Availability and quality of residue data in Europe
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Exposure assessment, as part of risk assessment, is defined (WHO, 1997) as the qualitative and/or quantitative evaluation of the likely intake of biological, chemical or physical agents via food as well as exposure from other sources if relevant.
Exposure assessments approaches

- **Deterministic approach**
  - *point-estimates* evaluation built by concentration single levels or mean values both of analytes and food consumption data

- **Probabilistic approach (distributional)**
  - Evaluation of likelihood distribution of exposure parameters potentially capable of influencing the exposure, taking into account uncertainties and variabilities of the parameters
<table>
<thead>
<tr>
<th></th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deterministic approach</td>
<td>Simple, accessible</td>
<td>Under or Overestimation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limited information for risk managers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No indication of the likelihood of the exposure</td>
</tr>
<tr>
<td></td>
<td>Readily accepted by regulators</td>
<td>Uncertainty analyses missing</td>
</tr>
<tr>
<td>Probabilistic approach</td>
<td>Meaningful information for risk managers (likelihood of the exposure)</td>
<td>More complicated</td>
</tr>
<tr>
<td></td>
<td>Quantitative estimation of uncertainty</td>
<td>Critic relation with regulatory guidelines</td>
</tr>
</tbody>
</table>
Regardless of whether chronic or acute dietary exposure is being estimated and the model used is deterministic or probabilistic, dietary exposure is a simple function of the amount of food consumed and the residue concentration on the food following the simple equation:

\[
\text{Dietary Exposure} = \text{Amount of Food Consumed} \times \text{Residue Concentration}
\]
Occurrence Data Quality: The Decalogue

- Source
- Timing
- Geographical Origin
- Representativeness
- Quality assurance of the analytical data
- Uncertainty and variability
- Availability
- Typology
- Amount
- Final target
- Accessibility or property
Source of data implies its credibility in terms of congruity to the real impact of the derived information within the context which refers to.

Generally data from governmental surveys and/or from public scientific institutions should be considered in a more trusted way in comparison with data base from private companies that could suffer with some conflict of interest.

In contrast, data from private companies would better reflect the impact of technology on the occurrence of residues and contaminants in food and feed commodities.

Ideally, a combination of data from the two structures would be desirable in order to guarantee the higher confidence and the best accordance to the real scenario.
TIMING

The date of a data set should be considered for evaluating the consistency of the acquired information with the current situation in a particular context. Very old data should not be included in any calculation either probabilistic or deterministic.

Comparison among data from discrete periods of time from one hand could outline a distribution of the data profile all over a longer period but could also lead to misinterpretation of data itself.

In addition a clustering of data related to an homogeneous period of time should be largely encouraged.
The information achievable from the knowledge of data belonging to known origin is of utmost importance. A geographical mapping of the origin of data contributes to depict the scenario of the status of contamination of a substance in a diffused way. On the basis of the knowledge of country of origin from which data is derived it is possible for instance to focus and to select suppliers of raw commodities before their utilization in food and feed preparations.
It is a result of different aspects such as:

- Data must be representative of different groups of population such as the entire population, specific consumer groups (pregnant or lactating women, female or male, children, celiac people etc.).

- Data must be obtained through the implementation of representative sampling plans.

- Data must be correlated to samples in the form they are consumed (wheat is not the same of wheat flour, unwashed lettuce is different from the washed one).

- The effect of processing should be taken into consideration (wheat is different from bread)

To understand the importance of representativeness of data it is enough to think about the consequences of their non representativeness.
AVAILABILITY

In performing a database it is important to handle datasets possibly homogeneous. This is an important feature for assuring a comparison between the various data and for achieving the “right or true” assumption.

