

## **GMOs (Control of Release) Expert Group**

### **Confirmed Minutes of the 4<sup>th</sup> Meeting**

Date : 21 February 2017 (Tuesday)  
Time : 2:30 – 4:20 p.m.  
Venue : Room 701, Agriculture, Fisheries and Conservation Department,  
7/F, Cheung Sha Wan Government Offices, 303 Cheung Sha Wan  
Road, Kowloon

#### **ATTENDANCE**

##### Chairman

Professor WONG Woon-chung Jonathan, M.H., J.P.

##### Members

Ms. AU Sin-lun, Catherine

Dr. CHEN Xue-ping

Professor CHENG Hon-ki, Christopher

Professor CHU Ka-hou

Ms. KIU Kin-yan, Judy

Professor LAM Hon-ming

Ms. LAU Yuen-ye, Vicky

Professor LEUNG Mei-ye, Kenneth

Dr. MAN Chi-sum, J.P.

Mr. SO Kwok-yin, Ken

Dr. TSE Tin-yau, Anthony

Mr. WONG Hing-keung

Ms. WONG Lai-yin, Idy

Dr. WONG TAAM Chi-woon, Vivian, J.P.

Mr. CHAN Kin-fung, Simon

Assistant Director (Conservation),  
AFCD

Dr. LOW Hon-kei, Kelvin

Senior Medical and Health Officer,  
Department of Health

Ms. CHAN Wai-yan, Vivian

Senior Administrative Officer  
(Nature Conservation),  
Environmental Protection

Department

Secretary

Dr. NG Sai-chit

Conservation Officer (Biodiversity)  
4, AFCD

**IN ATTENDANCE**

Dr. YIP Yin, Jackie

Senior Conservation Officer  
(Biodiversity), AFCD

**ABSENT WITH APOLOGIES**

Professor LAU Lok-ting, Terence

Dr. LO Sze-chung, Clive

**WELCOME MESSAGE**

1. The Chairman welcomed all members to the first meeting of the term (2015-2017) of the Genetically Modified Organisms (Control of Release) Expert Group (the Expert Group). The Chairman welcomed Ms. Catherine AU, Dr. CHEN Xue-ping, Prof. Christopher CHENG, Ms Judy KIU and Dr. Vivian WONG TAAM as members of the Expert Group joining the meeting for the first time. The Chairman also welcomed Dr. Jackie YIP as Senior Conservation Officer (Biodiversity) and Ms. Vivian CHAN as Senior Administrative Officer (Nature Conservation) of Environmental Protection Department joining the meeting for the first time. The Chairman told members that Dr. Clive LO and Prof. Terence LAU had apologised for their absence in the meeting.

2. The Chairman reminded members about the declaration of interests and transparency measures adopted by the Expert Group. Members were requested to follow the declaration of interests and transparency measures.

## **AGENDA ITEMS**

### **I. Confirmation of Minutes of the Last Meeting held on 8 May 2015**

3. The Chairman told members that the draft minutes of the last meeting held on 8 May 2015 was circulated on 6 July 2016 and no comments were received. As members had no further comments in the meeting, the draft meeting minutes were confirmed.

### **II. Report on the Eighth Meeting of the Conference of the Parties Serving as the Meeting of the Parties (COP-MOP8) to the Cartagena Protocol on Biosafety and relevant issue at the Thirteen Conference of the Parties to the Convention on Biological Diversity (COP13)**

(Discussion paper: GMO/01/2017)

4. The Chairman invited Dr. Jackie YIP to present the discussion paper (GMO/01/2017) which reported on the decisions that had been made in the Eighth Meeting of the Parties (COP-MOP8) to the Cartagena Protocol on Biosafety (the Protocol) and relevant issue at the Thirteen Conference of the Parties to the Convention on Biological Diversity (COP13) and the implications on the implementation of the Protocol in Hong Kong.

5. Members noted the decisions made in the COP-MOP 8.

6. A member enquired if there was any food resulted from synthetic biology (SB) that might be commercialised in the near future. Dr. Jackie YIP replied that there was not yet a widely accepted definition of SB, which involved a wide range of modern biotechnologies. AFCD would keep in view the future development of SB, and would enforce the controls of the Genetically Modified Organisms (Control of Release) Ordinance (the Ordinance) if these products or modified organisms of SB fell within the definition of genetically modified organisms (GMOs) in the Ordinance. On the other hand, given the fact that certain products or organisms resulted from SB might not be detectable, some Parties were considering exempting organisms resulted from certain processes or techniques of SB from the controls of their GMO regulation. Dr.

NG Sai-chit supplemented that gene-editing (also known as genome-editing) technique using molecular tools, such as CRISPR, TALENS, and ZFNs, was one of the most widely used SB techniques in recent years. Currently a lot of gene-editing researches were conducted to develop new crop varieties with desirable characteristics, such as non-browning mushrooms and drought-tolerant waxy corn. Certain organisms resulted from gene-editing might carry targeted mutation, and thus they might not be distinguishable from similar variants resulted from traditional breeding and selection methods.

