

TRAINER TOOLKIT

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Lead partner	Eurecat
Main authors	Almudena Abengozar and Santi Fort
Contributors	OneHealthWatch partners

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1 Introduction

The OneHealthWatch (OHW) project is a pioneering initiative to improve wastewater surveillance capacity through a comprehensive and harmonized training program. This project responds to the need to standardize the detection of contaminants in wastewater in order to implement a surveillance system that provides valuable insights into population-level health dynamics at the national scale.

The training program has been developed to provide information on this evolving surveillance system and to support wastewater treatment plant operators and public health officials in this approach with the necessary skills and knowledge. To assist with continuous professional development, the OHW Consortium offers a range of courses to help professionals stay up to date in their respective fields and adapt to evolving challenges.

To ensure the effective distribution of these resources, a standardised framework is needed to unite the efforts of experts, coordinators and professionals involved in course development. To facilitate the seamless exchange of data and results between the wastewater and health sectors at both regional and national levels, OHW uses an interactive online platform (<https://onehealthwatch.eurecatacademy.org/>). This platform serves as a repository for key materials, including training resources and a database of best practices, to inform and support wastewater surveillance efforts.

By providing free access, the platform enhances the coherence and effectiveness of training activities, encourages information sharing and promotes the widespread adoption of best practices necessary for successful implementation and impact.

The OHW project's educational strategy creates a robust framework for wastewater surveillance, promoting public health and environmental safety through innovative and adaptable training methods.

2 Purpose and objectives of the present document

This document is a guide to assist trainers in using the OHW online training platform as a support for their virtual and face-to-face training sessions.

It begins by outlining the pedagogical approach of the project, which is based on innovative methods for hybrid and digital learning. Next, to help professionals develop their own training programmes, a section is dedicated to content creation, using OHW platform as an example. Finally, the document details how the platform can be integrated into both online and face-to-face courses. This includes its use as a supplementary teaching tool and a step-by-step guide to ensure its proper implementation.

Then, to ensure the proper implementation of the training programme, this document will include the following main contents:

- The OHW training methodologies
- Course creation guidelines
- Course implementation suggestions
- Platform instructions

3 The OHW training methodologies

3.1 Innovative methodologies for hybrid and digital Learning

To adapt training methods to the current OHW's project context, it's important to contextualize the recent methodologies applied to hybrid and digital educational ecosystems.

This section highlights two key approaches that integrate the latest technological advancements and learning strategies to enhance knowledge acquisition in digital environments. These approaches - Connectivism and Instructional Design - are proposed as the foundation for this project's training development.

Connectivism

Siemens, in the early 2000s, elaborated this updated theory, Connectivism, where the learner is not isolated in its own process but acquiring the knowledge in a connected reality, where the knowledge is distributed through networks and learners integrate this knowledge considering complexity¹.

Connective knowledge networks have four characteristics²:

1. Diversity. All possible points of view should be provided.
2. Autonomy. Individuals contribute to the interaction of their own free will and according to their own knowledge, values, and decisions.
3. Interactivity. The knowledge that is generated is the result of interactions between members and not a sum of their opinions.
4. Aperture. You have a mechanism in the network for a certain perspective to be introduced, to be heard, and to allow the rest to interact with it.

Instructional design

The roots of instructional design trace back to the World War II, where there was the urgent need to rapidly and effectively teach vast numbers of individuals highly specific tasks. In response, a method emerged: breaking down complex tasks into individual components, allowing soldiers to comprehend each step thoroughly. This wartime approach became the foundation for instructional design, a multifaceted discipline that blends education, psychology, and communications. Its primary goal is to craft optimal teaching plans tailored

¹ <https://pressbooks.pub/lidtfoundations/chapter/connectivism-a-learning-theory-for-the-digital-age/>

² <https://dialnet.unirioja.es/servlet/articulo?codigo=4169414>

to distinct groups of learners, ensuring that instructions are not only delivered but are also effective and meaningful.