Generally, a deterministic approach is performed using summary data and may be calculated quite quickly. Viceversa, a distributional analysis such as a Monte Carlo analysis, requires large datasets, sophisticated computational algorithms and mainly raw (ungrouped) data.
Database can be compiled by different approaches that can lead to different conclusions or can be suitable for deterministic or probabilistic quantitative risk assessment. For instance, data from total diet studies and targeted survey are devoted to be handled in deterministic rather than in probabilistic assessment, whilst data from raw data from random surveys can be more useful for probabilistic approaches.

The following typology of data can be handled:

- Total Diet Studies
- Duplicate diet studies
- Targeted surveys
- Random surveys
As far as the amount of available data, it is highly desirable to handle a statistically sufficient number of samples to allow the determination of high percentile values.
DATA QUALITY ASSURANCE

The following characteristics should be assured when a dataset has to be built apart from the final use:

- Existence and implementation of ad hoc sampling protocols
- LOD/LOQ calculation
- Use of validated analytical method (ELISA, HPLC)
- Use of recovery factors
- Accredited laboratories
In reporting occurrence data for residues and contaminants in food samples, values below the LOQ can be found.

There are different methods for dealing data for exposure assessment purposes:

• the LOQ/LOD

• zero

• a number between zero and the LOQ, often half of the LOQ

• For instance for Monte Carlo approach or similar, before the computation of data is wise to consider the weight of results below and above the LOQ and decide which behavior has to be performed in order to avoid or an underestimation or an overestimation.
There are a few options:

- Non-detects are assumed to be ‘real’ zeros. This is always appropriate when the LOD is far below those concentrations likely to cause any adverse health effects.
- Non-detects are assumed to indicate that the sample contains half the LOD or the LOD. This maybe appropriate when the chemical in question is relatively toxic and also low levels may contribute significantly to the total exposure. This assumption should be used only if the presence of a contaminant appears plausible.
HOW TO HANDLE < LOD VALUES

It does not exist an official document stating what has to be the right approach for handling “negative” occurrence values.

GEMS/Food-EURO Report stated in 1995 the following approach:

<table>
<thead>
<tr>
<th>Proportion of results &lt;LOD</th>
<th>Simple estimate of mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>None, all quantifiable</td>
<td>True mean</td>
</tr>
<tr>
<td>≤ 60% non quantified</td>
<td>Using LOD/2 for all results less than LOD</td>
</tr>
<tr>
<td>&gt; 60% but ≤ 80% not quantified and with at least 25 quantifiable</td>
<td>Produce two estimates using 0 and LOD for all the results less than LOD</td>
</tr>
<tr>
<td>&gt; 80% non quantified OR if &gt;60 but &lt;80% non quantifiable and with &lt;25 results</td>
<td>Produce two estimates using 0 and LOD for all the results less than LOD</td>
</tr>
</tbody>
</table>
Uncertainties in risk assessment

Any estimate of risk to the health of human populations contains both uncertainty and variability. These factors can be used to represent the quality of the data.

The utility of a risk assessment for the risk manager is increased when qualitative and quantitative descriptions of uncertainty and variability in the exposure assessment are included in the risk characterization.

In dietary exposure assessment it is important to distinguish between the relative contributions of variability (i.e., heterogeneity) and true uncertainty (i.e. lack of knowledge) to the accuracy and precision of the predictions of human exposure. Some contributions to the uncertainty are the following:

- the numerical values of parameters in exposure assessments, e.g., the amount and frequency of food consumption or chemical concentration in foods;
- modeling uncertainty, e.g., identification of the parameters which are, or are not relevant to exposure assessment;
- the decision rule uncertainty, e.g., should food consumption or chemical concentration be represented by the mean, median, 90th percentile, or other percentile value; how significant are the differences in adult and children’s diet; or between those of pregnant women and adult males; etc.
Variability in risk assessment

Variability represents the heterogeneity in a range of parameters, e.g. differences in food consumption rates or diet across meals, from day to day, or from season to season, food chemical use rates, effect of processing on food chemical concentrations, etc.
Uncertainty And Variability Of The Output In Probabilistic Approach

The Uncertainty derives from the not sufficient knowledge of specific factors such as:

- the parameter (measurements error, sampling error, systematic error)
- the model (incorrect simplification of real processes, improper use of the model)
- the scenario (errors of description, aggregation, evaluation and judgment, incomplete analysis).

