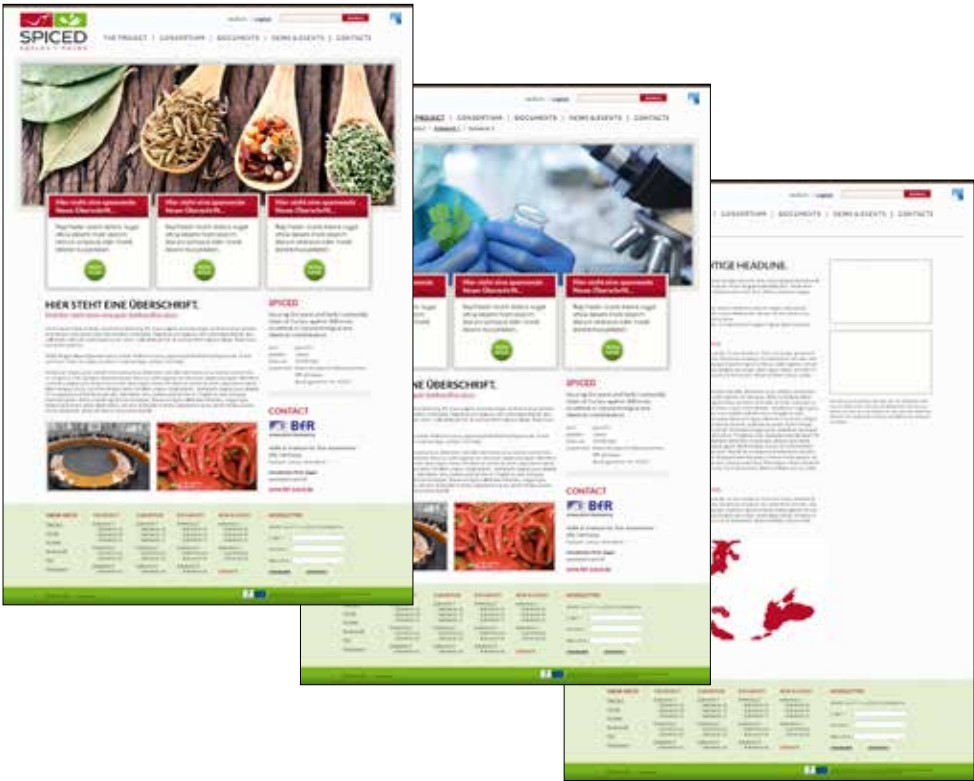


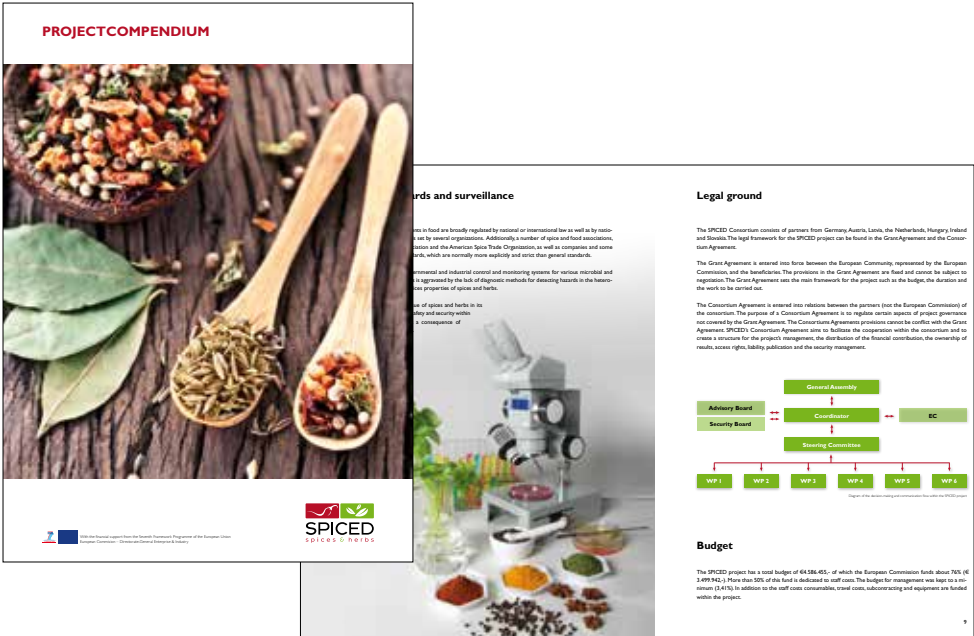
Logo:



