

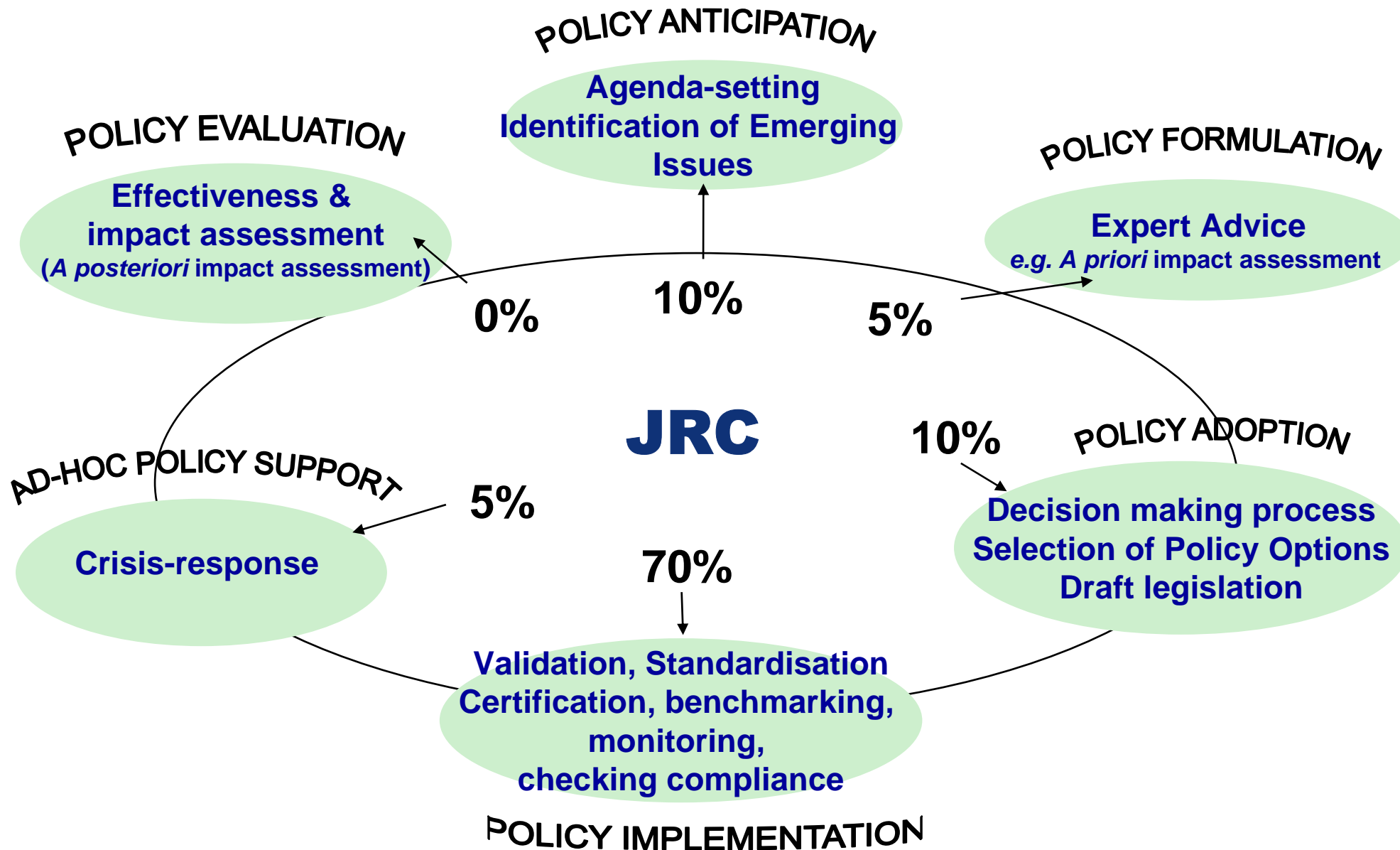
Open Day JRC - Malta

St. Julians, 20th November 2009



Health, Biotechnology and Consumer Protection: A Snapshot on JRC Activities

Elke Anklam, Director of JRC-IHCP



Type of Activities



Risk Assessment (mainly on Chemicals)

- **Classification and Labelling of Biocides**
- **Support to European Agency on Chemicals (Helsinki) and European Food Safety Authority (Parma)**
- **Evaluation and validation of alternative testing**
 - **Computational models**
 - **In-vitro testing methods (3 R methods)**
- **Indoor and Outdoor Exposure**