The Variability represents the real heterogeneity or diversity in population, the natural variation of the matter under investigation or the parameter of exposure (different growth temperatures of pathogen, presence of different toxigenic microbial strains, etc.).
Uncertainty and variability in food occurrence data

The most accurate method for achieving the least uncertainty would be the measurements of chemical levels in foods \textit{as consumed}, but unfortunately it corresponds also to most costly method. Uncertainties in food chemical concentration data can be reduced by improving the quality of the data available.
Final Target

Information from surveys addressed to specific consumer groups should be encouraged, since the implications associated to the relationship between the exposure level and toxicological parameters could be treated in a different way as a consequence of the different risk susceptibility of the different population group under investigation.

*This condition is more easily reached by the utilization of probabilistic rather than deterministic approach*
Data Property

Data property can play a strategic role in collecting data for the compilation of a database. Data from governmental or private institutions could be hindered or not published with the aim of guaranteeing data confidentiality or of taking the necessary corrective actions in case of critic but not alarming situations for public health.
What does reliable mean?

If all the aspects treated in this communication have been taken into consideration then our data survey can be considered **reliable**.
**Single point method**

- Model diets
- Regional diets
- National diets
- Household and individual diets

**Probabilistic method**

- Methods used for estimating exposure
- As consumed levels
- Monitored levels
- Maximum levels in standards

**Improved consumption data quality**

- First estimate
- Best estimate

**Improved residue data quality**

- Least quality, greatest uncertainty and least cost

**Best quality, least uncertainty and greatest cost**
Conclusions

• Data quality and the ability of the assessment of the dietary exposure are in strong correlation

• To date, point estimates of exposure are largely higher than probabilistic exposure assessment

• There is an evidence that the best method for estimating dietary exposure is the use of probabilistic modeling (less uncertainty associated)

• A comparison between deterministic and probabilistic approaches is still missing and it should be largely encouraged in order to establish the potential gaps and consistency inherent to these two different approaches
European Scenario
Concentration Data Quality

SAFE FOODS Project

Food-CT-2004-506446
Safe Foods
Promoting Food Safety through a New Integrated Risk Analysis Approach for Foods

Recent food safety incidents and the introduction of genetically modified foods in Europe have resulted in an intense public debate regarding the safety of the European food supply. Consumers have little confidence in the safety of their food supply and remain sceptical and distrustful of the management procedures currently in place.

This Integrated Project addresses the issue of how consumer confidence in consumer protection and risk analysis can be restored and strengthened.

This project is subsidised by the European Commission through the 6th framework programme.

Contract number: Food-CT-2004-506446

For questions or more information please contact the Dissemination & Communication Manager of SAFE FOODS, Dr. Filip Cnudde. Tel: +31 317 482406

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Dr. H.A. Kulper & Dr. H.J.P. Marvin
RIKILT – Institute of Food Safety

SAFE FOODS Events
Stakeholders meeting Athens (19 Oct 2005) successful (Click on picture for more information)

Click here for more information about the consortium meeting in Athens (20-21 Oct 2005)

Séminaire de retour SAFE FOODS
6/22/2005
Research Task 3
Quantitative Risk Assessment of Combined Exposure to Food Contaminants and Natural Toxins