7. Two members further explained how SB technologies were different from genetic modification technologies. One of the members stated that gene-editing techniques were recently developed biotechnology techniques to achieve genetic modification, and they should be under the controls of the Ordinance, although it might be questionable whether the resulted modified organism could be detected. He added that the recently developed tools, such as CRISPR and TALENS, could achieve gene-editing easily in most laboratories. On the other hand, SB was not well-defined and it encompassed a much wider range of biotechnology techniques. Certain products of SB, such as some nanoparticles, might have certain biological properties yet they might not be defined as GMOs under the Ordinance.

8. Another member commented that, although gene-editing techniques involved in vitro application to modify the genes, further deliberation would be needed to clarify whether they should fall under the definition of GMO. This was because certain changes introduced by gene-editing, such as targeted deletion, might also occur naturally, and such changes would not possibly be detected as there was no foreign gene insertion and the resulted organism would not be distinguishable from other natural variant. Most of the commercialised GMOs carried foreign genes and thus they fulfilled the definition of GMOs in the Ordinance. On the other hand, deliberation would also be needed to clarify whether a modified organism from SB which had their original genetic material re-arranged, would fall under the definition of GMOs in the Ordinance. Another key concern for these modified organisms from SB would be whether they might pose any risk with regard to food safety or risk to the environment.

9. The Chairman opined that, for the sake of law enforcement, it was important to

clarify whether the organisms resulted from SB would be defined as GMO under the Ordinance. He also agreed that a modified organism with their original genetic material re-arranged might have different gene expression, and thus there would be implication to the risk assessment for these organisms.

10. A Member hoped that the Government could provide a clear guideline for the seed traders sector whether the organisms resulted from these newly developed modern biotechnologies would be regulated by the Ordinance if the genetic changes introduced by the SB technologies were not detectable. Another member indicated that the importer and exporter sectors would also be affected by the Government's position on SB. Mr. Simon CHAN responded that AFCD would keep in view the decisions of the coming COP-MOPs with regard to the definition of SB technologies under the Protocol. In the meantime, AFCD would follow the existing definitions of GMOs in the Ordinance and LMOs in the Protocol, with regard to the regulation of products arising from SB technologies. On the other hand, AFCD would need the expert advices from the members of the Expert Group with regard to sampling and detection of the newly developed modified organisms from SB.

11. Another member further enquired the definition of GMO and modern biotechnology in the Ordinance. Mr. Simon CHAN explained that GMO was defined in the Protocol and the Ordinance as living organism that possesses a novel combination of genetic materials obtained through the use of modern biotechnology, and modern biotechnology means the application of (a) in vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or (b) fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection. Dr. NG Sai-chit further explained that modern biotechnology in the Protocol referred to biotechnology and techniques that were not traditional breeding and selection method. With regard to the implementation of the Protocol and the enforcement of the Ordinance, a GMO should possess a novel combination of genetic materials obtained through the use of modern biotechnology. As such, a modified organism resulted from gene editing might not be qualified as a GMO if it possessed a combination of genetic material that was not distinguishable from a variant that could be resulted from traditional breeding and selection.

12. A Member suggested that, given the difficulty to define GMO, the Government should propose to the COP-MOP to require the developers to insert a “DNA tag” in the GMOs to facilitate their detection. Another member concurred with the suggestion and reckoned that the DNA tag would be similar to the labelling requirement used for food labelling. Another member noted that it would be a challenge to regulate or label GMO products resulted from SB technologies such as CRISPR as it might not have any traceable GM element in the product. The Chairman opined that there should be further elaboration of the definition in the Ordinance for the relevant stakeholders to follow when dealing with GMOs resulted from SB. He recommended AFCD to include the discussion of SB in the agenda of future Expert Group meetings.

13. A member enquired further the term “novel combination” in the GMO definition, Dr. NG Sai-chit responded that further clarification would be required to define whether an organism resulted from SB should be regarded as GMO if its combination of genetic materials was not different from that of a variant resulted from traditional breeding and selection. The Ad Hoc Technical Expert Group (AHTEG) on SB established by the Convention on Biological Diversity Secretariat would consider whether any organisms resulted from SB might fall outside the definition of GMOs. AFCD would keep in view the recommendations from AHTEG on SB. Another member added that natural population already contained a lot of genetic variations, and thus it might not be easy to identify a novel combination of genetic material if the organism was modified with genes from the same species or with rearrangement of the genes it originally had. However, the newly developed CRISPR techniques could achieve the above changes in a much shorter time than using traditional breeding and selection methods.

14. A member enquired whether there might be any special risk concerns for organisms resulted from SB due to the scale of human intervention on the particular combination of genetic materials. Another member commented that the World Health Organization had published a guideline on risk assessment of genetically modified food. It was considered that the guideline should be applicable to food developed from SB and other newly developed techniques. The Chairman commented that one might argue a risk assessment might not be necessary if the modified organisms from SB had the same combination of genetic materials as a naturally bred variant, as they

should have the same risk profile. The Chairman opined that the SB issues would have important implications to the organic farming sector in the near future.