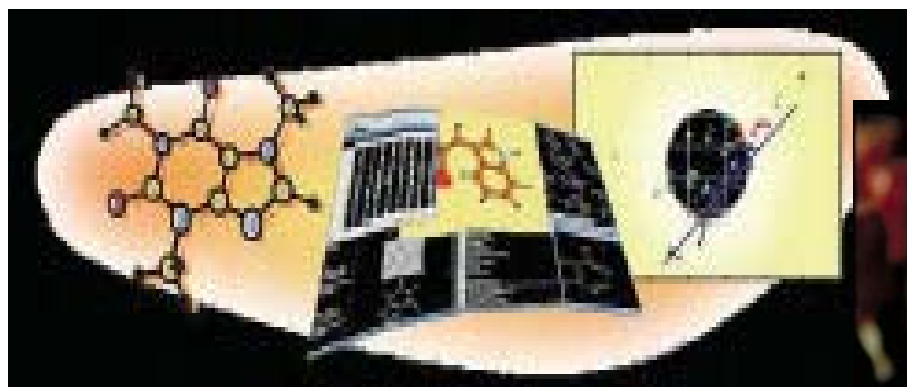
Methods Development and Validation

- **Validation of alternative test methods (in-vitro)**
- **Method validation for food and feed safety and quality control, GMOs, food contact materials, textiles**
- **Sampling protocols**
- **Traceability**



Databases/Repositories

- Databases on e.g. alternative methods, Nanomaterials, European wines
- Material banks (food contact materials, feed additives, wine, chemicals, nanomaterials)



Provision of robust analytical data

- **Analysis in support to implementation of food and feed legislation (mainly in JRC-IHCP and JRC-IRMM)**
- **Genetically modified organisms**
- **Food contact materials**
- **European wine**
- **Chemicals from consumer products**



Selected JRC Activities on Food and Feed



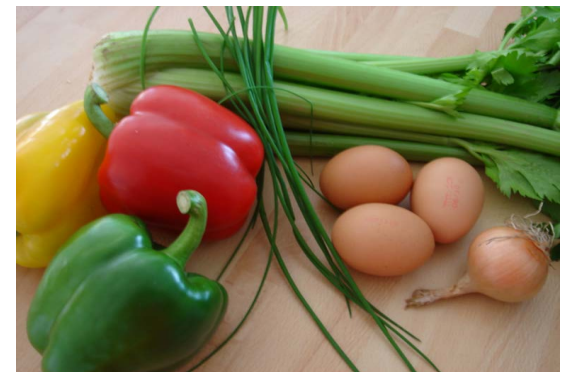
JRC Work on Food Safety and Quality

Scientific and technical support

- to Directorates General (for development of food and feed legislation and implementation thereof)
- to the European Food Safety Authority (EFSA)
- to national official control laboratories for implementation of legislation

Pro-active research and prospective studies in areas where legislation is expected (e.g. Food Allergens, Cloning of Animals, Proteomics and Metabolomics)

Input to standardisation and harmonisation bodies (e.g. European Committee for Standardisation (CEN), Codex Alimentarius, AOAC International, ISO...)



JRC Tasks on Food Safety and Quality

- **Community Reference Laboratories**
- **Method development, validation and harmonisation (e.g. BSE, GMOs, food allergens, mycotoxins...)**
- **Proficiency testing (e.g. acrylamide, food contact materials)**
- **Monitoring data bases (e.g. wine, acrylamide, PAHs)**
- **Reference materials and sampling plans**
- **Foresight studies (e.g. GMOs, cloned farmed animals)**
- **Support to emergency cases (crisis)**



Community (CRLs) National Reference Laboratories (NRLs) for Food & Feed Control

**Support to high quality and harmonisation of analytical results
by provision of:**

- Reference methods
- Reference materials
- Proficiency testing schemes
- Training of laboratory staff



