



**ANSES**

**French Agency for Food,  
Environmental and Occupational  
Health & Safety**

---

# Missions of Reference Laboratories in Times of Crisis

*Laurent Laloux (ANSES)*

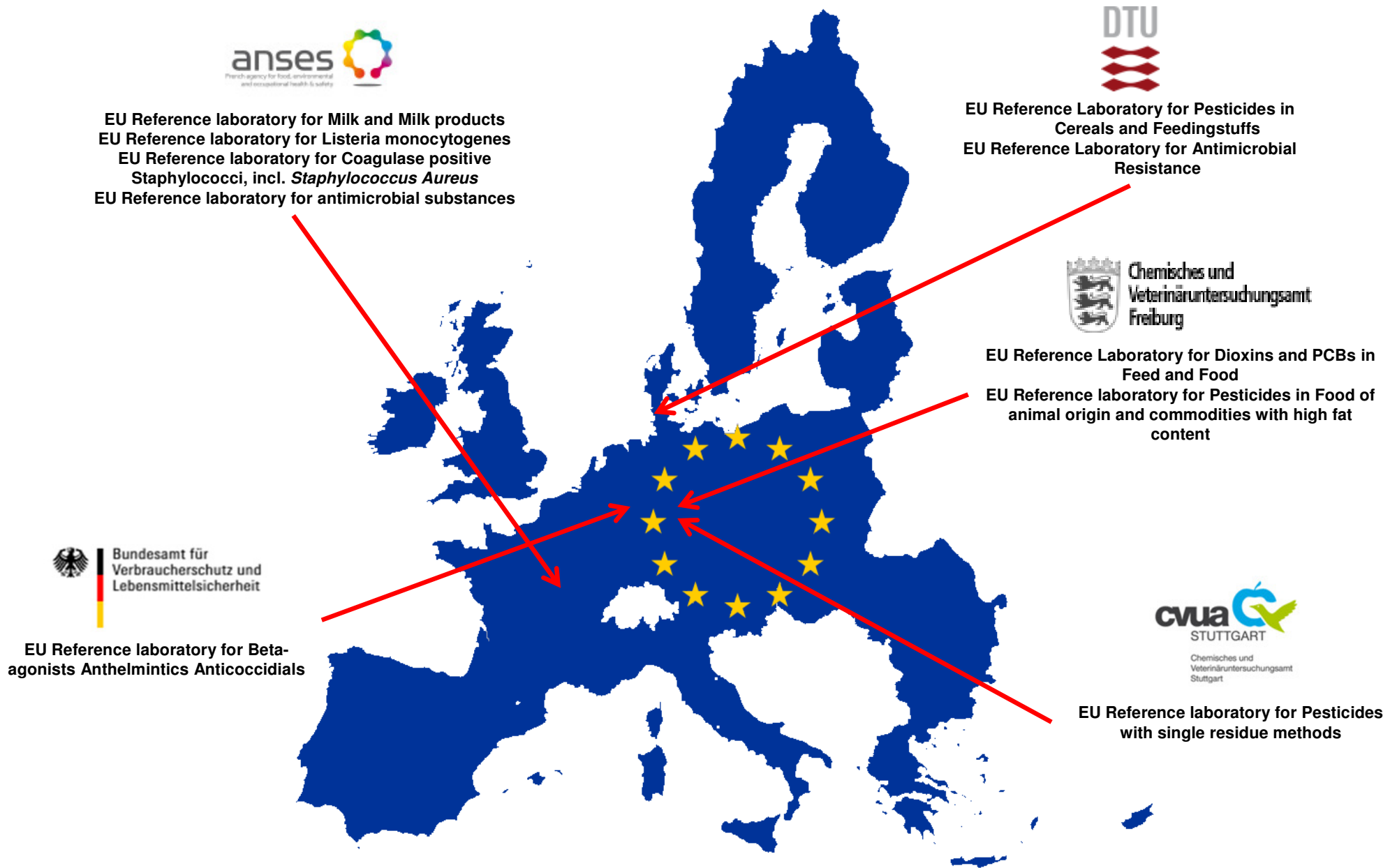
- 
1. European organization of food reference laboratories
  2. Mission of reference laboratories
  3. Role of reference laboratories to prevent or in time of crisis
  4. Actions of E Coli EURL in O104:H4 crisis

