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JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements  
European Union Reference Laboratory for Polycyclic Aromatic  
Hydrocarbons

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## **Work programme of the European Union Reference Laboratory (EURL) for Polycyclic Aromatic Hydrocarbons (PAHs) for the years 2016 and 2017**

1. Organisation of a proficiency test (PT) on PAHs in spices and herbs. A PT on the determination of PAHs in a smoked spices matrix will be organised in 2016 under accreditation according to ISO 17043. The PT will be conducted for the network of NRLs. EU official food control laboratories will get the possibility to participate in the study on a participation fee basis. Special focus will be given to the analysis of the four marker PAHs (benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, and chrysene) that are defined by EU legislation. A report on the PT will be made available after results have been collected from the NRLs.  
This activity comprises preparation of the test material, packaging, homogeneity, and stability testing of the test material. The homogeneity of the test material will be demonstrated by means of ANOVA of at least 10 randomly selected containers, with a method for which in-house method performance has been established. The stability of the material during the execution of the exercise will be studied as well.
2. Organisation of a PT on monochloropropanediol (MCPD) esters and glycidyl esters (GEs) in edible oil and fatty food. A PT on the determination of 3-MCPD esters, 2-MCPD esters, and glycidyl esters in both spiked edible oil and a biscuit matrix will be organised in 2016 under accreditation according to ISO 17043 for the network of NRLs. EU official food control laboratories will get the possibility to participate in the study on a participation fee basis. Results will have to be expressed as free MCPD and free glycidol both on product basis and on fat basis. The influence of the applied analysis methods on the analytical results will be studied. A report on the PT will be made available after results have been collected from the NRLs.  
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3. Organisation of a PT on PAHs in coconut oil. A PT on the determination of PAHs in coconut oil will be organised in 2017, as information on the performance of official food control laboratories in the determination of PAHs in this regulated food matrix is lacking. The PT will be conducted under accreditation according to ISO 17043 for the network of NRLs. EU official food control laboratories will get the possibility to participate in the study on a participation fee basis. Special focus will be given to the

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analysis of the four marker PAHs (benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and chrysene) that are defined by EU legislation. A report on the PT will be made available after results have been collected from the NRLs.

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4. Organisation of a PT on acrylamide in food. The EU-RL PAH proposes to focus in 2017 on the determination of acrylamide in a bakery product. However, the selection of food matrix still needs agreement of both DG SANTE and the network of NRLs. This point will be put on the agenda of the next workshop with the NRLs, which will take place in October 2015. The PT will be organised in 2017 under accreditation according to ISO 17043 for the network of NRLs. Particular focus will be given to the EU official food control laboratories will get the possibility to participate in the study on a participation fee basis. The influence of the applied analysis methods on the analytical results will be studied. A report on the PT will be made available after results have been collected from the NRLs.

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5. Preparation of test materials for the 2018 PTs (upon renewal of the EU-RL mandate). It is foreseen to focus in 2018 on the determination of PAHs and other process contaminants in food matrices for which maximum levels are set in Commission Regulation (EU) No 835/2011, respectively for which maximum levels or similar threshold levels (e.g. guidance levels) are in preparation. The nature of the PT test material will be discussed and agreed with DG SANTE and the NRLs during the 2015 and 2016 workshops.

For that purpose suitable test materials have to be identified and pilot studies on the preparation of test samples have to be conducted. Since this is expected to be a challenging task, the activity will start already in 2017.

6. Organisation of follow-up measures for laboratories that underperformed in proficiency tests organised by the EU-RL PAH in 2016 and 2017. Follow-up measures are in this respect
  - the initiation of a structured root-cause analysis by the NRL,
  - on request provision of test material for the execution of experiments to revalidate/improve the analysis method applied by the NRL,
  - the evaluation of the effectiveness of corrective action taken by the NRL.

