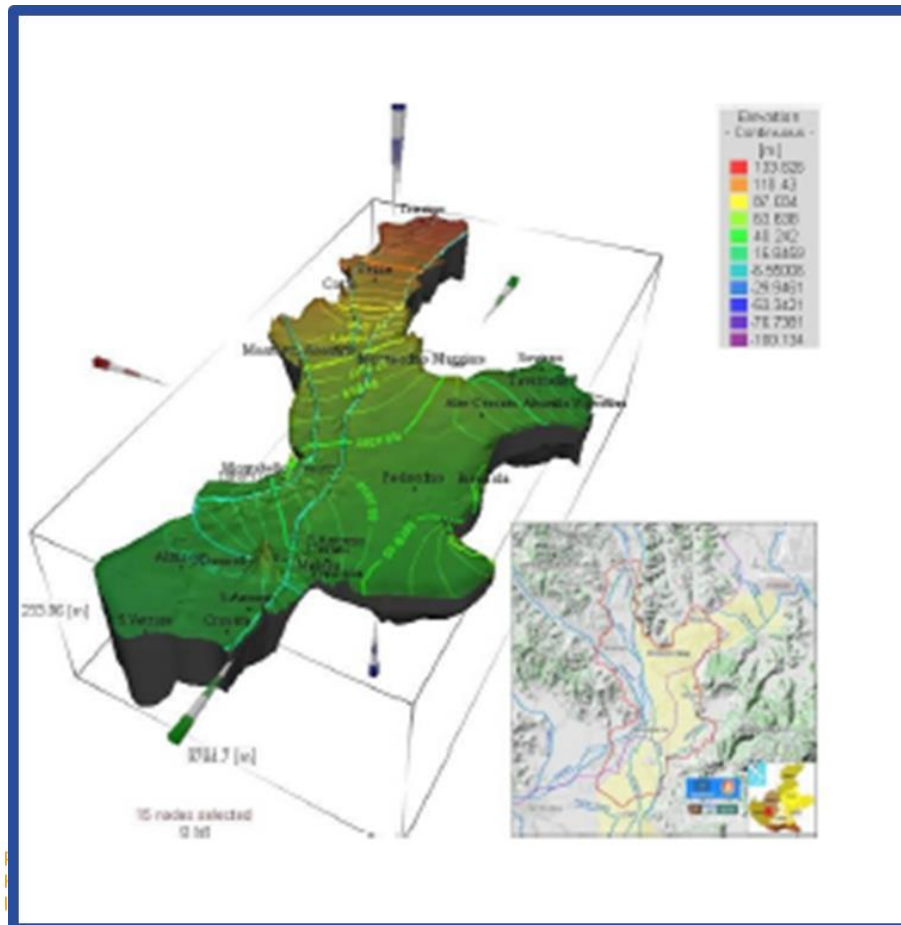
Integrated information system for Environment & Health

Centrality of a shared database for collecting and analysing available data in a integrated way in order to define sources, assess E&A risks and forecasting scenarios



Predictive mathematical models

Validated to understand 3D **flow and transport** in groundwater; understand and predict **qualitative and quantitative processes**, evaluate the **site specific** interaction between PMOC and the different environmental matrices



See webinar 2: March, 3rd, 2021

M. Mazzola, 3D modelling for assessing and forecasting PFAS distribution and evolution in a groundwater at a catchment scale

Tools for transferability of the model

- Self-analysis check-list
- Management Guidelines



All these documents will be available in the final form on the project website (www.lifephoenix.eu)

Self-analysis check-list

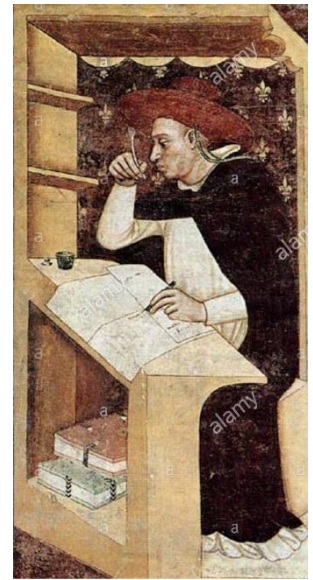


- This check-list addresses Institutions and Organizations that might be interested in transferring and adapting the model of the Life Phoenix project (or parts of it) in their context.
- It is designed as a tool to help Institutions in assessing their own capacity to implement the model and to identify any gap that needs to be filled in.
- The check-list summarizes, for each action of the project, which baseline conditions and which key steps are necessary to guarantee a successful implementation.

