UNEP

CBD

Convention on Biological Diversity

Distr.
GENERAL

CBD/CP/DI/WS/2017/1/2
13 June 2017

ENGLISH ONLY

ASIA-PACIFIC WORKSHOP ON THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS
Kuala Lumpur, 20-24 March 2017

REPORT OF THE ASIA-PACIFIC WORKSHOP ON THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS

INTRODUCTION

1. At its eighth meeting, in decision BS-VIII/16, the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety requested the Executive Secretary to continue convening, in cooperation with relevant organizations, subject to the availability of resources, regional and subregional capacity-building activities, such as online training and face-to-face workshops in the fields of sampling, detection and identification of living modified organisms (LMOs) with a view to assisting Parties in fulfilling the requirements under Article 17 and towards achieving the relevant outcomes of the Strategic Plan for the Cartagena Protocol on Biosafety for the period 2011-2020.[1]

2. In their decision VIII/3 on capacity-building, Parties also requested the Executive Secretary to facilitate the priority capacity-building activities for supporting the implementation of the Cartagena Protocol, among which the organization of workshops on sampling, detection and identification of LMOs was identified as a priority area.

3. With support from the Government of Japan, through the Japan Biodiversity Fund, and from the Government of the Republic of Korea, through the Korea Biosafety Capacity Building Initiative, and in collaboration with the Department of Chemistry of the Ministry of Science, Technology and Innovation of Malaysia, the Secretariat of the Convention on Biological Diversity organized the Asia-Pacific Workshop on the Detection and Identification of Living Modified Organisms, which was held in Kuala Lumpur from 20 to 24 March 2017.

4. The objectives of the workshop were to provide theoretical and practical training on (a) sampling, detection and identification of LMOs in the context of the Cartagena Protocol on Biosafety, and (b) laboratory methodologies used for the analysis of test samples, as well as to share experiences and assess national needs and gaps for the effective implementation of the relevant outcomes under the Strategic Plan for the Cartagena Protocol.

5. A total of 14 participants from 13 Parties in the Asian region attended the workshop (Bangladesh, Bhutan, China, India, Iran (Islamic Republic of), Iraq, Lao People's Democratic Republic, Lebanon, Malaysia, Mongolia, Philippines, Republic of Korea and Yemen). The list of participants is contained in annex I.

[1] Available at http://bch.cbd.int/protocol/issues/cpb_stplan_txt.shtml.

ORGANIZATIONAL MATTERS

ITEM 1. OPENING OF THE WORKSHOP

6. The workshop was opened by Ms. Manoela Miranda, Head of the Biosafety and Biosecurity Unit, on behalf of Ms. Cristiana Paşca Palmer, Executive Secretary of the Convention on Biological Diversity, at 9:00 a.m. on Monday, 20 March 2017. In her remarks, Ms. Miranda welcomed the participants to the workshop and noted the importance of the detection and identification of LMOs as a cross-cutting issue for the effective implementation of the Cartagena Protocol on Biosafety. She highlighted the challenges being faced with the development of more complex LMOs given the advancements in modern biotechnology techniques, such as synthetic biology. She also noted the importance of establishing long-term connections and cooperation among the participants. Finally, Ms. Miranda thanked the Government of Japan, through the Japan Biodiversity Fund, and from the Government of the Republic of Korea, through the Korea Biosafety Capacity Building Initiative, for their generous financial support and the Government of Malaysia and the Department of Chemistry for hosting the meeting.

7. Ms. Hajjah Rosnah Awang, on behalf of Mr. Hajj Ismail Bin Talib, Director General of the Department of Chemistry of the Ministry of Science, Technology and Innovation of Malaysia, welcomed the participants to Malaysia and to the workshop. In her remarks, Ms. Awang emphasized the importance of expert collaboration and effective training in the field of the detection and identification of LMOs and expressed the hope that the workshop would provide the participants with hands-on training as well as promote cooperation among the laboratories. She also expressed gratitude for the generous financial support from the Government of Japan and from the Government of the Republic of Korea that had facilitated the realization of the workshop.

8. Ms. Yuvaneswari C. Swaran, from the Department of Chemistry, also welcomed the participants to the laboratory facilities and expressed her gratitude for the opportunity to share her experience and knowledge. She also introduced the resource person, Mr. Oliver Chen, from the Food and Drug Administration of Taiwan Province of China.

