

# Water Health Open KnowlEdge Co-creation program meeting

10 May 2021 3:30 PM to 5:30 PM  
*Online event*

EU GREEN WEEK 2021 PARTNER EVENT

Gianluca Carletti - ARIA  
Marco Picone - ISPRA

**ZERO** #EUGreenWeek  
**POLLUTION**  
for healthier people and planet



# Scenarios

1. Water for human consumption & Infectious diseases
2. Bathing waters
3. Bioaccumulation
4. *Ostreopsis ovata*
5. Extreme events

# What are Water intended for human consumption



**Directive 98/83/EC, Directive 2020/2184**

Regulatory framework



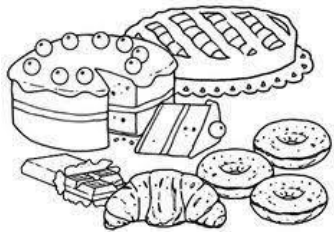
Legislative Decrees 2 February 2001, n. 31 and 2 February 2002, n. 27, and further amendments



Circular 03/16/2004 n.15 D.G. Health (15 / SAN / 2004): guidelines for application of LD 31/2001 and LD 27/2002 and further amendments



All **water** either in its original state or after treatment, **intended for drinking, cooking, food preparation or other domestic purposes**, regardless of its origin and whether it is supplied from a distribution network, from a tanker, or in bottles or containers;



All **water** used in any food-production **undertaking for the manufacture, processing, preservation or marketing of products or substances intended for human consumption** unless the competent national authorities are satisfied that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form.

# Monitoring Water intended for human consumption



## **Annex I: PARAMETERS AND PARAMETRIC VALUES**

- part A: Microbiological parameters
- part B: Chemical parameters
- part C: Indicator parameters
- Radioactivity



## **Annex II: MONITORING**

- table A: Parameters to be analysed
- table B1 and B2: Minimum frequency of sampling and analyses

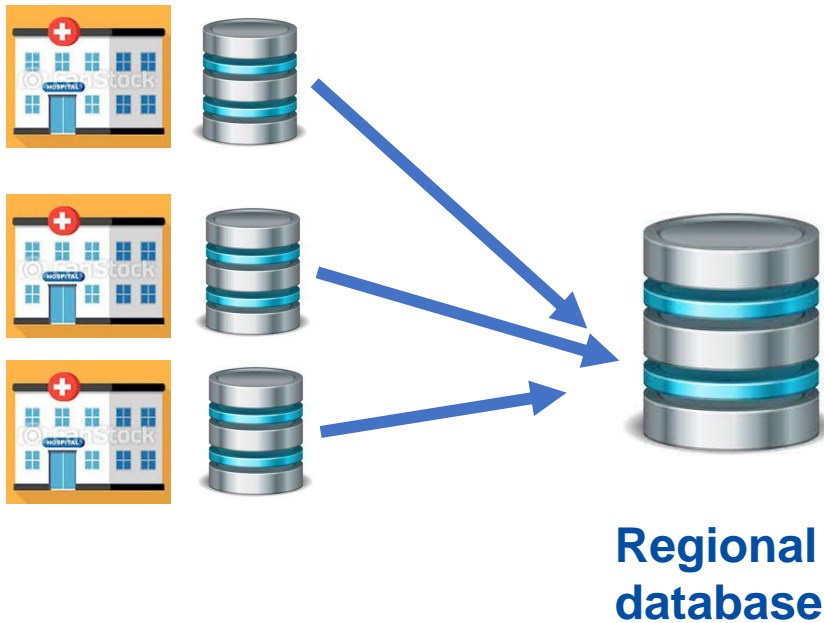
## **Annex III: SPECIFICATIONS FOR THE ANALYSIS OF PARAMETERS**

- Parameters for which methods of analysis are specified
- Parameters for which performance characteristics are specified
- Parameters for which no method of analysis is specified

# Water intended for human consumption Data



Monitoring is up to ATS (Local healthcare authorities).



## SAMPLING REPORTs

- Sampling point
- Type of sampling point (es. drinking water, aqueducts, wells),
- Sampling point address and coordinates
- Sample date
- Parameter (code and description),
- Unit of measure,
- Value,
- Acceptability threshold

**CLOSED  
DATA**

# Infectious diseases

## Draft of Regulatory framework

Regulatory framework **NOT COMPLETE**



[..]

Ministry of Health Decree 15/12/90 and Decree 29/7/98



[..]