Management Guidelines

Draft version

- This preliminary version will be completed with the main action Deliverables produced within the LIFE PHOENIX Project and after technical meetings with other EU experts.
- The final document will be structured as a collection of the key Deliverables produced within the LIFE PHOENIX Project, following its original structure divided in different actions (i.e. operative, monitoring, dissemination).



Guidelines - Index

1. GOVERNANCE AND OPERATIONAL TOOLS

- 1.1. Goals of governance
- 1.2. Self-analysis checklist - requirements assessment
- 1.3. Technical committees
- 1.4. Information and statistical data system
- 1.5. Monitoring of chemical contamination
- 1.6. Socio-economic impact assessment

2. RISK MITIGATION TOOLS

- 2.1. Contamination of the drinking water resource
- 2.2. Contamination of the water resource for irrigation

3. FORECASTING TOOLS

- 3.1. Numerical forecast model of dispersion
- 3.2. Early warning methods

4. COMMUNICATION PLAN

5. EXAMPLES

- 5.1. How to act in the event of an emergency: example of data extraction and operations
- 5.2. Integration with Water Safety Plans



Example scenario: accident with release of PMOC into the environment from a known pressure source

In the event of accidental release of PMOC to the environment by a known source of pressure, the Environment and Health Commission, assisted by the Technical-Scientific Committee, may use the Information and Statistical System (Datawarehouse) as a tool to support the following risk analysis phases:

1. Hazards identification: query of the **database** on the toxicological and ecotoxicological properties of the released PMOCs
2. Starting from information on the environmental **mobility** of the contaminant, the location of the pressure **sources** and the structure of the surrounding territory, identify the potential **targets** affected by contamination will be identified (e.g. groundwater bodies, surface water bodies, agricultural land through irrigation network, drinking water collection points)
3. Subsequently, by feeding the **flow and transport model**, it will be possible to obtain a quantitative estimate of the time required for the propagation of the pollutant and of its concentrations in the various matrices

Example scenario: accident with release of PMOC into the environment

4. Identify of the potentially **exposed population** (e.g. residents in certain geographic areas, inhabitants served by potentially impacted aqueduct networks) and its composition by age group, quantifying the number of particularly vulnerable subgroups (children, the elderly)
5. Carry out human and ecological **risk assessment** and classify the **chemical and ecological status** of environmental receptors
6. Implement the **mitigation measures** both at emergency and long-term levels
7. Define a **monitoring system** for the diffusion of the contaminant: assess whether any existing monitoring networks are sufficient or need to be integrated with more sampling points or more frequent monitoring to track the spread of the contaminant and to evaluate the effectiveness of the containment and mitigation measures adopted.

Un approccio integrato per la gestione
efficace dei rischi di inquinamento delle acque
da contaminanti emergenti



Perfluorinated compounds
HOlistic ENvironmental
Interinstitutional eXperience

Thank you for your attention

Pictures from the Chapter Hall of St. Nicholas church,
Treviso, Veneto

ENTE COORDINATORE



REGIONE DEL VENETO

Progetto LIFE PHOENIX

lifephoenix.eu

PARTNER ASSOCIATI



REGIONE DEL VENETO
AZIENDA
Z E R O



UNIVERSITÀ
DEGLI STUDI
DI PADOVA



WITH THE CONTRIBUTION OF THE LIFE FINANCIAL
INSTRUMENT OF THE EUROPEAN UNION
LIFE16ENV/IT/000488 - LIFE PHOENIX

This publication reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.