Objectives

• To perform probabilistic risk modelling (exposure as well as effects) of food contaminants and natural toxins.
• To perform Pan-European risk modelling using different national food consumption databases simultaneously, including exposure of vulnerable groups.
• To evaluate uncertainties in risk assessment, i.e. exposure, occurrence of adverse effects, and variations in susceptibility.
• To perform uncertainty analyses for different chemicals to demonstrate the impact of uncertainty in data, risk models, and assumptions made on variables in the assessment.
• To develop criteria for comparative risk analysis.
• To develop probabilistic models to evaluate the risk of combined exposure of chemical contaminants and natural toxins including validation of the statistics and taking into account, where appropriate, nutrition and labelling aspects.
• To contribute to building a new integrated risk analysis approach for foods which is based on qualitative and quantitative data.
• To actively make use of completed and currently on-going research based on these specified in the earlier sections of this technical annex.
• **Compounds: pesticides, mycotoxins, environmental contaminants and natural toxicants**
In order to compare data from European countries, the ISS developed a questionnaire that was sent to the participants requesting information on the general characteristics of the available data. The questionnaire was developed on the basis of the information that was requested by RIKILT aimed at individuating the list of compounds to be investigated in the project.

Mycotoxins
Pesticides
Natural Toxins
<table>
<thead>
<tr>
<th>Country</th>
<th>Years</th>
<th>n pos/n tot (%)</th>
<th>Matrices</th>
<th>Agricultural system</th>
<th>Mean value (µg/L)</th>
<th>Max level (µg/L)</th>
<th>Sampling type</th>
<th>Validated methods</th>
<th>LOD (µg/L)</th>
<th>Recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Netherlands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
WHO GEMS/Food

• In 1996, WHO started the development of a new data structure for food contaminant data and protocols for the electronic submission of data. Protocols for submitting individual and aggregate data on contaminant levels in foods as well estimates of dietary intake of contaminants from total diet studies or other methods are provided.
Introduction to GEMS/Food

Since 1975, the Global Environment Monitoring System - Food Contamination Monitoring and Assessment Programme, which is commonly known as GEMS/Food, has informed governments, the Codex Alimentarius Commission and other relevant institutions, as well as the public, on levels and trends of contaminants in food, their contribution to total human exposure, and significance with regard to public health and trade. The Programme, implemented by the WHO in cooperation with a network of WHO Collaborating Centres for Food Contamination Monitoring and participating institutions located in over 70 countries around the world.

In this section:
1. Introduction to GEMS/Food
2. GEMS/Food: regional diets
3. GEMS/Food: contaminated cluster diets
4. GEMS/Food: short-term diets
5. GEMS/Food: total diet
6. GEMS/Food: publications

Databases
Food or food groups
Total diet

Data collected by GEMS/Food is maintained as components of the Web-based interface for health-related statistical information known as WHO SIGHT (Summaries of Information on Global Health Trends). The GEMS/Food international databases include data on contaminants in individual foods or food groups and on contaminants in the total diet. Institutions wanting to submit data to GEMS/Food should follow the prescribed formats.

In addition, linkages are maintained with the Codex Alimentarius Commission, the United Nations Environment Programme (UNEP), the Food and Agriculture Organization of the United Nations (FAO), the International Atomic Energy Agency (IAEA) and other parties interested in food contamination. It is an important part of national and international efforts to provide assurance regarding the safety of the food supply and provides the basis - where appropriate - for remedial actions, for standards
The main objectives of GEMS/Food are to:

• Collect data on levels of priority chemicals in foods and to evaluate these data, review trends and produce summaries, thus encouraging improved food control and resource management;
• Obtain estimates of the dietary intake of priority chemicals by combining food consumption information with levels of the chemicals in selected foods or food groups;
• Provide technical cooperation to countries wishing to initiate or strengthen food contamination monitoring programs;
• Prepare estimates of regional food consumption patterns;
• Provide the joint FAO/WHO Codex Alimentarius Commission and supporting expert advisory bodies with information on levels of contaminants in food to support and facilitate its work on international health standards for foods.
GEMS/Food guidelines