Instructional design is more than the creation of teaching materials; it is a meticulous process that considers how individuals learn. The principles of instructional design dictate how educational tools should be designed, created, and delivered. It should recognize the diversity of learners and aims to provide tailored solutions to help individuals and organizations achieve their goals.

One facet of instructional design is to systematically collect, process, and analyse data to evaluate the effectiveness of the education provided. If any aspect of the training falls short of established standards, instructional designers take on the responsibility of refining the course, ensuring that learners comprehend the topics thoroughly. This iterative process contributes to the efficiency of organizations, enabling them to utilize their resources wisely. This methodology helps to create high-quality learning materials that account for the strengths and weaknesses of learners. These materials are not generic; instead, they are tailored to meet the specific needs of educators and learners alike.

3.2 Instructional design proposal for OHW

For the development of training materials, Eurecat uses within its methodology an evolved instructional design model adapted from the most recognized references of pedagogical practice. From the ADDIE model, it establishes a structure for the content development process itself. Its acronym Analysis, Design, Development, Implementation and Analysis, an extension of the PDCA (Plan-Do-Check-Act) improvement model, represents a sequence of actions that are carried out throughout the life cycle of the project to guarantee its quality and ensure its continuous improvement. The proposed model also takes as a reference the recommendations that Merrill³ summarized in his well-known instructional principles that we believe are especially suitable for this project:

- A course should be task-focused to incentivize students to solve real-world problems.
- A course must activate the student's prior knowledge; therefore, it helps to connect the previous knowledge with the new one.
- A course should convey knowledge through different media, textual, audiovisual, so that it takes advantage of different regions of the brain and, in this way, help students retain the content for longer.
- A course should insist on the application of the knowledge acquired in cases close to real life through exercises and assessments. These exercises should be accompanied by information and guidance on correcting errors.
- A course should offer to the extent of the possibilities of the distribution format, possibilities for the integration of knowledge into the student's world through discussion and reflection.

The resulting scheme for the instructional design that is applied is inspired by the one proposed by Robert Gagné⁴, which seeks to adapt to the needs and possibilities of each

³ <https://books.google.es/books?id=kPB-L4JcOoC&printsec=copyright&hl=es#v=onepage&q&f=false>

⁴ <https://onlinelibrary.wiley.com/doi/abs/10.1002/pfi.4140440211>

training project, adapting it for example to the initial level of the participants and in this case the possibilities of developing content and activities to be used autonomously by the participants through the online training platform.

In the context of the OHW project, the instructional design is structured across three levels: units, modules, and activities. Motivational elements for learners are consistently present at all levels, while self-evaluation components are included at the unit and module levels. This flexible design adapts to the specific needs of each subject within the syllabus, ensuring that the unique characteristics of each topic are effectively addressed. This approach guarantees that the training materials remain relevant and engaging, promoting a deep and lasting understanding of the concepts. Some of the main constructive elements for a course can be found in the following table.

Constructive elements of the course	
Element	Purpose
Encouragement to the student	Engage students with stimuli to help them focus on the content (innovative ideas or questions for reflection, etc.)
Explain Goals	Provide an explanation to students about the objectives, the expected set of outcomes, and the criteria for measuring achievement.
Self-diagnosis	Determine prior learning knowledge by measuring and referencing the student's prior knowledge before introducing and building on new knowledge.
Knowledge transfer	Present the content in comprehensible and easily "assimilated" fragments: easy to read, easy to understand, and that keep the student motivated. These can be non-interactive or interactive, where the student is asked to interact with the content to improve the efficiency of the transfer.
Exemplification and Expansion	Provide complements and alternatives to the student with examples, case studies, and other supports to complement the content.
Self-assessment and practices	To help the student check their own understanding of the content and to ensure that they have acquired the skill or knowledge that was intended. Allow students to practice their learning in exercises or simulated practices.
Feedback (after practice and assessment)	Provide feedback to the student to strengthen knowledge with responses to the results of assessments or practices, whether informative or corrective.
Evaluation	The purpose is to evaluate the performance of the training action, checking the new knowledge according to established criteria.
Summary and generalization by improving retention	Provide a final synthesis to improve knowledge retention and transfer using a summary or outline as a synthesis and recapitulation.