9. Following the opening remarks, Ms. Dina Abdelhakim, from the Secretariat of the Convention on Biological Diversity, introduced the workshop objectives and its organization of work and invited participants to consider and adopt the provisional agenda circulated by the Secretariat as document CBD/CP/DI/WS/2017/1/1. The agenda was adopted without amendments. The participants were then invited to introduce themselves to the group.

ITEM 2. OVERVIEW OF BIOSAFETY AND THE CARTAGENA PROTOCOL ON BIOSAFETY

10. Under this agenda item, Ms. Miranda and Ms. Abdelhakim gave an overview of the Cartagena Protocol's provisions and recent developments related to the detection and identification of LMOs, including:

(a) Relevant provisions under the Cartagena Protocol on Biosafety;

(b) Relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Cartagena Protocol on Biosafety and the Strategic Plan for the Cartagena Protocol;

(c) Overview of the activities of the Network of Laboratories for the Detection and Identification of Living Modified Organisms;

(d) Information exchange through the Biosafety Clearing-House.

11. Furthermore, Mr. Letchumanan Ramatha introduced the participants to the activities of the "Asia BCH Family"[2] initiative, which had been established by the Republic of Korea, in an effort to enhance compliance with the Protocol in the Asia-Pacific region. In his presentation, Mr. Ramatha provided an overview of the goals and achievements of the Asia BCH family to date and highlighted the areas in

[2] http://asiabchfamily.org.

which the Asia BCH family can aide Parties through the facilitation of cooperation among countries as well as providing support and leadership.

ITEM 3. INTRODUCTION TO THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS IN THE CONTEXT OF THE CARTAGENA PROTOCOL ON BIOSAFETY

3.1. Laboratory sampling and preparation of test samples

12. Under this agenda item, the Mr. Oliver Chen, from the Food and Drug Administration of Taiwan Province of China, introduced participants to the theory and general principles of receiving bulk samples and preparing and handling test samples for the detection and identification of living modified organisms in a regulatory context.

13. Key concepts and considerations were introduced regarding the criteria for receiving bulk samples with regard to their packaging and size. That was followed by an overview of the methodology for homogenization of samples from commonly encountered matrices. Strategies for preparing suitable test samples as well as procedures for avoiding and minimizing contamination during sample handling and homogenization were also discussed. The session concluded with a practical demonstration of the steps for sample homogenization.

3.2. Procedures for the extraction and purification of DNA from test samples

14. Under this agenda item a presentation was made by Mr. Chen on the methodologies used for extracting and purifying DNA from test samples. His presentation included an overview of the methodology used for DNA extraction, and he shared with the participants information on how genetically modified food is regulated in Taiwan Province of China. This included information on the Genetically Modified Food Act, which outlines provisions on food safety, labelling requirements and testing, among other things.

15. Following the theoretical presentation, Mr. Chen guided the participants through a hands-on practical exercise to extract DNA from maize, soya and rice matrices using a resin membrane method. This was followed by a brief discussion on DNA quantification methods as well as a corresponding hands-on demonstration.

3.3. Testing methods and analysis of results

16. In introducing this agenda item, Mr. Chen provided an introduction to some DNA-based detection methodologies and techniques that can be used to detect, identify and quantify LMOs. The presentation provided an overview of DNA-based detection, identification and quantification methods based on the polymerase chain reaction (PCR), including end-point and real-time PCR. The discussion also provided an overview of the principles behind the “matrix approach” as a tool for facilitating the process of screening samples for the presence of LMOs using PCR.

17. Finally, Mr. Chen explained the theory behind digital PCR as an example of a new and emerging methodology that could be used to detect, identify and quantify LMOs.

18. Following the presentations, the participants were guided through a hands-on practical exercise to prepare and analyse the results from samples using real-time PCR.

3.4. Considerations on quality assurance and quality control

19. In this session, Ms. Swaran made a presentation on the various aspects that needed to be considered for the establishment of a quality assurance and quality control system (QA/QC) in an LMO detection laboratory. The topics covered in her presentation included an overview of several guidance documents and standards that could be used to guide the implementation a laboratory’s QA/QC system. Consideration on effective laboratory organization, documentation and method verification were also discussed.

20. Participants shared their experiences in the implementation of their laboratory's QA/QC systems, and discussed the challenges, needs and gaps in their laboratories.

