Elaboration of guidelines for implementation of the Convention (decision FCTC/COP1(15))

Article 9: Product regulation

1. The first session of the Conference of the Parties to the WHO Framework Convention on Tobacco Control decided (decision FCTC/COP1(15)) to set up a working group¹ to develop guidelines pursuant to Articles 9 and 10 of the WHO Framework Convention regarding, in a first phase, the testing and measuring of tobacco product contents and emissions. For the second session of the Conference of the Parties, either draft guidelines or a progress report were to be presented. This document is the progress report that the working group has opted to present. In addition to giving an overview of the work done so far, this report proposes an outline for future work.

Meetings

2. Three meetings of the working group took place after the first session of the Conference of the Parties.

3. In Norway, in May 2006, the World Health Organization, acting as the interim secretariat to the WHO Framework Convention (pursuant to Article 24.2 and in accordance with decision FCTC/COP1(10) and resolution WHA56.1)² convened the first meeting with the key facilitators and WHO’s Tobacco Free Initiative to develop a workplan and to discuss expected outputs and timelines for the development of guidelines. Agreement was reached that, in general, the agenda, the list of participants and an abstract of the minutes would be made public. It was also suggested that participants be requested to complete a conflict of interest form. It was agreed upon to invite up to three representatives of civil society to future meetings.

4. The second meeting, held in Japan in July 2006, was convened by the interim secretariat and was attended by the key facilitators, WHO’s Tobacco Free Initiative, a number of Parties that offered to partner in the development of the guidelines, the entire WHO Study Group on Tobacco Product

¹ Key facilitators: Canada, the European Community and Norway. Partners: Brazil, China, Denmark, Finland, Hungary, Jordan, Kenya, Mexico, Thailand, the Netherlands and the United Kingdom of Great Britain and Northern Ireland.

Regulation and representatives of the Framework Convention Alliance. The discussions focused on a set of questions relating, in particular, to the testing and measuring of the contents and emissions of tobacco products and, more generally, to the scientific basis of tobacco product regulation.¹

5. The third meeting, held in Canada in October 2006, was convened by the interim secretariat and was attended by the key facilitators, WHO’s Tobacco Free Initiative, the majority of the Parties that offered to partner in the development of the guidelines, as well as representatives from the Study Group, the WHO Tobacco Laboratory Network and the Framework Convention Alliance. This meeting was mainly focused on the drafting of the progress report for the second session of the Conference of the Parties.

6. One of the key facilitators, the European Community, has offered to host the next meeting of the working group from 26 to 28 September 2007 in Brussels.

Working group’s task

7. In accordance with the decision adopted by the Conference of the Parties, the working group is first looking at cigarettes. The working group believes that methods can be developed and validated in the area of analytical chemistry for measuring and testing cigarette contents and emissions. The working group is also of the opinion that methods in toxicology and dependence liability have promise for use in cigarette monitoring.

8. Methods in analytical chemistry can, for example, be put in place by Parties to monitor trends, over the years, of selected chemicals found in unburnt cigarettes (contents) of various brands and in the cigarettes’ smoke (emissions). Methods in toxicology would be applied to monitor the adverse effects of chemicals (from either the contents or the emissions) using cultured bacteria or mammalian cells, animals or human trials, and the application of biomarkers. For their part, methods in dependence liability would be utilized to monitor the various factors that influence cigarettes’ attractiveness and dependence-producing properties.

9. The working group expects that the development and validation of guidelines setting out these methods will take several years, given the amount of work required and the complexity of the issues faced. International sharing of experience, expertise and knowledge is essential in order to successfully undertake and complete this process.

Public health rationale for tobacco product testing and measuring

10. The working group believes that the main objective of testing and measuring tobacco product contents and emissions would be for the purposes of allowing Parties to characterize and monitor cigarettes and other tobacco products. As tobacco product regulation is still an emerging issue, other purposes may be identified by the working group in the future.

11. Although some Parties have implemented testing and measuring regulations, this type of control measure has been fairly limited on a global scale. This may explain why there has been little

¹ To obtain a copy of “Question and answer session for the development of guidelines for the implementation of Articles 9 and 10 of the WHO FCTC” in its entirety, contact WHO’s Tobacco Free Initiative at: tfi@who.int.
assessment of the effects of such measures on public health. Parties are invited to evaluate their future interventions in this area and to share their results with other Parties.