When selecting formats for course elements, it is important to consider both their suitability for specific tasks, such as the use of questionnaires for assessments, and their effectiveness in presenting introductions, transitions and summaries. The selected format should also support the long-term sustainability of the course while ensuring that academic coordination remains easy to manage.

All these pedagogical concepts have been considered to develop the courses.

4 Course creation guidelines

In the context of the OHW project, the guidelines for course creation are designed to ensure as complete and effective an educational experience as possible. These guidelines are divided into three main sections. The information needed to develop a course and understand how it is structured is described in the following tables and includes:

- Overall description of the suggested sections**
 A summary of the proposed sections, outlining their description, and how they contribute to the overall structure and objectives of the course.
- About the content format types**
 This section outlines the various types of content to be included in the courses, along with their specific characteristics and requirements.
- Examples to be considered from RISE format**
 The goal is to be able to consult how each element of the RISE format can be effectively integrated into the course to improve the overall educational experience. A link has been provided to the teachers to be able to prepare the training content.

4.1 Overall description of the suggested sections

SECTION	ITEMS	DESCRIPTION (Grey areas are only recommended Items)
A. Introduction to the general course		
Presentation	Course title	Seen by students.
	Course introduction	General short presentation of the course (100-150 words approx..).
	Initial reflection questions	Initial reflection questions to encourage the student (1 or 2 questions).
	Teacher presentation	Mini-CV (around 80-100 words). Add link to personal profile if you want.
	Objectives of the course	Around 5 general objectives for the course.
	Table of contents	Include sections and subsections (if any). (Name the following sections and/or subsections same as in the Table of contents).
General info	Level required /Recommendation	Indicate the required knowledge or level previously needed. If there is any course or section linked, please mention them here.
	Keywords	<i>Around 5 concepts useful to add to the search engine (and facilitate dissemination) (e.g., Guidelines, MOOC, preparation).</i>
B. Section #n	For every section of the course (Every section should last between 5 and 15 minutes.)	
Presentation #n	Title of the section #n	Write the same name as in the Contents table.



	Introduction to the section #n	Short presentation of the section (50-100 words approx.).
	Specific objectives of the section #n	Write around 5 specific objectives for the section.
Content #n	Theoretical and practical content for knowledge transfer on section #n	It must be divided into understandable and assimilable fragments. Include passive knowledge transfer and interactive activities. Remember that the course will be autonomous. Text or video
Closure of the section #n	Final questionnaire of the section #n	Around 10 questions related to this section. Self-assessment format We recommend writing it as a single or multiple-choice test with the correct answer/s (indicate the correct answer/s)
	Conclusions of the section #n	Write around 100 – 200 words
	Complementary content for the section #n	Add extra content to provide further information, e.g.: - Link to uses cases - Best practices - Other resources to explore, new sources, list of acronyms...
	Introduction to the next section #n	Motivational information towards the next section
C. Closure of the course		
Final section	Conclusions of the course	Provide some information to wrap up the course learnings
	Complementary content for the course	Add extra content to provide further information, e.g. Glossary Link to uses cases Best practices Other resources to explore, new sources, list of acronyms...
	References	Include the bibliography and other reference sources used to develop the course content.
*Grey areas are suggested but not mandatory		

4.2 About the content format types

Characteristics of the content to be included in the courses	
Textual content	Text material
Images	Include it in the word document and please attach the original quality (high resolution)
Questionnaires	<ul style="list-style-type: none"> - Single or Multiple-choice test with one or several valid answers (indicate the correct one/s) - Matching (link with arrows a concept with one valid answer) - Concept grouping (provide concepts that can be ordered in columns)
Infographics	Prepare with PowerPoint and attach the original file to facilitate translation
Videos (publicly available)	Include link (preferably YouTube or Vimeo video)
Video (ad hoc)	A new ad hoc video can be created. Length: minimum 30 seg. Maximum 5-7 minutes Format mp4 (preferred compressors: h264, h265)
Animations (ad hoc)	Export as video. Same format and quality
Links to websites	Ensure the sustainability of the link. Include metadata: date of creation, author.
Downloading documents	PDF recommended to protect documents
Others	Confirm with the course coordination to include any other typology not listed in here

4.3 Examples to be considered from RISE format

Articulate Rise (<https://rise.articulate.com/>) has been used in this project considering several advantages of this eLearning software that help with the objectives of the OHW project.