3.5. Reporting of testing results

21. Under this agenda item, Ms. Noor Shafriza Zainal Azmi, from the Department of Chemistry, made a presentation on how a report can be structured to effectively communicate the laboratory's findings to the regulatory authority in a clear and concise manner. Her presentation also included the typical contents of a laboratory report, a description of relevant reporting guidelines and the use of appropriate reporting language as well as considerations for reporting uncertainty.

ITEM 4. CONCLUSIONS AND RECOMMENDATIONS

22. Under this agenda item, Ms. Abdelhakim invited the workshop participants to put forward their conclusions from the workshop and propose recommendations, including future actions to facilitate the implementation of activities relating to the detection and identification of LMOs at the national and regional levels, for consideration by the Conference of the Parties serving as the meeting of the Parties to the Protocol at its ninth meeting.

23. The participants in the workshop agreed that a series of online activities by the group would facilitate the consolidation of the knowledge gained during the workshop and encourage the sharing of information between labs within the region, including an open discussion to provide the participants with an online forum to discuss experimental procedures, exchange of technical support and troubleshooting approaches.

24. The participants also agreed that the online discussions would be moderated. Volunteers were identified from within the group to moderate each of the topics of discussion. It was agreed that the moderators would also take the lead in drafting the necessary documents to serve as a basis for the discussions.

25. The participants suggested that the Secretariat could organize online discussions through the Biosafety Clearing-House (BCH) to facilitate the continued sharing of knowledge and practical experiences on the following topics:

(a) *Sample preparation*: Sharing of practical experiences and knowledge on sample preparation from different matrices including considerations for troubleshooting (Moderator: Mr. Joe Said, Lebanon);

(b) *Extraction methods*: Compilation of information on extraction procedures from difficult samples, such as oily seeds and honey (Moderator: Mr. Lijo John, India);

(c) *Science-policy interface*: Facilitate the exchange of views among policymakers and scientists to discuss the strengths and limitations of detection methods in order to inform policymaking, including policies to set requirements for identification and quantification from exporters (moderator: to be determined).

26. In making their recommendations, participants agreed that the Conference of the Parties serving as the meeting of the Parties to the Protocol might wish to:

(a) Encourage Parties to require exporters to provide the appropriate reference materials to enable the detection and identification of LMOs for regulatory purposes;

(b) Encourage Parties to make funds available for the training of laboratory personnel in the field of the detection and identification of LMOs, including the provision of co-financing opportunities;

(c) Encourage Parties to invite the Global Environment Facility to provide funds for the support of a regional project on the development of capacity in the field of the detection and identification of LMOs;

(d) Invite the Food and Agriculture Organization of the United Nations to continue collaborating with the Secretariat of the Convention on Biological Diversity in order to improve the capacities of countries with regard to detection of genetically modified food and LMOs.

ITEM 5. EVALUATION OF THE WORKSHOP

27. Participants were invited to complete an evaluation of the workshop and propose suggestions for improvements. A summary of the results of the evaluation is attached as annex 2.

ITEM 6. ADOPTION OF THE REPORT

28. A draft report was circulated online after the workshop among the workshop participants for their comments for a period of one week. The Secretariat made the necessary amendments to the final version of the present report.

ITEM 7. CLOSURE OF THE WORKSHOP

29. Closing remarks were made by Ms. Miranda and Mr. Wong Kok Fah, Director of the Environmental Health Division, Department of Chemistry, Ministry of Science, Technology and Innovation of Malaysia.

30. In her remarks, Ms. Miranda acknowledged the hospitality of the staff at the Department of Chemistry and the excellent lectures they had provided with the help of Mr. Chen as resource person. She reiterated her appreciation to the Governments of Japan, the Republic of Korea and Malaysia. She also extended her gratitude to the Department of Biosafety of the Ministry of Natural Resources.

31. In his remarks, Mr. Wong thanked the participants, Mr. Chen and the Secretariat of the Convention on Biological Diversity for the successful workshop. He also expressed the hope that the training would help strengthen local capacities and further implementation of the provisions of the Cartagena Protocol, and that the experience gained during the workshop would help the participants carry out their work more effectively, and establish fruitful collaborations.

32. Finally, the participants expressed appreciation to the Government of Japan through the Japan Biodiversity Fund, the Government of the Republic of Korea through the Korea Biosafety Capacity Building Initiative. They also extended their gratitude to the Department of Chemistry of the Ministry of Science, Technology and Innovation for hosting the workshop as well as the Secretariat for organizing it.