12. At this stage, it is expected that tobacco product monitoring would be achieved by requiring the tobacco industry to perform the specified testing and measuring and then to provide the information generated to the competent national authority.

13. Accomplishments and challenges are reviewed in the next section. The working group has identified four points on which it would appreciate receiving direction from the Conference of the Parties.

ACCOMPLISHMENTS AND CHALLENGES TO MOVING FORWARD

14. The area covered by Articles 9 and 10 is one of the most challenging fields of tobacco control. While it is clear that Parties must act rapidly to develop much-needed guidelines, the complexity of the issues faced calls for considerable prudence.

15. Several Parties may face serious capacity problems when considering the eventual adoption of guidelines. Parties will need to take a measured approach when addressing these challenges in order to avoid deviating from a comprehensive and balanced tobacco control strategy. Parties will therefore need to consider the relative importance of tobacco product regulations in their overall tobacco control strategy. Guidelines for Article 9 will have to be implemented within a broad strategy to bring added value to each Party’s tobacco control efforts. This could mean that a higher priority may be given by a Party to the implementation of selected guidelines, which could be carried out in a staged process in accordance with its tobacco control strategy.

16. What follows is an overview of the progress made by the working group on a number of relevant issues. Where appropriate, a discussion of the perceived key challenges in moving ahead has been inserted.

Provisional definitions

17. The working group has developed the following provisional definitions for “contents” and “emissions”.

18. “Contents” includes all tobacco product components, materials used to manufacture those components, residual substances in tobacco from agricultural practices and from storage and processing and substances that migrate from packaging material into the product, as well as all additives and processing aids. The term also includes substances that occur naturally in the tobacco.

19. “Emissions” includes all substances that are produced and released when the product is used. For example, in the case of cigarettes and other combusted or heated products, emissions refers to the substances found in the smoke. In the case of smokeless tobacco products for oral use, emissions refers to substances released during the process of chewing or sucking, and in the case of nasal use, to substances released during the process of sniffing.

20. For the working group, the terms “measuring and testing” taken together represent, in the context of Article 9, the application of methods in the areas of analytical chemistry, toxicology and dependence liability. The provisional individual definitions are as follows.
21. “Measuring” refers to the use of analytical methods to generate both quantitative and qualitative data, including the identification and quantification of substances.


23. The working group may further refine these last two definitions in order to clarify their scope and meaning.

Guidelines in analytical chemistry

24. The analysis of material samples to learn about their composition, structure and function is known as analytical chemistry, which can be split into two main types: qualitative and quantitative. Qualitative analysis seeks to establish the presence of a given element or compound in a sample, while quantitative analysis seeks to establish its amount.

25. The working group has determined that guidelines can be developed for methods in analytical chemistry to identify and quantify selected chemicals in cigarette contents and emissions.

26. In order to compile a list of cigarette contents of interest, the working group proposes the following provisional criteria for inclusion: substances with known inherent toxicity as well as substances with the potential to increase toxicity, addictiveness or attractiveness, either on their own or as a result of interaction with other substances. Factors related to these criteria that may be taken into account when prioritizing contents of interest for testing and measuring include the concentration of a particular substance in cigarettes, the variability of its concentration between brands and the extent to which the substance is present among various brands.

27. A provisional list of cigarette contents of interest follows:

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Nicotine                                   Metals (for example, arsenic, cadmium, chromium, lead, mercury, nickel, selenium)
Additives (for example, humectants and flavours)  Pesticides and herbicides
Aldhydes                                   Sugars (added and naturally occurring)
Ammonia/ammonium ion                       Tobacco-specific nitrosamines
Etheric oils (for example, menthol and eugenol)
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28. In regard to emissions, the working group wishes to underscore that tar, nicotine and carbon monoxide should not be the sole emissions measured for product monitoring purposes, as they do not provide a sufficiently broad chemical profile. Using the general criteria of relevance to public health, the working group believes that the list of 44 “Hoffmann analytes” forms a sound basis for such purposes. (The “Hoffmann analytes” refers to a list of toxic and carcinogenic constituents in mainstream cigarette smoke compiled by Dr Dietrich Hoffmann.) Criteria for prioritization of these analytes may have to be developed.