As an eLearning authoring tool, Rise enables the creation of responsive courses that are accessible on any device, ensuring that training materials are available to all users regardless of their preferred platform. Its intuitive drag-and-drop interface simplifies the course creation process, allowing even non-technical users to quickly develop engaging and interactive content.

This ease of use is beneficial to the OHW project, as it allows for the rapid development and deployment of training materials tailored to the specific needs of wastewater treatment plant operators and public health officials. In addition, RISE's design and its various content format options, including text, media and interactive blocks, enhance the learning experience by adapting to different learning styles. By integrating the RISE format into the OHW project, we provide with training materials that are effective, engaging and adaptable to the evolving challenges of wastewater monitoring.

To understand better the format, find below some examples used for the creators to be able to share their contents with the technical team for the courses to be published.



Exemple activitats interactives (ENG)

0% COMPLETED

INTERACTIVE WIDGETS

Interactive activities


Accordion

Embracing Discovery	+
Gaining Insight	+
Making It Real	+

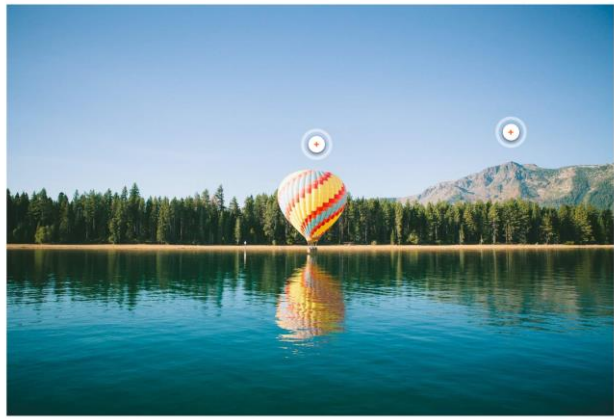
Text-image tabs

EMBRACING DISCOVERY GAINING INSIGHT MAKING IT REAL

Every creative endeavor requires that you take risks. If you try and don't succeed, you've still learned something. It took Thomas Edison more than 10,000 tries to invent a viable lightbulb. You're not failing. You're discovering what doesn't work.



Labeled graphic (hot spots on image)



Process cards

Introduction

Lorem ipsum dolor sit amet, consectetur adipiscing elit. In purus velit, tincidunt ac nibh quis, sollicitudin varius libero. Nullam at mi felis. Donec a scelerisque augue, sit amet porttitor nibh. Suspendisse at lorem ut elit placerat blandit.

START >

Flashcards grid (flip cards)

Front of card 1 Front of card 2 Front of card 3

Sorting activity

Item 2

Category 1 Category 2

Timeline

Date 1

Event 1 Title

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

Date 2

Event 2 Title

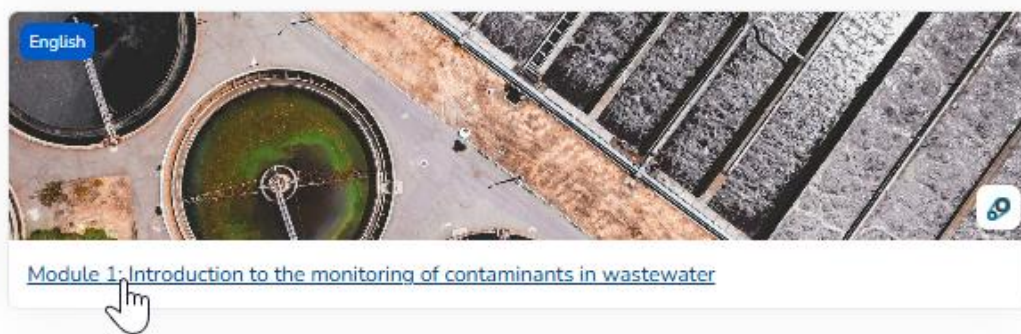
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.