15. Mr. Simon CHAN suggested that members might consider providing their suggestions and comments on the topic of SB before the AFCD representatives attend the next COP-MOP9 Meeting in 2018. The Chairman concurred with the suggestion. Dr. Jackie YIP thanked the members' advice, especially regarding the definitions in the Ordinance, the risks assessment and enforcement of the Ordinance in relation to organisms resulted from SB technologies. She noted that members generally agreed that the definitions in the Ordinance and the Protocol might cover organisms resulted from SB, although it might be a challenge to detect the organisms and to conduct risk assessment for them. AFCD would consider consulting various stakeholders likely to be affected by the development of SB to identify any gaps and challenges. The Chairman noted that there were still uncertainties regarding the definitions which had rooms for further elaboration. He opined that further clarification of the definitions related to SB should be provided by AFCD after consulting the Expert Group and other relevant stakeholders.

16. Upon a member's enquiry, Dr. Jackie YIP responded that there had not been any prosecution case against intentional release of GMO previously, and AFCD had not received any application for release of GMO in Hong Kong.

17. A member enquired about unintentional or illegal transboundary movement. Dr. NG Sai Chit responded that a person being charged by the Ordinance for importing a GMO intended for release without approval or exemption could defend by establishing that he/she did not know that the organism was GMO. Mr. Simon CHAN further clarified that according to the Ordinance, prior approval was not required for the import of GMO intended for direct consumption for food, feed or for processing. On the other hand, all shipments of GMOs intended for release, for contained-use or for direct consumption as food, feed or for processing, when being imported or exported, had to be accompanied by prescribed documents.

### III. Survey on GMOs in Hong Kong 2014-15 and 2015-16

(Discussion Paper: GMO/02/2017)

18. Invited by the Chairman, Dr. NG Sai-chit briefed members on the discussion paper (GMO/02/2017) that summarised the findings of the survey conducted during 2014-15 and 2015-16 on GMOs in local markets and farms.

19. The Chairman also reported a recent study by the Hong Kong Organic Resource Centre (the Centre) on the papaya fruits produced by locally grown certified organic papaya. According to the Centre's survey, 31% of the papaya fruits produced by certified organic papaya plants contained genetically modified (GM) seeds. The same study was conducted again in 2016 and the percentage had dropped to 13%. The Centre's survey also revealed that the contamination occurred only in the seeds but not in the pulp or leaves.

20. A member was concerned about the risk of release for GM fluorescent aquarium fish. He noted that the GM fluorescent aquarium fish available in the market could produce offspring in aquarium. He suggested the Government to strengthen education to the public for not releasing GM fluorescent aquarium fish in the nature.

21. A member suggested AFCD to collect seed samples imported from China as most of the papaya being grown there belonged to the unapproved Taiwan strains (i.e. the TW-lines). The member presented in the Expert Group meeting a sample of packaged papaya seed purchased in the Mong Kok Flower Market. Dr. NG Sai-chit responded that the papaya seed samples in the 2014-15 and 2015-16 GMO survey were purchased from local traditional seed traders where the papaya seeds were mostly imported from Taiwan. AFCD would try to source seed samples produced in China and other countries in future GMO surveys. Another member added that, the TW-lines were not approved and not controlled in China, and it was also found they were more disease-tolerant than the approved strain, thus the TW-lines had spread widely among farmers in recent years. Another member stated that letters had been issued to seed traders of the Hong Kong Seed Trader Association to remind them to avoid importing papaya seeds from unknown sources. However, a lot of vendors selling seeds in the flower market were not members of the Association.

22. A member was concerned about the import of un-exempted GM papaya, and asked whether there would be any action by the AFCD for vendors selling unexempted GM papaya seeds in the market. Dr. NG Sai-chit responded that legal actions against the vendors would be initiated if there was proof suggesting that they had knowingly imported the unexempted GM papaya seeds. Mr. Simon CHAN said that AFCD would continue the education and publicity work in relation to the Ordinance. Moreover, future GMO surveys would expand the sampling of papaya seeds to cover flower shops which were not traditional seed traders. A member stated that, being one of the flower retailers in the Mong Kok Flower Market, he would remind other flower retailers not to sell seeds from unknown source and take note of the requirements in the Ordinance.

#### **IV. Any Other Business**

23. There was no other issue to discuss.

24. As this meeting is the last meeting for the current term of the Expert Group, the Chairman thanked all Members for their support to the work of the Expert Group in the third term (20.06.2015 – 19.06.2017).

25. On behalf of AFCD, Mr. Simon CHAN thanked the Chairman and Members for their support to the effective implementation of the Ordinance and their expert advices for the challenging issues being discussed in the Expert Group. Mr. CHAN especially thanked some of the members, including the Chairman, who had served the Expert Group for the last six years since the commencement of the Expert Group and the Ordinance in 2011.

26. Mr. Simon CHAN said the Secretary for the Environment would appoint members for the next term soon.

27. The meeting adjourned at 4:20 p.m.

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