- Aid countries with varying capacities to assess the health risk posed by exposure to chemical contaminants in the food supply and to aid countries in reviewing and amending current policies and approaches;
- Utilize monitoring data effectively in the prediction of exposure to potentially toxic substances in food;
- Identify chemicals for which dietary intake assessment studies may be useful and appropriate;
- Provide methods for predicting intakes for new chemicals or expanded uses of existing chemicals;
- Assist in determining whether risk management of a chemical is necessary and, if so, facilitating the process of setting an acceptable tolerance and residue limit;
- Enable improved assessments to be made of the potential health effects of chemicals in food, by comparing dietary intake estimates with acceptable daily intakes or other health reference point derived from toxicological studies in animals and other appropriate studies, such as epidemiological information;
- Facilitate global estimates of dietary intakes of chemicals of importance to health and trade.
Computer program for data access by Operating Program for Analytical Laboratories (OPAL)

- Request of OPAL I and II softwares (only for National contact point or Collaborating Centres)

- Compilation of records with concentration and consumption data

- Consultation of the data through SIGHT software. The GEMS/Food database is accessible through the Internet at WHO SIGHT (Summary Information on Global Health Trends) Website (http://sight.who.int)
## Protocols for electronic submission of contaminant concentration data

<table>
<thead>
<tr>
<th>Level</th>
<th>Aggregated</th>
<th>Individual</th>
<th>Total diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>Sample - Contaminant</td>
<td>Study - Cohort - Exposure</td>
<td></td>
</tr>
</tbody>
</table>
Data fields

- Field No. 1: Serial Number of the Record
- Field No. 2: Date of Record Creation
- Field No. 3: Country Providing the Record
  - Field No. 4: Food Identifier
  - Field No. 5: Food Origin
- Field No. 6: Time Period of Food Sampling
- Field No. 7: Representativeness of the Samples
  - Field No. 8: Number of Laboratories Participating in Sample Analyses
    - Field No. 9: Indicator of Analytical Quality Assurance
      - Field No. 10: Contaminant Identifier
    - Field No. 11: Unit of Reporting for Contaminant Levels
    - Field No. 12: Range of Analytical Limits in the Data Set
      - Field No. 12a: Limit of detection – minimum
      - Field No. 12b: Limit of detection – maximum
      - Field No. 12c: Limit of quantification – minimum
      - Field No. 12d: Limit of quantification – maximum
    - Field No. 13: Basis for the Analytical Values
    - Field No. 14: Number of Samples Analyzed
  - Field No. 15: Number of Samples with Concentrations Below Limit of Quantification
    - Field No. 16a: Minimum concentration
    - Field No. 16b: Maximum concentration
      - Field No. 17: Mean Concentrations
        - Field No. 17a: Mean Concentration
        - Field No. 17b: Mean – lower bound
        - Field No. 17c: Mean – upper bound
      - Field No. 18: Median Concentration
    - Field No. 19: 90th Percentile Concentration
    - Field No. 20: Standard Deviation (Optional)
      - Field No. 21: Confidentiality of Data
      - Field No. 22: Remarks/References
## Template for aggregate values (Cd in dried figs)

<table>
<thead>
<tr>
<th>Serial no.</th>
<th>Creation date</th>
<th>Country</th>
<th>Food id.</th>
<th>Food orig.</th>
<th>Sampling period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980001</td>
<td>2-Nov-98</td>
<td>NEZ</td>
<td>DF297</td>
<td>NEZ</td>
<td>04/1997-12/1997</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Represent.</th>
<th>No. of labs</th>
<th>AQA</th>
<th>Contam. id.</th>
<th>Dimen.</th>
<th>LOD min</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW</td>
<td>1</td>
<td>SP</td>
<td>012</td>
<td>1</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOQ max</th>
<th>Basis</th>
<th>No. samples</th>
<th>N&lt;LOQ</th>
<th>Range min.</th>
<th>Range max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0005</td>
<td>A</td>
<td>100</td>
<td>5</td>
<td>0.002</td>
<td>0.483</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean conc</th>
<th>Mean low</th>
<th>Mean up</th>
<th>Median</th>
<th>90th</th>
<th>St. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.032</td>
<td>0.032</td>
<td>0.032</td>
<td>0.024</td>
<td>0.125</td>
<td>0.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Confid.</th>
<th>Rem/Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>LOQ was equal to the LOD</td>
</tr>
</tbody>
</table>