5 Course implementation

The sessions on the online platform are designed for autonomous completion, providing flexibility for learners. However, these materials can also serve as valuable resources to complement advanced training programs. Below are some suggestions for integrating the courses into a broader training context.

Steps to support teachers in implementing a course session:

- 1. Preparation:** Access to the Course Catalogue and select the course you are going to perform:



Once inside the course, review the provided materials to understand the content and objectives. Then, plan the session by outlining its structure, including key points, activities, and timing.

Make sure that all content (e.g. videos) is available and that you have Internet access to all of it from the classroom location.

*Let's start with this video, which explains what wastewater is and why this complex matrix is so valuable as a public health observatory.
For the best experience, we recommend watching the video in fullscreen mode.*



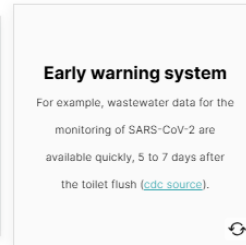
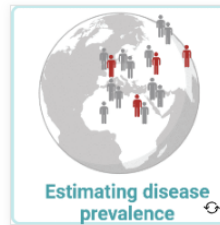
- ≡ Navigation assistance
- ≡ Disclaimer and further reading
- ≡ Introduction
- ≡ The surveillance of drug metabolites
- ≡ The surveillance of infectious diseases
- ≡ The surveillance of therapeutics
- ≡ The surveillance of chemical exposure
- ≡ The surveillance of antimicrobial resistance
- ≡ Advantages and disadvantages of wastewater surveillance
- ≡ Future perspectives

- 2. Delivery:** Use a combination of teaching methods (e.g. lectures, discussions, group work) to address different learning styles. Incorporate the materials provided into the classroom in a way that is appropriate to your objectives.

Take advantage of the platform's interactive materials to make the session more dynamic and encourage participation (e.g. with flipcards).

The usefulness of monitoring infectious diseases in wastewater

Click on the card to flip it over and read the text explanation on the back.



Created with BioRender.com

- 3. Assessment:** Use provided assessments (e.g. module quiz) to measure learners' understanding.

Module 1: Introduction to the monitoring of contaminants in wastewater

Training



Introduction to the monitoring of contaminants in wastewater

To do: Complete the activity



Module quiz

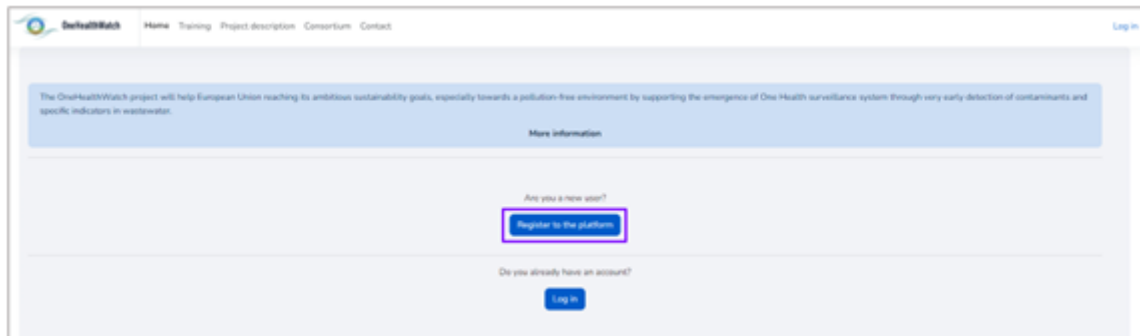


Not available unless: The activity Introduction to the monitoring of contaminants in wastewater is marked complete

6 Training platform instructions

1. If you already have an account on the platform, click on Login to access and go directly to step 9 to continue with the instructions.