29. A provisional list of cigarette emissions of interest follows:

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Acetaldehyde                                Acrylonitrile
Acetone                                     1-Aminonaphthalene
Acrolei                                     2-Aminonaphthalene
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30. Unlike the methods used for analysing contents, a critical step in the methods for analysing emissions is specifying how the cigarettes are to be smoked. The working group appreciates that the selection of a smoking regimen is a contentious issue. It acknowledges that smoke emission data from machine measurements are not intended to be nor are they valid measures of human exposure.

31. At this point, the working group believes that methods to test and measure emissions should provide for the machine smoking of cigarettes under conditions of different intensities in the collection of mainstream smoke (mouth-level smoke exposure); however, the working group has not yet decided to propose a specific smoking regimen. The working group is aware of the work being done on this issue by the WHO Tobacco Laboratory Network\(^1\) and intends to study it at one of its next meetings.

**Method development**

32. Although reliable analytical methods exist for most of the above-mentioned contents and emissions, the majority are not validated. The working group proposes to work with the Network to review the structure and completeness of identified methods and to support the development of new methods where they are lacking. This review is expected to take a minimum of two years once the review process has been set up, and will depend on funding availability. Should new contents or emissions of interest be added to the lists, additional development work would have to be performed.

**Method validation**

33. Validation is an essential process in the development of a method in order to demonstrate that the method in question is suitable for its intended purposes. Before a guideline is to be submitted to the Conference of the Parties for adoption, the testing and measuring method it contains must first be validated. Typical validation characteristics for analytical methods are: accuracy, precision

\(^1\) For a copy of the submission by the WHO Tobacco Laboratory Network to the working group outlining the technical pros and cons of the International Organization for Standardization, Massachusetts, intense smoking and human compensatory cigarette smoking machine regimens, contact the interim secretariat or WHO’s Tobacco Free Initiative at: tfi@who.int.
(repeatability and reproducibility), specificity, limit of detection, limit of quantification, linearity and range.

34. Regarding contents, a validated method already exists for alkaloids in tobacco (for example, nicotine) that was developed by the International Organization for Standardization. That organization is currently developing a method for tobacco-specific nitrosamines. For other contents, no methods have yet been validated.

35. With respect to emissions, validated methods are available from the International Organization for Standardization for nicotine and related alkaloids, carbon monoxide, water and tar. No methods have yet been validated for other emissions.

36. The working group has started discussing with the Network the conditions that would be necessary to develop a suitable validation process for the analytical methods not yet validated. Key points that would have to be taken into account include the number of independent laboratories that should be involved in this validation process and the number of materials each laboratory would have to test.

37. The working group estimates that the validation of analytical methods covering all of the above-mentioned contents not already included in an International Organizations for Standardization method could cost as much as US$ 200 000. For similarly unvalidated cigarette emissions of interest, the estimates are as high as US$ 2 000 000. The working group proposes to work with the Network to arrive at a more precise cost estimate, which would be part of a detailed workplan to be submitted to the Conference of the Parties at a later session.

38. It is expected that the validation of methods for the above-mentioned contents and emissions may require several years, depending on funding availability.

**Laboratory capacity**

39. It is anticipated that Parties would eventually require that cigarette manufacturers perform the testing and measuring of contents and emissions as per the guidelines to be adopted pursuant to Article 9.

40. The working group recognizes that some Parties may want to verify the data obtained from industry by performing their own testing and measuring. It has been suggested that the cost of testing and measuring for verification purposes could be borne by the tobacco industry via licence fees or via annual brand registration, such as the brand registration put into place in Brazil.¹ The working group believes that for tobacco product contents, it is likely that independent laboratories can be found in all regions. However, testing and measuring emissions from tobacco products require very specialized laboratory staff and equipment. Independent laboratories that can perform this type of work cannot yet be found in all regions of the world. Strategies to develop resources and laboratory capacity in a number of regions will have to be fostered, and the working group proposes to work with the Network to identify possible avenues for development.

41. The working group plans on exploring alternatives for verifying measurement data and assessing the suitability of such alternatives for ensuring the validity of the data generated. For

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¹ This WHO/Tobacco Free Initiative product regulation best practice paper is forthcoming.
example, an alternative approach to verification could be the prior certification of laboratories that perform the testing and measuring.