Website:



Compendia A4:



Compendia A5:

PROJECT COMPENDIUM

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 732007

**SPICED**  
spices & herbs

### Biological Hazards

about biological hazard properties and on-site and high throughput diagnostic detection.

characterize the biological properties and the development of reliable and robust for biological hazards in spices and herbs. Further it will be ensured it will be based on the most current available diagnostic methods. A de-oligomerizing sample preparation, purification and detection methods.

deduced on the microbiology of spices and herbs. It has been demonstrated important and potential foodborne bacteria and zoonotic moulds. In the forming units per gram raw material can be found in spices and herbs. There is a long period of time in dried products like spices due to their nature.

screening and detection methods will be investigated to ensure surveillance and suspicious consignments. Additionally, high throughput and adapted and established for the generation of data about the prevalence of biological agents. Of further interests are approaches with large prospects in being and non-living bacteria, which will be investigated for selected.

JCHS | UL | NAFVUP | WIS

activity studies (survival, processing, storage)  
database containing diagnostic methods  
optimization of sample preparation and detection methods  
being and non-living bacteria  
evaluation of rapid qualitative on-site detection / screening methods  
evaluation of quantitative high-throughput detection methods

Task 3.7 Standardisation and harmonisation of diagnostics (ring trial)

24

25

Flyer :  
(DE, EN, LET, HU)

### SPICED principles

- Natural and/or intentional contamination within the food chain are realistic events and have to be considered together not individually.
- Measures against intentional attacks need to be based on available food safety systems.
- Food safety and food security are still a major concern in many EU member states due to increased food-borne outbreaks and issues raised by contamination.
- The complexity and vulnerability of food supply chains are correlated to available opportunities for pathogen transmission.
- Flour components hold major potential to contaminate a wide range of products in a large-scale distribution system.

**Consortium**

This project consortium is composed of eleven experienced institutions from several European countries and includes partners from industry, academia and food authorities.

**Project partners**

1. Bundesinstitut für Risikobewertung (Federal Institute for Risk Assessment), Germany
2. Austrian Agency for Health and Food Safety Austria
3. Institute of Food Safety, Animal Health and Environment, Latvia
4. DLR Foundation – BVL, the Netherlands
5. FLCHS Geomatics GmbH, Germany
6. National Agricultural Research and Innovation Centre, Hungary
7. RTO Services, Austria
8. University of Lincoln, Ireland
9. National Agricultural and Food Centre, Slovakia
10. International Research Institute for Prospective Technologies and Food Protection, Germany
11. Wageningen University the Netherlands

**Integrated stakeholders**

12. European Spice Association, Germany
13. Fachverband der Gewürzindustrie, Germany
14. Van Houtte GmbH, Germany
15. Kneissl Peter GmbH, Germany

**Coordinator**

Department Biological Safety – Federal Institute for Risk Assessment  
Nonnenhofstraße 11 • 10828 Berlin, Germany | +49 30 8462-2100 | +49 30 8462-2000 | [spiced@bfr.bund.de](mailto:spiced@bfr.bund.de)

July 2013 – June 2016

**Securing the spices and herbs commodity chains in Europe**  
against deliberate, accidental or natural biological and chemical contamination

**www.spiced.eu**

### Background

Securing the food chains from primary production to consumer-ready food against major deliberate, accidental or natural contamination is directly related to the safety of food products. Many claims from European states via the Rapid Alert System for Food and Feed (RASFF) over the past years included spices and herbs, leading to the 4<sup>th</sup> rank of all registered categories, indicating the need of monitoring this commodity.