7. Organisation of a method validation study by collaborative trial of an indirect analysis method for the determination of MCPD esters and glycidyl esters in fatty food. An analytical method for the indirect determination of 3-MCPD esters, 2-MCPD esters, and glycidyl esters in fatty food will be validated by collaborative trial according to ISO 5725. Method performance specifications as laid down in Commission Recommendation 2014/661/EU will serve as target. Face-to face meetings with experts in this type of analysis are envisaged for developing the analytical

protocol. This activity is expected to start in the second half of 2016. The activity will comprise in 2016 public consultation on the proposed analysis method, the identification of participants, preparation of test materials and homogeneity testing and dispatch of samples. Participation in the study will be free of charge and open to NRLs, EU official food control laboratories, but also to laboratories from industry and academia. A face-to-face kick-off meeting with delegates of participating laboratories will be organised prior to sample shipment. NRLs will be informed during the annual workshops about the design, and later on the outcome of the study. The final report of the study will be presented in 2017.

8. Evaluation of the suitability of screening methods for the determination of PAHs in food. A literature survey conducted in 2015 identified different screening methods for the determination of PAHs in different, mostly environmental matrices. The EU-RL PAH will select the most promising screening methods and test them in the laboratory for their applicability for the determination of EU marker PAHs in food. Special consideration will be given to sensitivity, selectivity and compatibility with fatty food matrices. A report on the outcome of the study will be made available in 2017. Additionally a survey will be conducted on screening methods for the determination of acrylamide in food. Face-to-face meetings with experts might be necessary in this context.
  
9. Organisation of workshops with the network of NRLs. The EU-RL PAH will organise both in 2016 and 2017 each one workshop for the network of NRLs. The workshops will serve to strengthen the network structure and to identify the needs of the NRLs. The outcome of the PTs and other specific topics concerning the chemical analysis of PAHs and other process contaminants will be addressed during the workshops. The workshops will be used to disseminate information from both Commission and the EU-RL PAH to the network of NRLs. However, the expanded mandate of the EU-RL PAH might have consequences for the organisation of workshops, as it is not yet completely clear whether the NRLs for PAHs will also cover the chemical analysis of other process contaminants. Consequently it might be necessary to invite to the workshops, besides NRLs for PAHs, additional laboratories from the EU MS, which act as reference laboratory for the particular process contaminant. Reports on the workshop will be made available.
  
10. Providing training to NRLs: This activity will comprise hands-on trainings relevant for the determination of PAHs and other process contaminants in food. The trainings shall serve to disseminate analytical methods to NRLs and to harmonise analytical methodology applied within the network of NRLs. The EU-RL PAH proposes to focus in 2016 on the determination of MCPD esters and glycidyl esters in food, as this type of analysis is new to many NRLs. The participants will be trained on the analysis of these substances by an indirect analysis method, which expresses MCPD ester contents as free forms of MCPD and glycidyl ester contents as free glycidol. For 2017, the EU-RL PAH proposes the organisation of hands-on training on the determination of acrylamide by LC-MS/MS, according to EN 16618, which shall support less experienced NRLs in preparing for the participation in the PT on acrylamide in food. Details of the hands-on trainings will be discussed with the NRLs during the 2015 workshop (19-20 October 2015). The trainings will be organised for staff of the NRLs at the EURL premises. The maximum number of invited participants will be eight in each training.

On request, EU-RL PAH staff will visit NRLs and provide training on analytical methodology for the determination of process contaminants in food.

11. Providing support to DG SANTE and EFSA in technical matters concerning analytical methodology for the determination of process contaminants in food, if requested.
12. Providing support to standardisation bodies such as CEN for the standardisation of analytical methods for the determination of process contaminants in food. This will require regular participation in the meetings of CEN TC 275/WG13 and CEN TC 327/WG1.
13. Dissemination of information: The EU-RL PAH will foster internet based communication with the NRLs. In this respect a discussion forum will be installed and maintained for the fast exchange of information. Training on the use of the forum will be provided to the NRLs during the annual workshop.  
The EU-RL PAH will publish the outcome of scientific studies in open accessible format.  
The EU-RL PAH will disseminate information concerning the EU-RL activities at international conferences such as the 2017 International Symposium on Polycyclic Aromatic Compounds (ISPAC) respectively AOAC, or AOCS annual symposia.