**Communications**

42. The working group acknowledges that the communication of results derived from analytical methods to the public can create misunderstanding about differences in individual exposure and health risks. To prevent such misunderstandings, the Parties may want to consider, at a later stage, the adoption of guidelines pursuant to Article 10 concurrent with the adoption of guidelines pursuant to Article 9.

43. The working group wishes to obtain direction from the Conference of the Parties as to whether it should prioritize the development of guidelines in analytical chemistry.

44. *In consideration of the preceding information, does the Conference of the Parties agree that the working group’s first priority should be the development of guidelines in analytical chemistry?*

**Guidelines in toxicology**

45. Toxicology is the study of the adverse effects of chemical substances on living organisms. Such studies are done on cultured cells (in vitro toxicology), on animals (in vivo toxicology) or on humans (through research with human volunteers).

46. The working group realizes that the testing and measuring of the toxicity of cigarette contents and emissions is an emerging field, with promising use for tobacco product monitoring.

47. In vitro and in vivo methods are generally well established, but their use for testing tobacco product contents and emissions has been quite limited. For example, in the case of emissions, a small number of methods already exist to examine both the gas/vapour phase and the particulate phase, as well as the total smoke, however their value as a monitoring tool must still be evaluated. Important development and validation work will be needed before any guideline can be submitted to the Conference of the Parties for adoption.

48. With respect to human trials, the value of using biomarkers is far from being unequivocal. Some of the issues that need to be considered are: Which biomarkers should be measured and why? Can biomarkers be useful in monitoring tobacco products? How can we interpret biomarker measurements given individual human variability in response to toxicants? Furthermore, although methods for some biomarkers of effects are currently available, their use as a surveillance tool for assessing biological effects needs to be further developed. Finally, ethical considerations, capacity issues and the cost of controlling human trials will need to be examined.

49. The working group intends to develop a better understanding of these issues before recommending any course of action.

**Guidelines for assessing dependence liability**

50. Assessing abuse liability and dependence potential is an important component of the safety evaluation of many new medicinal compounds that influence central nervous system activity. To perform such assessments, national authorities usually rely on results from well-established in vitro and in vivo methods, combined, where appropriate, with clinical trial results.
51. Because tobacco products are known to be dependence producing, it is conceivable that methods for the assessment of abuse liability and dependence potential could be adapted to them. Potentially, these methods could be built upon to help study subjective responses (such as reinforcing effects, mood effects and side effects), behavioural responses (such as drug-seeking paradigm, self-administration and duration of use) and physical dependence (such as withdrawal and withdrawal suppression) in tobacco product users.

52. In the area of tobacco product analysis, the concept of testing and measuring the attractiveness and dependence-producing properties of various tobacco products is fairly new and its application to tobacco product monitoring in particular has yet to be defined. Although the working group believes this area to be very promising, it is of the opinion that there is insufficient knowledge to move forward with guidelines at this time. The working group encourages Parties to support progress in this field, so that relevant methods can be developed in the coming years. The working group intends to monitor advancements in this area.

**Suggested guideline template**

53. The working group proposes that the Article 9 guidelines in analytical chemistry be structured according to the following template (adapted from International Organization of Standardization standards and Organisation for Economic Co-operation and Development testing guidelines):

   (a) initial considerations  
   (b) principle of the method  
   (c) description of the method  
   (d) information on the test substance  
   (e) repeatability and accuracy  
   (f) reference substances and validation methods  
   (g) performance of the test  
   (h) calculation of the results  
   (i) data and reporting.

54. In addition to the template, the guidelines would include information on sampling and conditioning procedures and, where applicable, would provide an estimate of infrastructure costs, training costs and operating costs related to performing the method. Each guideline would also include an estimate of the cost to perform the method.

55. Finally, the working group proposes that before any guidelines are submitted to the Conference of the Parties for adoption, they be the subject of public consultations, possibly via the Internet.