Template for individual values

(Chlorpyrifos in celery)

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Creation date</th>
<th>Country</th>
<th>Food id.</th>
<th>Food orig.</th>
<th>Sampling date</th>
</tr>
</thead>
<tbody>
<tr>
<td>96000001</td>
<td>2-Feb-96</td>
<td>CHN</td>
<td>VS624</td>
<td>CHN</td>
<td>04/07/1994</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Represent</th>
<th>Id. of lab</th>
<th>AQA</th>
<th>Confd.</th>
<th>Rem/Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>01</td>
<td>OA</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contam id.</th>
<th>Dimen</th>
<th>LOD</th>
<th>LOQ</th>
<th>Basis</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>053</td>
<td>1</td>
<td>0.001</td>
<td>0.003</td>
<td>A</td>
<td>0.006</td>
</tr>
</tbody>
</table>
# Cadmium intake from total diet study

<table>
<thead>
<tr>
<th>Study Id</th>
<th>Study Name</th>
<th>Creation Date</th>
<th>Country</th>
<th>Sampling Period</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Diet Type</th>
<th>Consumption Method</th>
<th>No. of Foods</th>
<th>Beverages</th>
<th>Drinking water</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD</td>
<td>Individual</td>
<td>107</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prep. of diet</th>
<th>No. of Labs</th>
<th>AQA</th>
<th>Confd.</th>
<th>Rem/Ref</th>
<th>Calc. Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1</td>
<td>IQ</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cohort Id</th>
<th>Cohort desc.</th>
<th>Cohort size</th>
<th>Age units</th>
<th>Age Min</th>
<th>Age Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>AM</td>
<td>Y</td>
<td>19</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Habitat</th>
<th>Body weight</th>
<th>Mean consumption</th>
<th>Median consumption</th>
<th>High percentile</th>
<th>High percentile consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>70</td>
<td>3990</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contam. Id</th>
<th>Dimen.</th>
<th>Mean exposure</th>
<th>Median exposure</th>
<th>High percentile exposure</th>
<th>Major food/food groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>ug/kg</td>
<td>0.41</td>
<td></td>
<td></td>
<td>Wheat, offal</td>
</tr>
</tbody>
</table>
SCOOP Tasks

✓ According to Council Directive 93/5/EEC "on the assistance to the Commission and co-operation by the Member States in the scientific examination of questions relating to food" Member States of the European Union can co-operate on problems facing the Commission in the area of food.

✓ The rationale for each Task is to provide harmonized and reliable information to be used by the Commission for the management of problems related to food.
Scientific Cooperation (SCOOP) Task Reports

• A scientific cooperation (SCOOP) task involves coordination amongst Member States to provide pooled data from across the EU on particular issues of concern regarding food safety. This data is used to assist the Commission in developing EU legislation to increase protection of consumers. The legal basis of SCOOP is Council Directive 93/5/EEC on assistance to the Commission and cooperation by the Member States in the scientific examination of questions relating to food, adopted in February 1993

• Reports on tasks for scientific cooperation

• final SCOOP Task 3.2.10 : "Collection of occurrence data of Fusarium toxins in food and assessment of dietary intake by the population of EU Member States"
WEB site - http://europa.eu.int/comm/food/fs/scoop/task3210.pdf

• Report of experts participating in Task 3.2.7 Assessment of dietary intake of Ochratoxin A by the population of EU Member States, January 2002 WEB site http://europa.eu.int/comm/food/fs/scoop/3.2.7_en.pdf