If you don't have an account, you need to register on the platform. Visit <https://onehealthwatch.eurecatacademy.org/> and click on Register to the platform.



2. Fill in the form details and click on Create my new account.

New account

Username ⓘ

The password must have at least 8 characters, at least 1 digit(s), at least 1 lower case letter(s), at least 1 upper case letter(s), at least 1 special character(s) such as *, -, or #

Password ⓘ

Email address ⓘ

Email (again) ⓘ

First name ⓘ

Last name ⓘ

City/town

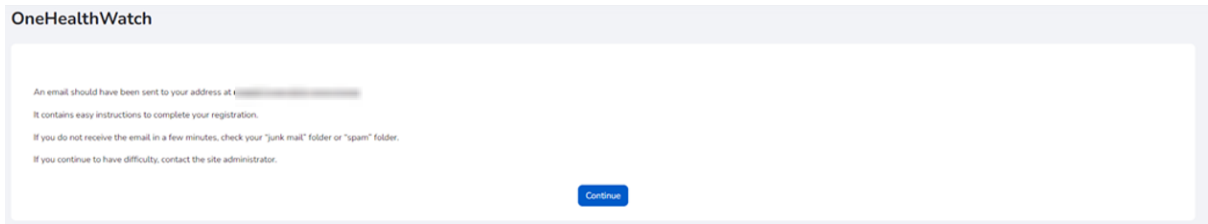
Country

Select a country ⌵

ⓘ Required



- As indicated by the platform, you will receive an email to confirm your account.



- IMPORTANT:** If you do not find the email in your inbox, please check your “SPAM” or “junk mail” folder.

- Once you have found the email, copy and paste the link into the browser to confirm your account.

AU Admin User (via OneHealthWatch) <noreply@onehealthwatch.eurecatacademy.org>

Hi,

A new account has been requested at 'OneHealthWatch' using your email address.

To confirm your new account, please go to this web address:

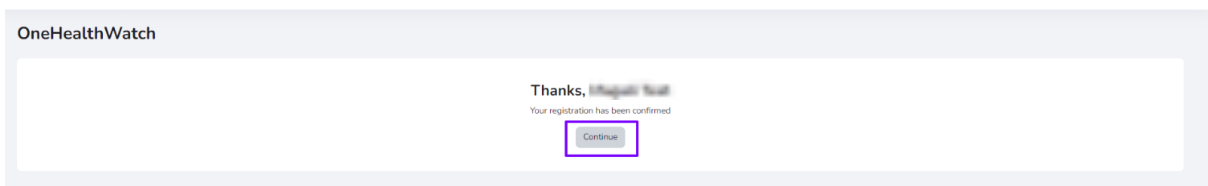
<https://onehealthwatch.eurecatacademy.org/login/confirm.php?data=5QC3CCurmMFZ7VR/r>

In most mail programs, this should appear as a blue link which you can just click on. If that doesn't work, then cut and paste the address into the address line at the top of your web browser window.