56. In consideration of the preceding information, does the Conference of the Parties agree in principle with the suggested guidelines template?
Related issues: product characteristics and design features

57. Article 9 does not explicitly mention tobacco product characteristics other than contents and emissions, nor does it mention design features. Nevertheless, the Conference of the Parties, at its first session, did ask that the working group take into consideration design features in the development of guidelines, as noted in the adopted template.¹

58. Tobacco product characteristics, including design features, refer to a wide array of characteristics, from cigarette ventilation to ignition propensity, and from cigarette circumference to tobacco density. Methods already exist to evaluate these design characteristics and national authorities may wish to collect information on them.

59. The working group wishes to obtain direction from the Conference of the Parties as to whether the evaluation of contents and emissions, as identified in Article 9, may be understood to include tobacco product design characteristics or features. Should the Conference of the Parties agree, the working group proposes to work with the WHO Tobacco Laboratory Network to identify suitable methods to qualify and quantify such product characteristics, in addition to contents and emissions.

60. In consideration of the preceding information, does the Conference of the Parties agree that “contents and emissions” is understood to comprise the characteristics, including the design features, of the tobacco product itself?

Global data repository

61. Most Parties will be confronted by capacity challenges when adopting Article 9 guidelines related to verifying the quality of the data collected, analysing the data and understanding their meaning and acting upon this new knowledge.

62. WHO and civil society representatives have suggested that the working group consider the development of a global repository for tobacco data, including data related to contents, emissions and product characteristics such as product design features, in order to provide an efficient and cost-effective means of collecting, storing, evaluating and appropriately disseminating the data collected by the Parties.² The global repository could present an opportunity to achieve a uniform means of collecting data, a central repository for the data and a coherent protocol for analysing the information.

63. The working group considers that this is an interesting avenue to explore in more detail in the future.

Guidelines with the potential to create standards

64. The working group recognizes that guidelines adopted by the Conference of the Parties pursuant to Article 9 would have the effect of standardizing testing and measuring methods. The working group wishes to seek direction from the Conference of the Parties on how it intends to exercise its standardization competence. The working group discussed two tenable and feasible options on the

¹ A/FCTC/COP/1/DIV/8_FCTC/COP1(15).
² Study Group on Tobacco Product Regulation recommendation: Guiding principles for the development of tobacco product research and testing capacity and proposed protocols for the initiation of tobacco product testing (WHO 2004).
issue of standards for tobacco product testing and measuring. The following are the two options for the Conference of the Parties:

(a) to invoke its competence to establish its own tobacco testing and measuring standards;

(b) to request WHO, with the financial and political backing of the Conference of the Parties, to work with the International Organization for Standardization Technical Committee on Tobacco and Tobacco Products (Technical Committee 126) in the establishment of tobacco testing and measuring standards.

65. Option one implies that the Conference of the Parties would provide resources to the WHO Tobacco Laboratory Network to develop and validate tobacco emissions and contents testing and measuring methods. As only independent laboratories participate in the Network, this option would protect against industry influence. However, it would call for setting up capacity and procedures.

66. Option two may remove some funding pressure from the Conference of the Parties’ budget. However, historically, the International Organization for Standardization development process in the tobacco product area has not always been in support of public health objectives.

67. The Conference of the Parties has the competence to elaborate international standards in the areas covered by the WHO Framework Convention. There are numerous examples of technical guidelines and similar non-binding instruments adopted by international bodies, such as food standards under the Codex Alimentarius or technical guidelines under a number of environmental treaties. Some of these have been recognized as international standards in the relevant fields, which is a strong indication of general international recognition. The interim secretariat will submit a paper on this issue to the Conference of the Parties.

68. In consideration of the preceding information, how does the Conference of the Parties want to exercise its competence to adopt international tobacco testing standards? Does it intend to act as a standardization body itself by requesting and funding the WHO Tobacco Laboratory Network to develop and validate tobacco emissions testing methods? Or, does it want to back WHO in its work with the International Organization for Standardization to develop and validate tobacco emissions testing methods?

Future work

69. The working group suggests that its mandate be extended so that it can, as priorities:

(a) further examine the issue of smoking regimens (relevant for the testing and measuring of emissions);

(b) prepare a workplan for the validation of analytical methods, including cost implications, with the assistance of the Network;

(c) examine mechanisms of financing for the testing and measuring of tobacco products contents and emissions, as well as discuss industry responsibility in this context.
EXISTING WORK TO BUILD ON

70. The Conference of the Parties, at its first session, asked that the Article 9 guidelines be based on the work already completed under the auspices of WHO’s Tobacco Free Initiative and the WHO Study Group on Tobacco Product Regulation. The following is an overview of this work.