Regional resolution 26/02/2015 n. X/3190 «Interventions of surveillance, prevention, prophylaxis and control of infectious diseases in view of Expo 2015»  
Regional resolution 17/12/2018 n. XI/1046 Annex H «Methods of reporting and notification of infectious diseases and investigations for epidemiological purposes»

### LIST OF INFECTIOUS DISEASES to be reported

### REPORTING PROCESS

**WHO** has to report, **HOW**,

**WHEN**

.....  
Legionellosis  
Hepatitis  
Food poisoning  
.....



# Infectious diseases Data



Regional  
database



## INFECTION FILE

Patient

....

Temporal scope

Territorial location

Pathology.

.....

Etiological agent

....

**CLOSED  
DATA**

## INFECTIONS REPORT

Number of reported cases

Pathology and cluster of pathology

Year of first symptoms

Gender and age cluster

**OPEN DATA**



Regione  
Lombardia

Open Data

[Infectious diseases Lombardy Region  
rates by sex and age \(updated to 2019\)](#)

# Linking Water intended for human consumption data & Infectious diseases reports

## Questions and Next steps

### QUESTIONS

- Can water intended for human consumption data be opened ?
- Can infectious diseases report be updated and extended?
- In case, how can we link them ?

### NEXT STEPS

1. **Use case** design
2. A **feasibility study** in terms of compliance with **law and privacy protection**



# Linking Water intended for human consumption data & Infectious diseases reports

## Opportunities



Drinking  
water quality  
awareness



advertise products made with  
“good” water,  
sale of purification products,..



data driven policy  
inspiration and monitoring  
comparison among  
territories

Research and data journalism



## WHAT ELSE ?

# Question time

**IYO, is this a valuable scenario ?**

- 1- Extreme**
- 2- Very high**
- 3- High**
- 4- Moderate**
- 5- Low**

**Do you see any other opportunity ?**

- 1- Yes**
- 2- No**

# Monitoring Bathing water



Directive 2006/7/CE

Regulatory framework



Legislative Decrees 30/05/2008, n. 116

Health Ministry decree 30/03/2010 and decree 19/04/2018



## Internal water monitoring

### BACTERIOLOGICAL PARAMETER under monitoring

*Escherichia coli*  
*Enterococchi*  
*intestinali*

### WHO

ATS (local  
healthcare  
authorities)



### WHERE

> 250  
sampling  
points



### WHEN

At least once every  
month on bathing  
season



# Bathing water Data



**Internal water**  
Monitoring is up to **ATS**  
(Local healthcare authorities)



**Regional  
database**



**Marine and  
internal water**



**National database**

## **SAMPLING REPORTs**

- Sampling point coordinates
- Sample date
- Parameter (code/description),
- Unit of measure,
- Value,
- Acceptability threshold

**CLOSED  
DATA**

*(Same as Water intended for  
Human consumption)*



**Open license CC-BY 3.0**

# Bathing waters

## Use case design

Is it worth to link internal and marine water data ?



Castel volturmo 7/5/2020

Wastewater treatment plant data ?



Land use and Nitrate data ?



# Linking Bathing Water data Opportunities



Water  
quality  
awareness



Advertise best  
bathhouses



data driven policy  
inspiration and monitoring  
comparison among  
territories

Research and data journalism



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# Why Monitoring Water quality?



**Directive 2000/60/CE  
(Water Framework Directive, WFD)**

Regulatory framework



**Legislative Decree 152/2006 “Norms Concerning the Environment” - “Single Environmental Text”**

*“Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such”*

Objective:

- protect all high status waters,
- prevent further deterioration of all waters
- restore degraded surface and ground waters to good status.



Monti Picentini Regional Park - Italy



# Why Monitoring Water quality?



**Directive 2000/60/CE  
(Water Framework Directive, WFD)**

Regulatory framework



**Legislative Decree 152/2006 “Norms Concerning the Environment” - “Single Environmental Text”**

Introduces status classes (high, good, moderate, poor, bad) to be defined for each water body

*Environmental targets:*

- Good Ecological Status (GES) or Good Ecological Potential (GEP)
- Good Chemical Status (GCS)

Great St Bernard Lake – Italy/Suisse



# Why Monitoring Water quality?



**Directive 2008/56/CE  
(Marine Strategy Framework Directive, MSFD)**

Regulatory framework



Legislative Decree 190/2010

“The marine environment is a precious heritage that must be protected, preserved and, where practicable, restored with the ultimate aim of maintaining biodiversity and providing diverse and dynamic oceans and seas which are clean, healthy and productive”



**Margarita Island - Venezuela**

Each Member State must implement a marine strategy for its marine waters, in cooperation with other Member States sharing the same marine region, reviewed every 6 years