• Report of experts participating in Task 3.2.8 Assessment of dietary intake of Patulin by the population of EU Member States, March 2002 - http://europa.eu.int/comm/food/fs/scoop/3.2.8_en.pdf
SCOOP Task 3.2.7. – OTA Frame of the study

Basically, participants were asked to provide information on the exposure of the population to OA in their country through the elaboration of the following categories of data:

• 1. Occurrence data in food and beverages, including those from different methodological approaches (i.e. total diet, duplicate test portion)
• 2. Consumption data
• 3. Best estimate of dietary intake
• 4. Occurrence data in biological fluids and intake as derived from data on serum
• 5. Data of intake for lactating babies through the ingestion of breast milk.
SCOOP Task 3.2.7. – OTA

- Data provided by participants were collected, harmonized, and reported by the Co-ordinators according to the following criteria:
- To provide a description, harmonized at European level, of the status of OA contamination in foodstuffs in each participating Member State
- To group available information on each raw material and/or food products
- To evaluate the best estimates of the OA dietary intake from food, and to compare them with the dietary intake as calculated from biological fluids, both for each participating Member State and at European level
- To evaluate the OA dietary intake of particular groups of population (high consumers, children, babies etc.).
Additional information was also asked, among others and whenever possible, on the following issues:

- Sampling procedures employed
- Quality Assurance of Analytical data
- Data on OA occurrence in working places
- Regulations related to the toxin (maximum limits, sampling plans, others).
## Estimated dietary intake of Ochratoxin A in each Member State.