## 1-European organization of food reference laboratories

---

- At European level, Council and European Commission have organized with all member states the scientific and technical support necessary to prevent and manage health crisis.
- First, around several European agencies in public health, and more precisely;
  - The European Centre for Disease Prevention and Control (ECDC) aimed at strengthening Europe's defences against infectious diseases,
  - The European Food Safety Authority (EFSA) aimed at assessing risk regarding food and feed safety.
- But also, with the assistance of European Union Reference Laboratories (EU-RLs) to implement EU regulations on animal health, food and feed. Each EURL coordinates a network of National Reference Laboratories (NRLs). To date, 17 EURLs have been designated for animal health, and 21 for food and feed.

# 1-European organization of food reference laboratories



EURLs in the food and feed sector are responsible for:

1. providing NRLs with details of analytical methods, including reference methods;
2. coordinating application by NRLs of the methods referred to in (1), in particular by organizing comparative testing;
3. coordinating, within their area of competence, practical arrangements needed to apply new analytical methods and informing NRLs of advances in this field;

EURLs in the food and feed sector are responsible for:

4. conducting initial and further training courses for the benefit of staff from NRLs and of experts from developing countries;
5. providing scientific and technical assistance to the European Commission (EC), especially in cases where member states contest the results of analyses; and
6. collaborating with laboratories responsible for analyzing feed and food in third countries.

# National Reference laboratories for feed and food



- NRL for Salmonella and Testing of Zoonoses (*Salmonella*)
- NRL for Escherichia coli O157 Verotoxin-producing *E. coli*
- NRL for Streptococcus profiles Staphylococci including *Staphylococcus aureus*
- NRL for analysis of milk and dairy products
- NRL for *Quasipilobacter*
- NRL for Multiple Resistant Staphylococci including *Staphylococcus aureus*
- NRL for Escherichia coli Verotoxin-producing *E. coli*
- NRL for *Mycotholax*
- NRL for Mycotoxins in seed and food
- NRL for Residues of Pesticides and Carcinogens
- NRL for Residues of Veterinary Medicines in animal feed and feeding stuffs
- Methods for the identification of single and multiple methods
- NRL for Bactericides in Veterinary Medicinal Products
- NRL for Antibiotic Resistance in Veterinary Medicinal Products
- NRL for Dioxins and PCBs in Food and Feed



# Food Crisis

## Characteristics

- The first three characteristics are that the event is:
  - ✓ 1. creates uncertainty
  - ✓ 2. unexpected (i.e., a surprise)
  - ✓ 3. seen as a threat to important goals

- Reference laboratories have a real role to play in the prevention and treatment of food crises by:
  - Their analytical expertise to resolve uncertainties in the investigation of the food sources in relation to human inquiry.
  - Their analytical capacity with the European NRLs network to analyze large amounts of food samples during the primary investigation.

- Reference laboratories have a real role to play in the prevention and treatment of food crises by:
  - Their ability to alert following the identification of unusual signals on sanitary quality drifts
  - Their knowledge of food hazards to guide epidemiological research and propose measures to improve hygiene control.

- Developed and distributed a method for the detection of the outbreak strain in food to the NRL network, together with appropriate reference materials.
- Performed laboratory testing of different types of samples and organized an inter-laboratory study on the detection of VTEC in seeds used for the production of sprouts.

## 4-Actions of EU-RL for *Escherichia coli* during E. coli O104:H4 outbreak

---

- Provided continuous scientific and technical support to DG SANCO.
- Participated in the inspection mission to Egypt carried out by the Food and Veterinary Office
- And took part in several working groups and initiatives established by EFSA and/or ECDC.