The CRLs within the JRC

Genetically modified organisms – IHCP, Ispra, IT

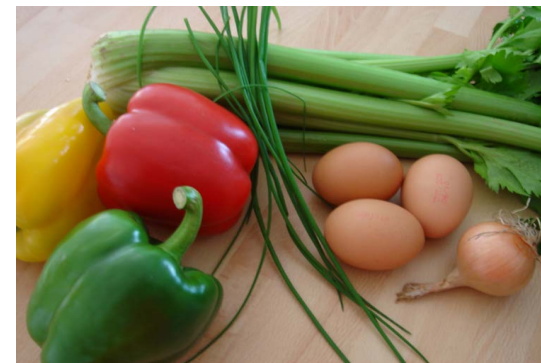
Feed additives – IRMM, Geel, BE

Food contact materials– IHCP, Ispra, IT

Heavy metals (Trace elements)– IRMM, Geel, BE

Mycotoxins – IRMM, Geel, BE

Polycyclic aromatic hydrocarbons – IRMM, Geel, BE



Research-based policy support in the GMO area is a pan-JRC activity

Institute for Health and Consumer Protection;
S/T support for the implementation of GMO legislation
Community Reference Laboratory for GM Food and Feed

Institute for Reference Materials and Measurement;
World leader in GMO Certified Reference Materials
and biometrology

Institute for Prospective Technological Studies;
Biotechnology foresight;
Model simulations and expert opinions on the co-existence of
GM and non-GM crops in European agriculture





Community Reference Laboratory for GM Food and Feed

- **Operations are carried out, aligned with the European Food Safety Authority;**
- **CRL has a crucial role in (dis)approval of methods that are “fit for the purpose of regulatory compliance”;**
- **It has a role in disputes and in response to crises;**
- **It is unique in the international GMO regulatory system;**
- **It chairs the “European Network of GMO Laboratories” (ENGL);**
- **It carries out extensive training programs;**

- **Validation of methods for GMO detection is prime role.**

Upcoming Activities and Challenges on Nutrition and Health

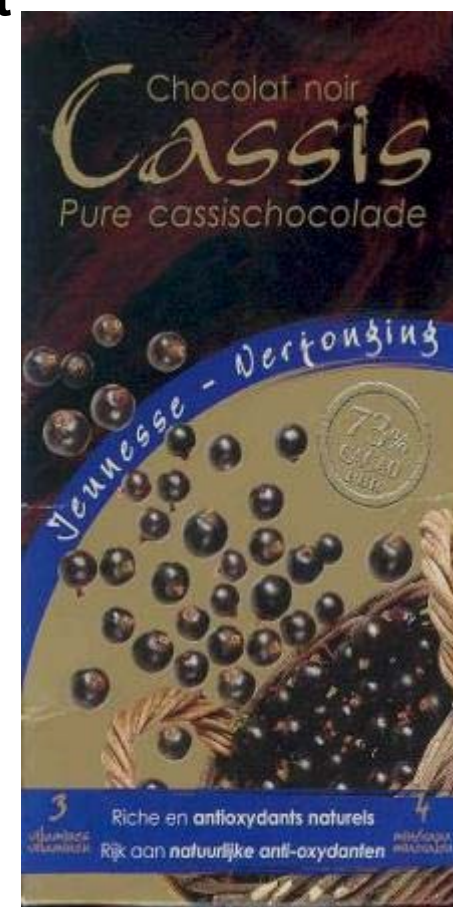
Many studies in the literature with sometimes contradictory results, e.g.

- **Cholesterol intake through food products**
- **Red wine vs. other alcoholic beverages**
- **Green vs. black tea**
- **Antioxidants in food products**
- **Trans fatty acids**
- **.....**



Nutrition and Health: Claims, benefit and risk statements

Examples already found on the market



Selected JRC Activities on Chemicals, Cosmetics and Nanomaterials



Risk Assessment of Nanomaterials

RISK ASSESSMENT

- Hazard identification
- Hazard characterization
- Exposure assessment

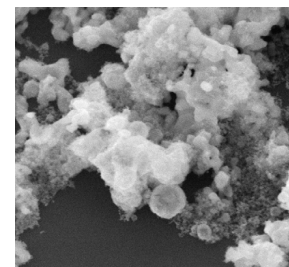
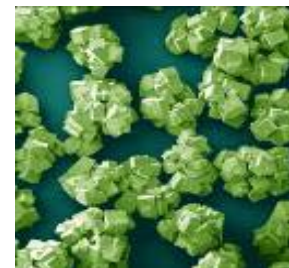
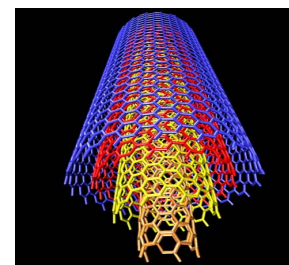
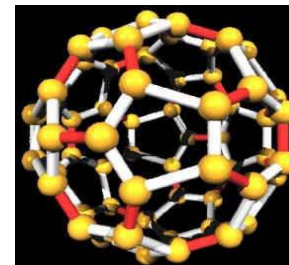
Fundamental questions:

- How to characterize nanoparticles?
- What determines their toxicity?
- Exposure?