<table>
<thead>
<tr>
<th>Food product</th>
<th>Food consumption</th>
<th>Mean of Ochratoxin A in food</th>
<th>Intake of Ochratoxin A</th>
<th>Intake of Ochratoxin A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>g/person/day</td>
<td>Mean 1 (ng/kg)</td>
<td>Mean 2 (ng/kg)</td>
<td>95th percentile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean 1</td>
<td>Mean 1</td>
<td>Range</td>
</tr>
<tr>
<td><strong>Greece (cont’d) Semi-Urban</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wine</td>
<td>25</td>
<td>0,17</td>
<td>0,28</td>
<td>&lt; LOD - 2,61</td>
</tr>
<tr>
<td>Coffee</td>
<td>4,1</td>
<td>1,69</td>
<td>2,58</td>
<td>&lt; LOD - 7,20</td>
</tr>
<tr>
<td>Dried vine fruits</td>
<td>0,01</td>
<td>1,88</td>
<td>3,09</td>
<td>&lt; LOD - 16,50</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wine</td>
<td>46</td>
<td>0,17</td>
<td>0,28</td>
<td>&lt; LOD - 2,61</td>
</tr>
<tr>
<td>Coffee</td>
<td>4,8</td>
<td>1,69</td>
<td>2,58</td>
<td>&lt; LOD - 7,20</td>
</tr>
<tr>
<td>Dried vine fruits</td>
<td>0,02</td>
<td>1,88</td>
<td>3,09</td>
<td>&lt; LOD - 16,50</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All population</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beer</td>
<td>23,03</td>
<td>123,2</td>
<td>0,02</td>
<td>0,04</td>
</tr>
<tr>
<td>Red wine</td>
<td>46,93</td>
<td>292</td>
<td>1,29</td>
<td>1,49</td>
</tr>
<tr>
<td>Roasted coffee</td>
<td>6,94</td>
<td>19,6</td>
<td>0,55</td>
<td>1,80</td>
</tr>
<tr>
<td>Decaffeinated roasted coffee</td>
<td>0,20</td>
<td>0,6</td>
<td>0,25</td>
<td>-</td>
</tr>
<tr>
<td>Barley</td>
<td>0,22</td>
<td>0,0 (?)</td>
<td>0,52</td>
<td>2,52</td>
</tr>
<tr>
<td>Corn</td>
<td>0,75</td>
<td>0,0 (?)</td>
<td>0,28</td>
<td>1,49</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>5,43</td>
<td>28,6</td>
<td>0,20</td>
<td>0,20</td>
</tr>
<tr>
<td>Rice</td>
<td>10,89</td>
<td>37,9</td>
<td>0,25</td>
<td>-</td>
</tr>
<tr>
<td>Rye</td>
<td>0,00</td>
<td>0,0</td>
<td>0,05</td>
<td>-</td>
</tr>
<tr>
<td>Olive oil</td>
<td>7,37</td>
<td>29,4</td>
<td>0,05</td>
<td>0,6</td>
</tr>
<tr>
<td>Salami</td>
<td>2,51</td>
<td>14,3</td>
<td>0,25</td>
<td>-</td>
</tr>
<tr>
<td>Spices</td>
<td>1,41</td>
<td>5,3</td>
<td>5,74</td>
<td>8,04</td>
</tr>
<tr>
<td>Consumers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beer</td>
<td>110,83</td>
<td>384,5</td>
<td>0,02</td>
<td>0,04</td>
</tr>
<tr>
<td>Red wine</td>
<td>159,76</td>
<td>450,4</td>
<td>1,29</td>
<td>1,49</td>
</tr>
<tr>
<td>Roasted coffee</td>
<td>9,28</td>
<td>21,0</td>
<td>0,55</td>
<td>1,80</td>
</tr>
<tr>
<td>Decaffeinated roasted coffee</td>
<td>5,48</td>
<td>15,8</td>
<td>0,25</td>
<td>-</td>
</tr>
<tr>
<td>Barley</td>
<td>8,23</td>
<td>17,5</td>
<td>0,52</td>
<td>2,52</td>
</tr>
<tr>
<td>Corn</td>
<td>10,98</td>
<td>41,2</td>
<td>0,28</td>
<td>1,49</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>15,38</td>
<td>46,7</td>
<td>0,20</td>
<td>0,2</td>
</tr>
<tr>
<td>Rice</td>
<td>20,25</td>
<td>48,4</td>
<td>0,25</td>
<td>-</td>
</tr>
<tr>
<td>Rye</td>
<td>0,00</td>
<td>0,0</td>
<td>0,05</td>
<td>-</td>
</tr>
<tr>
<td>Olive oil</td>
<td>15,15</td>
<td>35,7</td>
<td>0,05</td>
<td>0,6</td>
</tr>
<tr>
<td>Salami</td>
<td>10,61</td>
<td>28,6</td>
<td>0,25</td>
<td>-</td>
</tr>
<tr>
<td>Spices</td>
<td>2,13</td>
<td>6,5</td>
<td>5,74</td>
<td>8,04</td>
</tr>
</tbody>
</table>
The CASCADE Network of Excellence, launched in February 2004 within EU’s sixth framework programme, aims to provide Europeans with a durable, comprehensive and independent network of excellence in research, risk assessment, and education on health risks that are associated with exposure to chemical residues in food. Focus lies on chemicals that act via and/or interfere with cellular regulation by hormone receptors.
(DAFNE) – (DAta Food NEtworking) is harmonising the international level dietary exposure data from household budget surveys. DAFNE focuses on the creation of a pan-European food data bank based on national household budget surveys by the development of the most appropriate way of using food and related data from these surveys. Methods were designed to calculate, for instance, the overall average availability per person per day of comparable food items or groups among DAFNE countries, as well as average availability by degree of urbanisation and educational level of household head.

WEB site: www.net.uoa.gr/Dafnesoftweb
European Prospective Investigation into Cancer and Nutrition (EPIC) developed methods to collect comparable individual dietary intake data in specific populations. The rationale of the EPIC project is setting up a large European prospective cohort study combining epidemiological and laboratory methods in order to expand the presently limited knowledge of the role of nutrition and related factors in cancer epidemiology.

http://www.iarc.fr/epic/
Thanks for your attention