33. The workshop closed at 1:40 p.m. on 24 March 2017.

Annex I

LIST OF PARTICIPANTS

PARTIES

Bangladesh

1. Ms. Sonia Afsana
Senior Chemist
Department of Environment
Ministry of Environment and Forests
Poribesh Bhaban, E/16, Agargaon, Sher-e Bangla Nagar, Dhaka-1207
Bangladesh
Tel.: +8801815028145
Email: sonia.afsana@yahoo.com

Bhutan

2. Ms. Tashi Yangzom
Sr. Regulatory and Quarantine Officer
Bhutan Agriculture and Food Regulatory Authority
Ministry of Agriculture and Forests
P.O. Box 1071
Thimphu, Bhutan
Tel.: +975 2 327031
Email: tashiy@moaf.gov.bt

China

3. Ms. Shanshan Dong
Research Associate
Nanjing Institute of Environmental Sciences
Ministry of Environmental Protection
No. 8 Jiangwangmiao Xuanwu District
Nanjng 200433, China
Tel.: +86-25-85287251
Email: dongss306@163.com

India

4. Mr. Lijo John
Assistant Director
Export Inspection Agency - Kochi
Department of Commerce, Ministry of Commerce & Industry, Govt. of India
27/1767 A, Shipyard Quarters Road,
Panampilly Nagar (South), Kochi –682036,
Kerala, India
Tel.: +91 484 2316945, 2316946
Email: eia-kochilab@eicindia.gov.in; lijocjohn@yahoo.co.in

Iran (Islamic Republic of)

5. Ms. Motahhareh Mohsenpour
Researcher
Genetic Engineering and Biosafety Department
Agriculture Biotechnology Research Institute of Iran (ABRII)
Seed and Plant Improvement Institutes Campus, Mahdasht Road
Karaj P. O. Box 31535-1897, Iran (Islamic Republic of)
Tel.: +98 26 32703536
Email: mthrhm@yahoo.com

Iraq

6. Ms. Shurook M.K. Saadedin Al-Shadeedi
Assistant Professor
Institute of Genetic Engineering and Biotechnology of Postgraduate Studies
University of Baghdad
Baghdad, Iraq
Tel.: 009647817424237
Email: ssaadedin@gmail.com

Lao People's Democratic Republic

7. Mr. Kosonh Xayphakatsa
Director of Genetic Resource Division
Biotechnology and Ecology Institute
Ministry of Science and Technology
P.O. Box 2279
Vientiane capital, Lao People's Democratic Republic
Tel.: 85620 59545606
Email: kosonh@yahoo.com

Lebanon

8. Mr. Joe Said
DNA Testing Specialist
Laboratory Science & Technology/Genetics Unit
American University of Science and Technology
Lebanese Reference Laboratory for GMO

testing, Alfred Naccash Avenue
Ashrafieh 1100-2130, Lebanon
Tel.: +961 1 218716
Email: jsaid@aust.edu.lb

Malaysia

9. Ms. Dharmeziyana Daud
Science Officer
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Tel.: +60379853195
Email: dharmeziyana@kimia.gov.my

10. Ms. Faizah Puad
Food Technology Officer
National Public Health Laboratory: GMO & Speciation
Ministry of Health
Malaysia
Tel.: +603-61261200
Email: faizahp@moh.gov.my

Mongolia

11. Ms. Odongoo Ravdandorj
Researcher of Molecular Biology
Laboratory of Molecular Biology, Division of Biotechnology
Mongolian Academy of Sciences
Institute of Biology, 77 Zhukov Street
Ulaanbaatar 51, Mongolia
Tel.: +976-95056392
Email: r.odongoo@gmail.com

Philippines

12. Ms. Jacqueline Ramos
Research Assistant
Bureau of Plant Industry, National Plant Quarantine Services Division
Department of Agriculture
Elliptical Circle, Diliman, Quezon Avenue
Quezon City 1100, Philippines
Tel.: 09278596845; (046) 862-0875
Email: jacquelineramos02@yahoo.com

Republic of Korea

13. Mr. Sanghyun Shin
Research Scientist
Honam Regional office/ Experiment and Analysis Lab
Animal and Plant Quarantine Agency
Republic of Korea
Tel.: 82-10-2741-4002
Email: Shinx101@korea.kr