If you need help, please contact the site administrator,

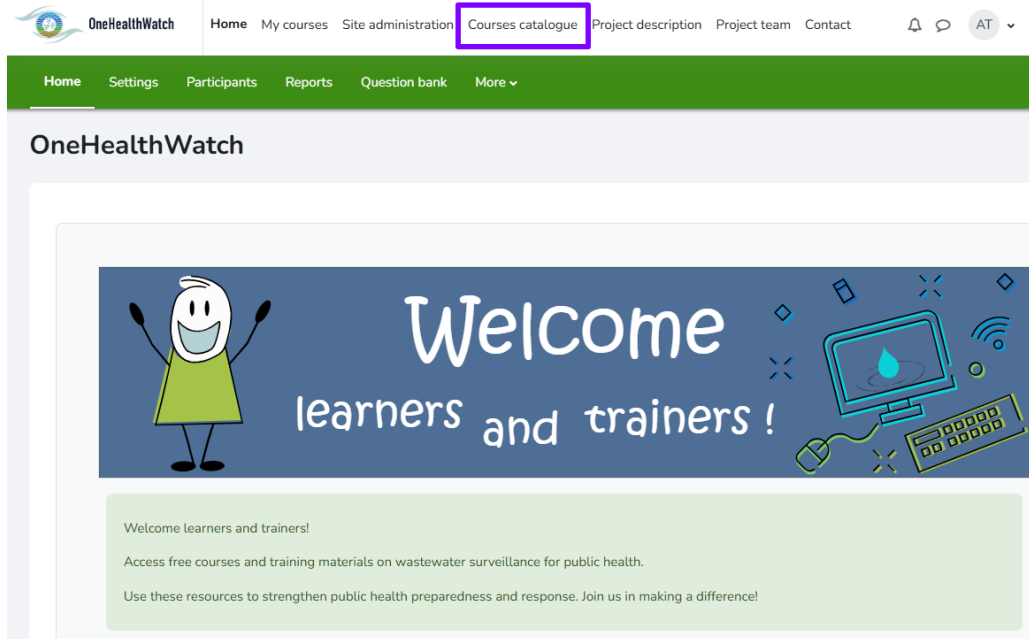
Admin User
[Contact site support](#)

- This link will redirect you to the platform. Now your account should be confirmed.

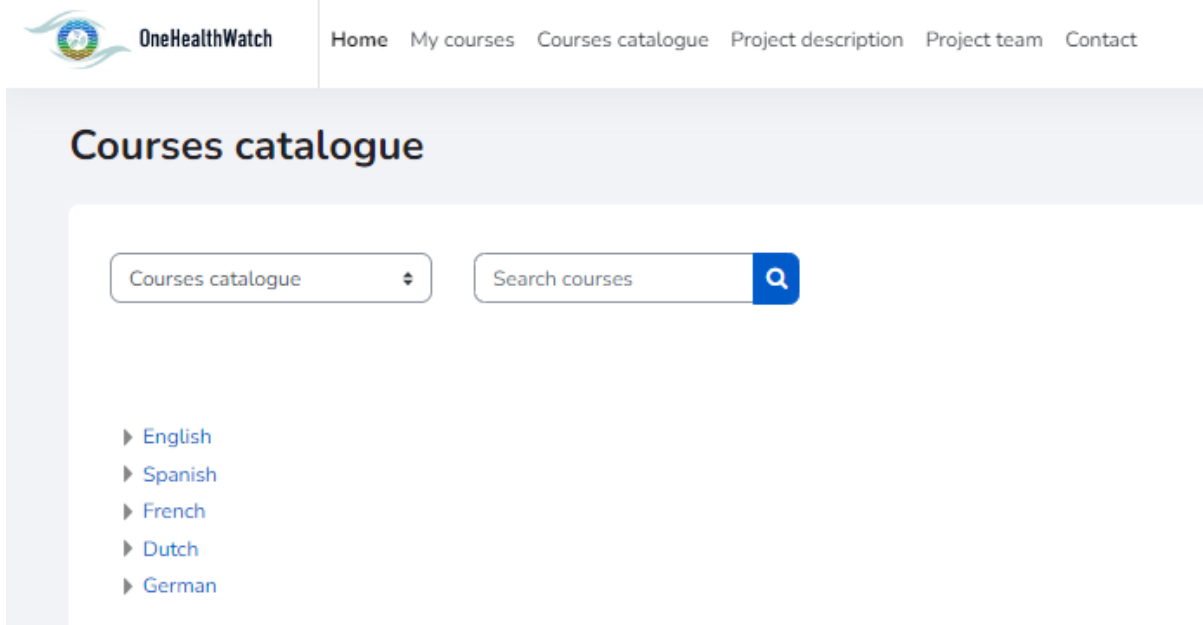


- Finally, click on the continue button and you will already be registered in the platform.