# Why Monitoring Water quality?



**Directive 2008/56/CE  
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Regulatory framework



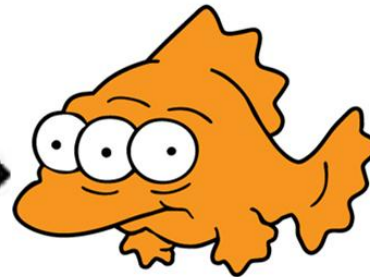
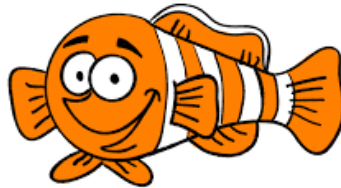
Legislative Decree 190/2010

The Directive defines eleven qualitative descriptors which describe what the environment will look like when the Good Environmental Status has been achieved.

1. Biological diversity 	2. Non-indigenous species 	3. Population of commercial fish/shellfish 	4. Elements of marine food webs 
5. Eutrophication 	6. Sea floor integrity 	7. Alteration of hydrographical conditions 	8. Concentrations of contaminants 
Good Environmental Status	9. Contaminants in fish/seafood for human consumption 	10. Marine litter 	11. Introduction of energy including underwater noise 

# A sample case - Bioaccumulation

Process that occurs when a chemical substance is accumulated in the tissues of an organism through any possible pathways of absorption.



Main effects on human

- Bioaccumulation in humans,
- Poisoning;
- Impossibility to use the fishery resource for human consumption.

# Bioaccumulation

## Useful and open datasets:

MSFD, WFD (and complementary directives) information systems;

- <http://www.db-strategiamarina.isprambiente.it/>
- <https://water.europa.eu/marine>
- <https://www.eionet.europa.eu>
- <https://echa.europa.eu/it/information-on-chemicals/registered-substances>

Pesticides in waters;

- <http://www.pesticidi.isprambiente.it/>

Urban waste water treatment plants (UWWTPs from EEA)

## Probably useful datasets (if freely available):

- Concentration of substances (drugs, antibiotics, pesticides) for human consumption, farms, agriculture, aquaculture in waters;
- Number of accesses to medical care for poisoning or diseases related to the bioaccumulation

# Bioaccumulation - Next steps

- Publication of available data for water monitoring

Main Issues:

- Data sources;
- Data formats;
- Data updates.

- looking for “open” health data with a good spatial and temporal resolution

Main Issues:

- Where are these data?
- Are these data real open?
- Are these data useful?



Zinzulusa Cave - Italy

# Bioaccumulation - Opportunities



Clear information for citizens



identification of areas for aquaculture or fishery regions



data driven policy inspiration

Research and data journalism



## WHAT ELSE ?

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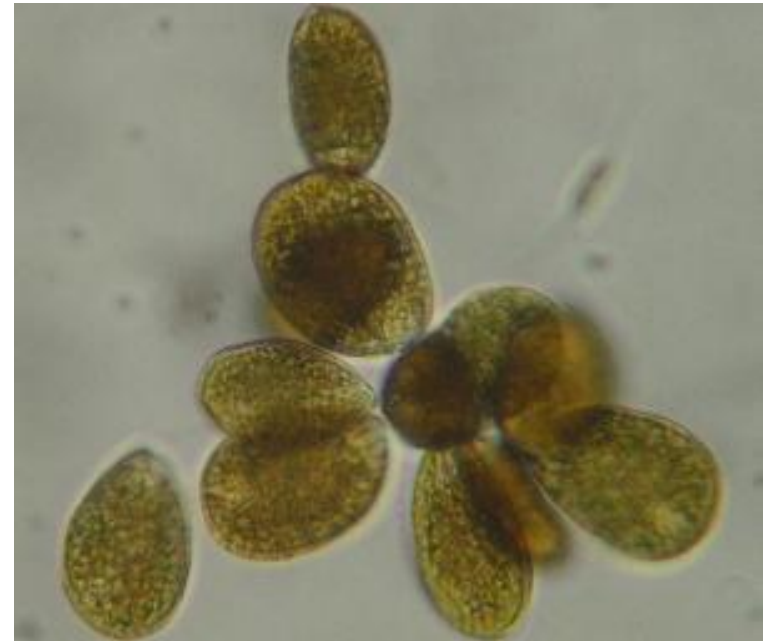
- 1- Yes
- 2- No



# Ostreopsis ovata

Ostreopsis ovata is a microalgae belonging to the dinoflagellate group, hailing from tropical and subtropical regions and found in recent years also in temperate zones and in many Mediterranean countries. In optimal environmental conditions and with high value of sea temperature, the number of cells can rapidly increase until reaching giving origin to blooms.