Despite the low water activity, which inhibits biological growth of the final spice and herb products, spices and herbs are natural products that can be contaminated with several micro-organisms, among them pathogenic species. However, also chemical contaminations may occur, mostly due to natural or environmental pollution but also because of accidental handling. Physical and chemical contaminations can take place at numerous vulnerable points within the production, processing and/or supply chain and can pose a tremendous risk for farmers, producers and consumers, leading to e.g. severe food-borne infections and intoxications.

Spices and herbs are contained in almost every processed food, including ready-to-eat products, thus consumers can be directly exposed to contaminated spices and herbs. The identification of contaminants as a cause of a natural, accidental or intentional outbreak would be difficult for consumers and experts that are investigating the outbreak often focus on major food ingredients instead of minor components as seen during the enterohaemorrhagic Escherichia coli outbreak in Germany in 2011.

The EU market is one of the largest markets for spices and herbs in the world, and these commodities are mostly imported in dried or crude form from producing regions outside of the EU. A large proportion of imported spices and herbs are used in the industrial sector, especially in the processing of meat and the production of ready-to-eat products. In general, but also the retail sector for private consumers and the catering sector have large turnovers in spices and herbs.

### Aims

- To characterize the heterogeneous matrices of spices and herbs and their respective production and supply chains in context with relevant biological and chemical hazards that can lead to major natural, accidental or intentional contaminations in the food supply chain.
- To improve the knowledge on biological hazard properties as well as on-site and high-throughput diagnostic methods for appropriate detection.
- To reduce (industrial) chemical adulterations and to ensure authenticity of spices and herbs by evaluation and improvement of non-targeted fingerprinting methods.
- To improve alerting, reporting and decontamination systems as well as techniques to ensure prevention and response on high-quality level.

### SPICED concept

The whole structure of SPICED aims in securing the food supply chain of spices and herbs against major natural, accidental or intentional biological and chemical contaminations and, therefore, in the protection of the European consumers' health as well as in the protection against economic loss.

The structure of the project SPICED spanning from production and input to the consumer within all workpackages

Roll up:

## Securing the spices and herbs commodity chains in Europe

against deliberate, accidental or natural biological and chemical contamination

### Aims

- to characterize the heterogeneous matrices of spices and herbs and their respective production and supply chains in context with relevant biological and chemical hazards that can lead to major natural, accidental or intentional contaminations in the food supply chain.
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**www.spiced.eu**



Poster A1:



### Securing the spices and herbs commodity chains in Europe

against deliberate, accidental or natural biological and chemical contamination

#### Background

Spices and herbs have been given particular attention in recent years due to their importance in food safety and security. They are also important for the economy and the environment. However, the European Union has not yet developed a specific regulatory framework for these products. This is due to the fact that they are not considered as food ingredients, but as food supplements. This means that they are not subject to the same strict controls as food ingredients. This situation creates a risk of contamination of the food chain. The SPICED project aims to address this issue by developing a regulatory framework for spices and herbs in the EU.



#### Aims

- To develop the harmonized regulation of spices and herbs and their respective production and supply chains in the EU.
- To develop a knowledge and training platform for stakeholders in the sector.
- To develop a regulatory framework for the production and supply of spices and herbs in the EU.
- To develop a regulatory framework for the production and supply of spices and herbs in the EU.



#### SPICED concept

The SPICED concept is based on the idea of a regulatory framework for the production and supply of spices and herbs in the EU. It is a multi-stakeholder approach that involves all actors in the chain, from producers to consumers. The concept is based on the idea of a regulatory framework for the production and supply of spices and herbs in the EU.