Integrated Testing Strategy

- Physico-chemical characterization
- *In silico* studies
- *In vitro* test systems

- *In vivo* studies



Understanding the biological response

Size and Shape

Size distribution
Shape

State of Dispersion

Agglomeration/Aggregation

Physical & Chemical Properties

Crystalline phase and crystallite size

Water solubility

Electro-optical properties

Surface Area and Porosity

Surface Chemistry

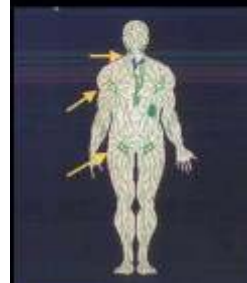
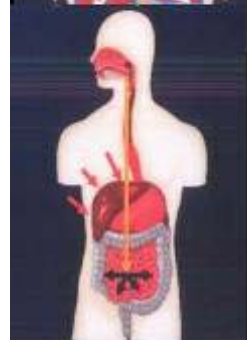
Surface composition

Catalytic properties

Surface charge

Reactivity

Adsorption/desorption of molecules



EFFECTS

Translocation from portal of entry to target organs

Protein binding properties

Cellular uptake

Accumulation and retention

The European Centre for the Validation of Alternative Methods

ECVAM's Mission

- Validation of alternative tests
- Exchange of information
- Database on alternatives



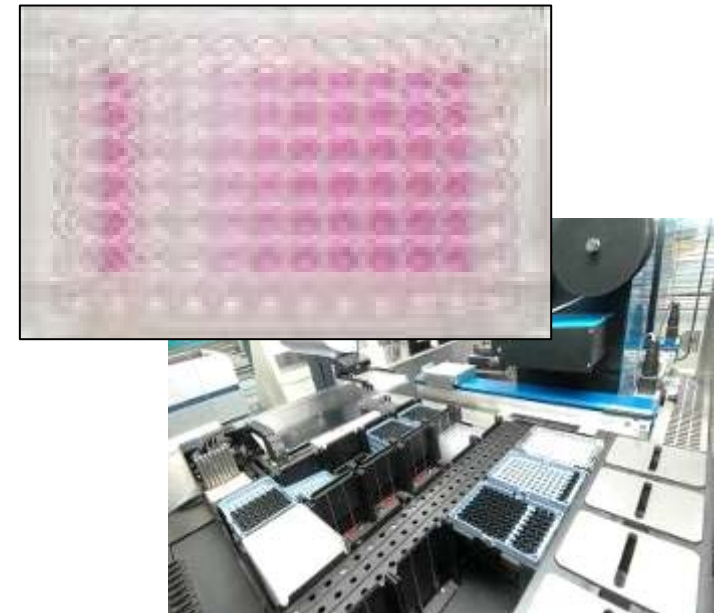
Directive 86/609/EEC (currently under revision)

Article 7.2:

An experiment shall not be performed if another method not entailing the use of animals, is available.

Article 23:

The Commission and Member States should encourage research into the development and validation of alternative methods to animal testing, including those which involve fewer animals or which entail less painful procedures.



Collaborations

JRC and European Agencies



European Food Safety Authority (EFSA)

- Method validation for GMO analysis, Feed additives analysis
- Safety assessments on GMOs, food contact materials, pesticides
- Food allergies and nanotechnology related matters



European Environment Agency (EEA)

- Participation in Annual Work Plan under thematic area *Integrated Assessments and Supporting Sustainable Development*
- Discussion to start up Human Exposure Data Centre



European Chemicals Agency (ECHA)

- Support to start-up of ECHA
- Transfer of REACH-related activities to ECHA
- Continued support to ECHA Agency (JRC-ECB officially closed in 2008)



JRC and Malta

GMOs:

**Public Health Laboratory is National Reference Laboratory
(contact person Mr. Albert Gambin)**

Food Safety:

**Public Health Laboratory is National Reference
Laboratory for Trace Elements**

**UK Food and Environment Research Agency is
responsible for other NRL activities**

Iain Formosa
**Head of Management Support Unit of the
JRC-IHCP**
*Studied at the University of Malta –
B.A. Accountancy*



Thank You for Your Attention!