## Point of view

### The role of European Union Reference Laboratories in food safety crisis: the experience of the EU-RL for *Escherichia coli* during the recent outbreak of *E. coli* O104:H4 infections

A. Caprioli (1) (alfredo.caprioli@iss.it), S. Morabito (1), K. De Smet (2)\*

(1) EU Reference Laboratory for *Escherichia coli*, Dipartimento di Sanità Pubblica Veterinaria e Sicurezza Alimentare, Istituto Superiore di Sanità, Viale Regina Elena 299, 00161 Rome, Italy

(2) European Commission, Health and Consumers Directorate-General, 1049 Brussels, Belgium

A. Caprioli, S. Morabito, K. De Smet (2012). The role of European Union Reference Laboratories in food safety crisis: The experience of the EU-RL for *Escherichia coli* during the recent outbreak of *E. coli* O104:H4 infections, *EuroReference*, No. 6, ER06-12P01. <http://www.anses.fr/euroreference/numero6/PN2010.htm>



**The EU-RL for *Escherichia coli* was thoroughly involved in the recent outbreak of *E. coli* O104:H4 infections occurred in Europe. Based on the activities carried out in the previous year, a method for the detection of the outbreak strain in food was rapidly developed and distributed to the NRL network, together with appropriate reference materials. The EU-RL also performed laboratory testing of different types of samples and organized an inter-laboratory study on the detection of VTEC in seeds used for the production of sprouts. During the entire period of the crisis, it provided continuous scientific and technical support to DG SANCO. Moreover, the EU-RL participated in the inspection mission to Egypt carried out by the Food and Veterinary Office and took part in several working groups and initiatives established by EFSA and/or ECDC. The experience of the *E. coli* O104:H4 outbreak confirmed that the activities of EU-RLs can provide an important contribution to the EC preparedness to face food safety crisis.**

The EU Reference Laboratories (EU-RLs) are established and financed by the Directorate General for Health and Consumers (DG Sanco) to support the European Commission (EC) in facing specific food and feed hazards or specific animal diseases, according to the Regulation (EC) No. 882/2004 on official controls. When an EU-RL is established, the Member States (MS) have to designate their own National Reference Laboratory (NRL) on the same hazard, in order to create an EU laboratory network on that topic. The duties and functions of EU-RLs and NRLs are detailed in the Articles 32 and 33 of Reg. (EC) No. 882/2004, respectively. In practical terms, the EU-RLs duties involve: (1) developing reference analytical methods; (2) coordinating the application of such methods by the NRLs, in particular by organizing proficiency tests (PTs); (3) coordinating the network of NRLs, by providing them information on the advances in the field, reference materials, and specific training on analytical methods; and (4) providing scientific and technical assistance to the Commission, in particular to the DG Sanco, and the European Food Safety Authority (EFSA). The NRLs duties include the collaboration with the respective EU-RL, the coordination of the activities of the laboratories involved in official controls in their own country, including the organization of PTs, the dissemination of the information received from the EU-RL, and the scientific and technical assistance to their Authorities. If the resulting laboratory networks comply with those duties, the analytical methods, the reference materials, and the PTs are transferred by the EU-RLs to the NRLs and by the NRLs to the local laboratories involved in official controls. The final aim of these activities is that any foodstuff produced

or imported in any MS of the EU is tested using the same state-of-art methods and with comparable levels of proficiency. The added value of such networks can be particularly important in food safety crisis involving different MS, when testing food with standardized, rapid and reliable methods is essential to provide the competent authorities with the data needed to plan appropriate control measures and to inform correctly the consumers.

The aim of this note is to describe the experience of the EU-RL for *Escherichia coli* during the recent outbreak of *E. coli* O104:H4 infections occurred in Europe and to discuss on how the activities carried out by our network of *E. coli* reference laboratories in the previous years may have contributed in terms of EU preparedness to face the crisis.

#### The EU-RL for *E. coli*

Verocytotoxin (VT)-producing *Escherichia coli* (VTEC) infections are a major public health concern, because of the severe illnesses that they can cause, such as hemorrhagic colitis and hemolytic uremic syndrome (HUS), and the large number of outbreaks occurring all over the world (Caprioli *et al.*, 2005). Due to this public health relevance, VTEC infections have been included in the list of zoonoses that will receive priority in monitoring schemes according to the Directive 2003/99/EC, and the EC established an EU-RL for VTEC in 2006.

The EU-RL VTEC is housed within the Istituto Superiore di Sanità (ISS) in Rome and its characteristics and activities have already been described in this Journal (Caprioli *et al.*, 2010). The network of NRLs coordinated by the EU-RL VTEC includes all

\* The views or positions expressed in this text correspond to the authors and are not, and cannot be regarded as representing the position, the views or the policy of the European Commission.

---

**Thank you for your attention**

[www.anses.fr](http://www.anses.fr)