Gruppo di cellule di *Ostreopsis ovata* (ArpaFVG)



# Ostreopsis ovata - Impacts on living organisms

## Humans:

- intoxication with symptoms (cough, irritation of the upper airways, muscle or joint pain, conjunctivitis, rhinorrhea, fever) due to the production of ovatoxins. Generally recovers spontaneously in the following 24-72 hours.
- lethal case following the ingestion of contaminated fish associated with the production of palytoxin in tropical regions.

## Marine organisms:

- harmful effects (suffering or mortality) in mussels, urchins, starfish and macroalgae.

First cases in Italy: in 2005 when 225 cases of a febrile-respiratory syndrome were recorded in bathers and tourists in Ligurian coasts.

*Estate balneare. Tra alga e topicidi manca trasparenza*

Publicato il 2005-09-30 di Redazione

L'Ostreopsis ovata torna di nuovo sui giornali. Unica imputata, l'alga detta "killer" che avrebbe intossicato centinaia di bagnanti e rovinato la stagione balneare, oggi torna ma in veste derubricata. Ora sarebbe solo un'ipotesi, insieme a un'altra reclamata a "furor di popolo": il versamento in mare di un potente topicida.

[www.olinews.it](http://www.olinews.it)

# Ostreopsis ovata – Monitoring program

In Italy a microalgae surveillance is active since 2007 (Toxic Algae Program Directive of the Minister of the Environment no. GAB / 2006/6741 / B01). The monitoring activities are carried out by the Regional Agencies (ARPA) along the coasts of the 15 coastal regions, generally from June to September / October.

<https://www.lagazzettadelmezzogiorno.it/>

— INQUINAMENTO —

## Bisceglie, irrompe l'alga tossica in zona Ripalta e scatta il divieto di balneazione

*L'ordinanza è stata firmata dal sindaco Angarano, dopo le analisi dell'Arpa*

di REDAZIONE BARLETTA

31 Luglio 2020



**ISPRa**  
Istituto Superiore per lo Studio e la Ricerca Ambientale

**ISPRA**  
Istituto Nazionale per lo Studio e la Protezione dell'Ambiente

**Monitoraggio della microalga potenzialmente tossica  
*Ostreopsis cf. ovata* lungo le coste italiane  
Anno 2019**

Linea di attività ISPRA/ARPA: Fioriture algali di *Ostreopsis cf. ovata* lungo le coste italiane

**336/2020**

**RAPPORTI**

# Ostreopsis ovata - Data

## Useful and open datasets:

- Environmental data yearbook (ISPRA - <https://www.isprambiente.gov.it/>)
- Eionet, Marine Strategy informative systems (<https://www.eionet.europa.eu>; <https://water.europa.eu/marine>; <https://www.isprambiente.gov.it>)
- Physical marine parameters form National and Regional Environmental Agencies and International Programs (<https://www.isprambiente.gov.it>, <https://marine.copernicus.eu>)

## Other useful datasets (if freely available):

- Ramoge Dataset (Italy, France, Monaco, Spain - <http://www.ramoge.org/>)
- Number of accesses to medical care for intoxication or symptoms related to Ostreopsis

# Ostreopsis ovata - Next steps

- **Publication of available data for water monitoring**  
Main Issues:
  - Data sources;
  - Data formats;
  - Data updates.
- **looking for “open” health data with a good spatial and temporal resolution**  
Main Issues:
  - Where are these data?
  - Are these data real open?
  - Are these data useful?

Apulian Coast - Italy



# Ostreopsis ovata - Opportunities



Clear information for citizens



Support for tourism and leisure activities



data driven policy inspiration

Research and data journalism



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# Extreme Events

Extreme events and water:

Snow storms

Avalanches

Floods

Shortage

Sea storms

High tides

Strong currents

Heat waves





# Extreme Events

## Direct (or not) effects on human health:

- possibility of accidents,
- drowning,
- breakdown in communication and connections,
- hydrogeological instability,
- pollutant diffusion among large areas,
- loss of crops,
- isolation of inhabited centers,
- loss of purification capacity of surface water.

## Data:

- Meteorological data (regional authorities, Copernicus)
- Marine monitoring networks (National and regional Institutes, Copernicus)
- Pollutant monitoring networks
- Number of accesses to medical care.

# Question time

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Do you see any other opportunity ?

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# Water Health Open Knowledge

Water is life, and clean water means  
health.

— Audrey Hepburn

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