WHO Tobacco Laboratory Network

71. WHO’s Tobacco Free Initiative created the Tobacco Laboratory Network to address testing and research on tobacco products at the global level and further the aims and objectives of the WHO Framework Convention on Tobacco Control tobacco product regulation provisions.

72. The goals of the Network are:

(a) to establish global tobacco testing and research capacity to test tobacco products for regulatory compliance;

(b) to research and develop harmonized standards for contents and emissions testing and to share tobacco research and testing standards and results;

(c) to inform risk assessment activities related to the use of tobacco products;

(d) to develop harmonized reporting of such results so that data can be transformed into meaningful trend information that can be compared across countries and over time.

WHO Study Group on Tobacco Product Regulation

73. In November 2003, the WHO Director-General formalized the ad hoc Scientific Advisory Committee on Tobacco Product Regulation by changing its status to that of a study group. Following the status change, the Scientific Advisory Committee became the WHO Study Group on Tobacco Product Regulation. The Study Group is composed of experts on product regulation, tobacco-dependence treatment and the laboratory analysis of tobacco ingredients and emissions. Its work is based on the forefront of research on tobacco product issues. It recommends research and testing in order to fill regulatory gaps in tobacco control. As a formalized entity of WHO, the Study Group reports to the WHO Executive Board through the Director-General in order to draw the Member States’ attention to WHO’s efforts in tobacco product regulation, which is a novel and complex area of tobacco control.

74. WHO has published the following eight documents by the Scientific Advisory Committee and, later, the Study Group:

(a) Statement of principles guiding the evaluation of new or modified tobacco products;

(b) Recommendation on nicotine and the regulation in tobacco and non-tobacco products;

(c) Recommendation on tobacco product ingredients and emissions;
(d) Conclusions and recommendations on health claims derived from ISO/FTC method to measure cigarette yield;

(e) Recommendation on smokeless tobacco products;

(f) Recommendation: Guiding principles for the development of tobacco product research and testing capacity and proposed protocols for the initiation of tobacco product testing;

(g) Best practices in tobacco control – regulation of tobacco products in Canada;

(h) Scientific advisory note – waterpipe tobacco smoking: health effects, research needs and recommended actions by regulators.

WHO attempt at collaboration with International Organization for Standardization Technical Committee 126

75. The International Organization for Standardization’s cigarette testing standard having been heavily criticized by public health experts, WHO persuaded Technical Committee 126, in November 2004, to set up a working group, called Working Group 9, to develop a new cigarette testing method. WHO mobilized public health experts to participate in the working group. Neither Working Group 9 nor the plenary meeting reached a consensus regarding a cigarette testing method.1 WHO urged the Technical Committee 126 members to delay any new work item to develop an intense smoking regimen until such time as the Conference of the Parties has decided on a guideline for the implementation of the tobacco product regulation provisions of the treaty.

76. On 28 November 2006, WHO sent a letter to Technical Committee 126 informing them about relevant outcomes of the meeting of the Article 9 guidelines working group in Ottawa in October 2006. WHO informed Technical Committee 126 that the working group had decided, after consideration of the scientific and methodological issues, that consultation with existing government and independent laboratories and others regarding the cigarette smoke-extraction regimen to use in order to generate testing samples was needed prior to arriving at a decision and that process is now under way. In sum, WHO requested that Technical Committee 126 delay its work on the development of an intense cigarette smoking machine testing regimen until the Conference of the Parties reaches a decision, as it would make little sense to invest resources in developing and validating a new regimen until it is clear which regimen will be recommended by the Conference of the Parties. As of the writing of this progress report, it remains to be seen whether Technical Committee 126 will delay its work pending the decisions of the second and third sessions of the Conference of the Parties, or whether it will go ahead and create standards without any considerations of those decisions.

1 At the International Organization for Standardization Technical Committee 126 plenary meeting in May 2006, WHO was given permission to distribute to interested Conference of the Parties delegates the complete copy of the Working Group 9 report. To obtain a copy, contact WHO’s Tobacco Free Initiative at: tfi@who.int.