Yemen

14. Ms. Nesrain Hasan Salem Hamid
Microbiology Specialist
Microbiology Lab
Yemen Standardization, Metrology and Quality Control Organization
Al-Zubairy Street Industrial Complex
Sana'a P.O. Box 15261, Yemen
Tel.: 00967-737902577
Email: nesreenhomaid2014@gmail.com

RESOURCE PERSONS

15. Mr. Oliver (Yu-Chih) Chen
Associate Researcher
Section of Food Biology, Division of Research and Analysis, Food and Drug Administration (TFDA)
Ministry of Health and Welfare, Taiwan
No.488, Sec. 6, Zhongxiao E. Rd., Nangang Dist., Taipei City 115
Taiwan Province of China
Tel.: +886 2 2787 7775
Email: yuchihchen@fda.gov.tw; ycc.oliver@gmail.com

16. Mr. Letchumanan Ramatha
Brahma Kumaris Malaysia
(Asia Retreat Centre)
Dengkil, Malaysia
Tel.: +60192216472
Email: bkletchu@yahoo.com

LOCAL STAFF (DEPARTMENT OF CHEMISTRY, MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION)

17. Ms. Elliza Mat Nor
Head of GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: elliza@kimia.gov.my

18. Ms. Yuvaneswari C. Swaran
Scientific Officer GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: yuvaneswari@kimia.gov.my

19. Ms. Noor Shafriza Zainal Azmi
Scientific Officer GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: shafriza@kimia.gov.my

20. Ms. Nazahiah Ab Ghani
GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: nazahiah@kimia.gov.my

21. Ms. Azeny Zainal Abidin
GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: azeny@kimia.gov.my

22. Ms. Ummi Hafiza AbdRazak
GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: ummihafiza@kimia.gov.my

23. Mr. Mohamad Amidi Mat Jahari
GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: amidi@kimia.gov.my

24. Ms. Nur Fatin Aimi Mohd Nor
GMO Unit
Biotechnology Section
Environmental Health Division
Department of Chemistry Malaysia
Jalan Sultan
46661 Petaling Jaya
Selangor, Malaysia
Email: fatinaimi@kimia.gov.my

SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY

25. Ms. Dina Abdelhakim
Secretariat of the Convention on Biological Diversity
413, Saint-Jacques Street, Suite 800
Montreal, Quebec H2Y 1N9, Canada
Tel.: +1 514 288 2220
Fax: +1 514 288 6588
Email: dina.abdelhakim@cbd.int

26. Ms. Manoela Miranda
Secretariat of the Convention on Biological Diversity
413, Saint-Jacques Street, Suite 800
Montreal, Quebec H2Y 1N9, Canada
Tel.: +1 514 287 8703
Fax: +1 514 288 6588
Email: manoela.miranda@cbd.int

Annex II

ASIA-PACIFIC WORKSHOP ON THE DETECTION AND IDENTIFICATION OF LIVING MODIFIED ORGANISMS

EVALUATION QUESTIONNAIRE

Participants were invited to undertake an exercise to evaluate the workshop by completing the questionnaire below. Participants were instructed to select one of the boxes that best reflected their assessment of the workshop.

A total of 15 participants representing Parties took part in the exercise. The number of respondents for each option is shown below.

A. OBJECTIVES OF THE WORKSHOP

Level of satisfaction					
How useful was the workshop in improving your knowledge or understanding of:					
The provisions of the Cartagena Protocol?	-	-	-	6	9
The role that detection and identification of LMOs plays under the Protocol?	-	-	-	4	11
Parties' obligations under the Protocol that rely on the detection and identification of LMOs?	-	-	-	3	12
Laboratory sampling and preparation of test samples?	-	-	-	5	10
Methods for the extraction and purification of DNA from test samples?	-	-	-	3	12
Testing methods and analysis of results?	-	-	-	3	12
Considerations on quality assurance and quality control?	-	-	-	7	7
Existing capacities and experience in other countries?	-	-	1	7	7

B. OVERALL WORKSHOP ASSESSMENT

Level of satisfaction					
Did the workshop meet your expectations?	-	-	-	7	8
How well organized was the workshop?	-	-	-	2	13
How did you find the balance between presentations and discussions?	-	-	-	5	10
Was the workshop useful?	-	-	-	2	13
Overall, how would you rate the workshop?	-	-	-	1	14

_____