#### Consortium

The consortium is composed of several stakeholders, including:

- European Commission
- European Parliament
- European Food Safety Authority
- European Union of Food Producers
- European Union of Food Processors
- European Union of Food Distributors
- European Union of Food Retailers
- European Union of Food Wholesalers
- European Union of Food Importers
- European Union of Food Exporters
- European Union of Food Producers
- European Union of Food Processors
- European Union of Food Distributors
- European Union of Food Retailers
- European Union of Food Wholesalers
- European Union of Food Importers
- European Union of Food Exporters

Newsletter I



### SPICED NEWSletter

#1 September 2014

#### IN THIS ISSUE...

- SPICED aims
- What is it?
- Who is who?
- May I introduce Allspice to you?



#### SPICED – what is it?

The SPICED project is a multi-stakeholder approach that involves all actors in the chain, from producers to consumers. It is a regulatory framework for the production and supply of spices and herbs in the EU. The project aims to address the issue of contamination of the food chain by developing a regulatory framework for the production and supply of spices and herbs in the EU.



#### WHO IS WHO...

Prof. Dr. Bernd Appel is the project manager of the SPICED project. He is a senior research fellow at the German Research Foundation (DFG) and a senior research fellow at the German Research Foundation (DFG).



#### FACT BOX

**Do you know...?**

- Spices and herbs are among the oldest trading goods in the world.
- They contain water and dry weight more valuable than gold.
- Europe is one of the biggest markets for spices and herbs.
- Europe is a major producer of spices and herbs, but a large importer and exporter of these products.
- The total import of spices and herbs amounted to 480 thousand tonnes in 2012, 40 % from non-EU countries.
- The total export amounted to 270 thousand tonnes, about 25 % to non-EU countries.
- Herbs and spices are defined by the European Spice Association as "Culinary herbs and spices, that are whole parts of plants, which are traditionally used as foodstuffs for their essential flavouring compounds, and most importantly" for more details see the List of Culinary Herbs and Spices in annex 1.
- The international food standards experts have agreed to elaborate methods standards for spices and culinary herbs. The first session of the Codex Committee on Spices and Culinary Herbs (CCSCH) took place in February 2014.



#### May I introduce Allspice to you?

Allspice, also called Jamaica pepper, is a member of the Myrsinaceae family. It is a small tree or shrub that grows in the tropics. The fruit is a small, round, red berry that is used as a spice. It is known for its strong, spicy flavor. It is a popular spice in Caribbean cuisine. It is also used in traditional medicine. It is a member of the Myrsinaceae family.

Newsletter 2



### SPICED NEWSletter

#2 June 2015

#### IN THIS ISSUE...

- Keeping up with SPICED
- A delegation of Vietnam
- May I introduce Parsley to you...



#### Keeping up with SPICED

The SPICED project is a multi-stakeholder approach that involves all actors in the chain, from producers to consumers. It is a regulatory framework for the production and supply of spices and herbs in the EU. The project aims to address the issue of contamination of the food chain by developing a regulatory framework for the production and supply of spices and herbs in the EU.



#### A delegation of Vietnam

A delegation of Vietnamese officials and experts visited the SPICED project in June 2015. They were accompanied by the project manager, Prof. Dr. Bernd Appel. The delegation was interested in the SPICED project and its aims. They also discussed the possibility of cooperation between the two countries in the field of spices and herbs.



#### FACT BOX

**Do you know?**

- With over 100 million consumers, the EU is an important market for spices and herbs.
- At least 400 spices and herbs species are commercially available worldwide.
- The average daily intake of spices and herbs in the EU is around 10g per person per day.
- The average daily intake of spices and herbs in the EU is around 10g per person per day.



#### May I introduce Parsley to you...

Parsley is a member of the Umbelliferae family. It is a small herb that grows in the temperate regions. The leaves are flat and feathery. The root is a thick, fibrous taproot. Parsley is used as a herb in many cuisines. It is also used in traditional medicine. It is a member of the Umbelliferae family.



#### SUCCESSFUL 2-WORKPACKAGE MEETING

The second SPICED project meeting was held in Berlin, Germany, in June 2015. The meeting was attended by representatives from all project partners. The meeting was successful and resulted in a number of important decisions. The meeting was held in Berlin, Germany.