9. To access the training, click on Courses catalogue on the navigation bar.

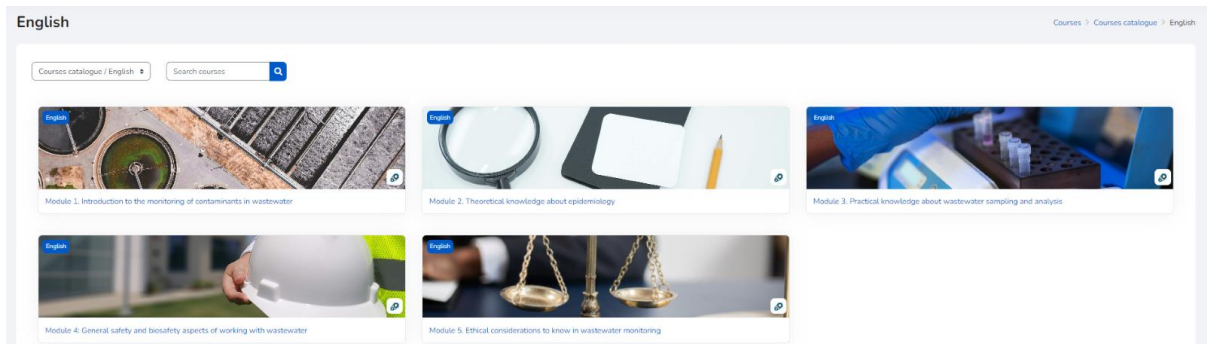


11. The courses are available in 5 different languages. Please click on your preferred language to continue the course in that language.



12. Five modules are available on our platform. Each training module is designed independently, allowing you to choose which one to attend.

Simply click on the module you wish to access.





13. Each module contains the following:

- Course content (1)
- Quiz for fundamental content (2)
- Quiz for advanced content (available only in modules with advanced material) (3)
- A survey to provide valuable feedback related to the module (4)


Module 2. Theoretical knowledge about epidemiology

▼ Training

 Theoretical knowledge about epidemiology 1


 Module quiz for general public 2

🔒 Not available unless: The activity [Theoretical knowledge about epidemiology](#) is marked complete





 Module quiz for specialists 3

🔒 Not available unless: The activity [Theoretical knowledge about epidemiology](#) is marked complete

Help us to improve!
Please answer the following questions about the training you have attended.

 Module satisfaction survey 4

The logos below help you to easily identify the different types of content available for each course on the platform.

	Course content
	Quiz
	Survey
	Certificate

14. Once you have clicked on the course content, a new window will open in your browser. You can now click "Start course" to begin your training.



☰ Navigation assistance	○
☰ Disclaimer and further reading	○
☰ Introduction	○
☰ The surveillance of drug metabolites	○
☰ The surveillance of infectious diseases	○
☰ The surveillance of therapeutics	○
☰ The surveillance of chemical exposure	○

15. To access the quiz, you must first complete the relevant course content.

The screenshot shows two course items. The first item, 'Introduction to the monitoring of contaminants in wastewater', has a blue folder icon and a green arrow pointing to a green-bordered box containing a green checkmark and the text 'Done: Complete the activity'. The second item, 'Module quiz', has a pink checkmark icon and a grey button labeled 'To do: Receive a grade'.

16. You can now download your certificate by clicking on the corresponding logo.

The screenshot shows the course page for 'Module 1. Introduction to the monitoring of contaminants in wastewater'. Under the 'Training' section, there are three items: 'Introduction to the monitoring of contaminants in wastewater' (blue folder icon), 'Module quiz' (pink checkmark icon), and 'Module satisfaction survey' (blue globe icon). A blue banner below the items says 'Help us to improve! Please answer the following questions about the training you have attended.' Below this is a green banner that says 'Congratulations! You have reached the required score in the test. Now you can download your achievement certificate.' At the bottom, there is a 'Certificate of achievement' item with a lightbulb icon, highlighted by a green-bordered box and a green arrow pointing to it from the right.