#### CONTACT

For more information, please contact the project manager, Prof. Dr. Bernd Appel, at [bernd.appel@dfg.de](mailto:bernd.appel@dfg.de).

**SPECIAL DISSEMINATION MATERIALS**  
For SPICED workshops:

# Brochure for EXPO

WORKSHOP EXPO, MILAN  
14th OCTOBER, 2015

## SPICES & HERBS - A risk-free taste experience?

This project has received funding from the European Union's Horizon Programme for research, innovation and digital development under grant agreement No 101019150.

- How to use food fraud in spices and herbs

11:00 - 11:15

**Spices and herbs supply and production chains (NARHC)**

- What are the characteristics of spice/herb commodity food?
- Where are the main vulnerable points in spice/herb production chains?
- What are efficient decontamination methods—now and in future?

11:15 - 11:30

Coffee Break

2

ence?  
Austrian Pavilion

(RI)

(BIR)

eric detection methods  
to be taken into  
for spices and herbs?

(BICRI)

eric detection methods  
in combination with

11:30 - 12:30

**World Café - Discussions with stakeholders (rda)**

- For each topic presented a table for discussions will be defined.
- Each table has a certain table manager and rapporteur.
- The workshop participants will have 20 minutes to be at one table.
- After each 20 minutes participants have to change the table.
- Participants have the chance to give active input to the presented objectives and results of SPICED.

12:30 - 1:30

**Short presentations by table managers**

- Each table manager will give a short overview of the main inputs given and discussed.

1:30 - 1:40

Networking Lunch

Risk Assessment, Germany  
Health and Food Safety, Austria  
Ag. Animal Health and Environment, Latvia  
BVL, the Netherlands  
BfR, Germany  
Research and Innovation Center Hungary  
B. Ireland  
and Food Center, Slovakia  
Institute for Precision Technologies and NBC Protection, Germany  
by - Laboratory of Food Microbiology (FM), the Netherlands

3

1. "SPICES & HERBS" - Germany
2. Fachverband der Gewürzindustrie, Germany
3. Van Hest GmbH, Germany
4. Van Hest GmbH, Germany
5. Krüger-Pfeiffer GmbH, Germany



## Cover & Roll Up for Symposia



**SPICED**  
spices & herbs

## Securing the spices and herbs commodity chains in Europe

against deliberate, accidental or natural biological and chemical contamination

### Spices and herbs supply and production chains

- What are the characteristics of spice/herb commodity flows?
- Where are the main vulnerable points in spice/herb production chains?
- What are efficient decontamination methods – now and in future?



European Union  
The European Union has provided financial support for this project under the Horizon 2020 research and innovation programme under grant agreement No 101019719.

[www.spiced.eu](http://www.spiced.eu)



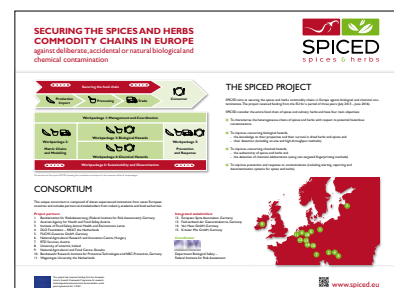
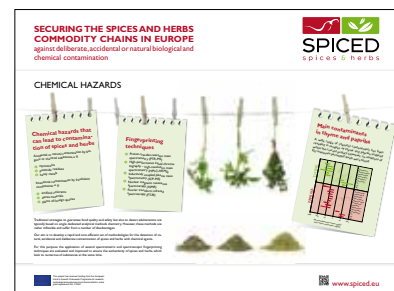
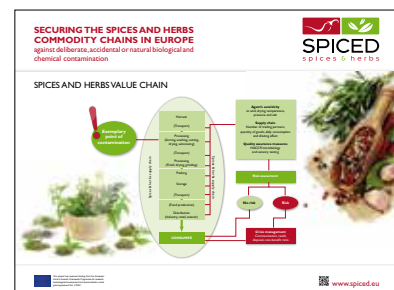
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For Exhibition:

2 Roll-ups for  
„Lange Nacht der Forschung“



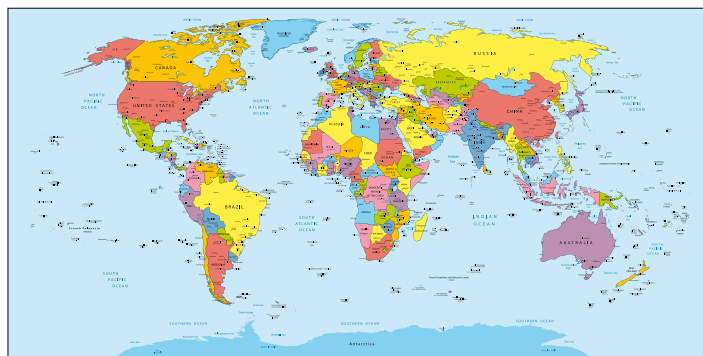
8 Informationpanels  
(EN, RUS, LAT)



## 11 Puzzles



## World map & Distance-cards





# Exhibition Folder



**EXHIBITION**  
APRIL 2016

## SPICES & HERBS - A risk-free taste experience?



you need to be vigilant looking for the European Union label on the packaging and the accompanying information leaflet.

in chili/paprika, saffron, turmeric, cinnamon or in freshly dried herbs. You can optically highlight some dishes with them.

### History

From time immemorial, man has enhanced his food with seasonings. Earliest findings of this practice are found in European fossil records. From Neolithic grains and cereals where people lived. Even in the last Stone Age, people were using the seasoning power of various herbs and seeds, e.g. caraway and chervil. Signs of evidence of the use of various plants or plant parts in food seasoning were found in detritus in caves used as dwellings for thousands of years in Eastern Asia, especially in China.

2



are an intense colour, which can be found for example in chili/paprika, saffron, turmeric, cinnamon or in freshly dried herbs. You can optically highlight some dishes with them.

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2

### PANEL 2



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2

### Potential microbiological contaminations in spices and dried herbs

Spices and herbs are natural products. Such products are never sterile, but contain different microorganisms – the same applies to us. Microorganisms are too small to see by eye, and most of them are harmless for us. But some can cause health problems by producing toxins and/or by causing diseases. Usually, relatively high numbers of such microorganisms are needed for causing a problem – often several thousand up to millions (or more) germs. Lower numbers are usually destroyed by our immune system after ingestion. Since contaminants are consumed in quite low amounts, contaminations with such germs are not necessarily a big issue.

Moreover, it can be quite challenging for microorganisms to survive in spices and dry herbs. In these products, there is not enough moisture available to support propagation of these germs, and many can't even survive as these low-moisture conditions. However, some microorganisms can be dangerous even in lower amounts – such as *Salmonella*. A proliferation of germs (and a toxin production) might take place in the final food over time if spices/herbs are added to a dish after cooking and if the dish is not stored properly. Germs can grow well at room temperatures. Some germs, such as *Bacillus cereus* spores, can even survive cooking and can produce toxins during improp-



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The infectious dose can strongly vary between different strains of the pathogen (and it also depends on the individual human).

To ensure the microbiological safety of foods, samples can be tested for the presence and amount of specific microorganisms using different approaches:

- Detection of the entire organism(s) by cultivation on selective medium on which specific germs of interest can grow and/or by microscopic analysis.
- Detection of specific parts of the organisms (e.g. proteins, cell wall compounds, genomic information, etc.) e.g. by immunological methods using antibodies or molecular biological methods.

temperature of around 10-45°C). To avoid proliferation it should be stored in the fridge.

can contain particular chemical compounds that are: sergins (anticoagulants) and m of spices/herbs.

germs required to cause an infection by ingestion): 100 to 10 000 germs, since even few can be sufficient 100 000 to 100 000 000 germs

of the infectious dose, the infectious dose can strongly vary between different strains of the pathogen (and it also depends on the individual human).

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## Workshop descriptions

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