Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
[1]	G	Editorial	Annex 2 will need to be modified once the Dielectric Heat treatment is added	Annex 2 contains the symbols to be used for the different treatments	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[2]	G	Editorial	Annex 2 will need to be modified once the Dielectric Heat treatment is added	Annex 2 contains the symbols to be used for the different treatments	European Union
[3]	G	Substantive	In general, EPPO supports the inclusion of dielectric heating as a treatment for ISPM 15. However, EPPO has some specific concerns which may need further consideration. Therefore, EPPO requests the IPPC Technical Panels to review the existing scientific evidence in order to verify whether all aspects important for the effective application of the dielectric heat treatment have been sufficiently addressed in the current draft revision of Annex 1 to ISPM 15. Some specific concerns relate to the final distribution of temperature throughout the profile of the wood as a result of the application of the dielectric heat treatment, e.g. whether the surface of wood will always be the coldest, which relates further to the placement of temperature sensors during the treatment (e.g. should they be placed on two opposite sides of the wood or inside the piece of wood). Specific attention may also be needed to the application of the dielectric heating to frozen wood or to dry wood that has become wet at the surface. Another aspect that may require further consideration is the possible need to specify requirements for the uniformity of the electromagnetic field during the treatment and methods or standards relating to its measuring and verification. The ability of microwaves to penetrate stacks of wood may also need to be further considered to clarify whether there is a need for requirements for spacing of wood during the treatment.	The EPPO Panel on CPM Affairs has received a scientific paper (Henin et al., under submission) which presents the results of the application of dielectric heating to frozen wood; the results show that in some cases the surface of wood reached the required temperature while the temperature of the core was lower than required.	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[4]	G	Substantive	redraft dielectric heating components of the annex.	Dielectric heating may make for a viable phytosanitary treatment of timber. However, the proposed standard will not ensure that the treatment will be applied in a way to deliver the desired outomes required of a phytosanitary treatment for timber. With microwave heating the distribution of heat in the timber is uneven in a manner that is not easily predictible which makes monitoring difficult and phytosanitary outcomes uncertain. Real time monitoring of internal wood temperature during treatment that accounts for temperature variability doesn't seem practical outside of laboratory scale treatments.	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				Commercial processes will probably have to rely on inferring internal temperatures by surface temperature measurement such an approach is of variable reliability. Australia believes that the dielectric component of the ISPM 28 annex requires significant revision and Australia will not support its adoption as currently drafted. Until the treatment annex is adopted, the dielectric heating components should not be incorporated into the ISPM 15 annex. When the time comes to incorporate dielectric heating into ISPM 15, Australia would like to see greater detail in the operational guidance to contracting parties consistent with that proposed for methyl bromide and heat treatments. this is particularly critical given the concerns that Australia has over the technical issues related to effective treatment of wood packaging with dielectric heat. Australia is of the view that any further development of ISPM 15 in relation to dielectric heat should reflect effective commercial application of the technology with the integration of processes that provide NPPOs with evidence of treatment efficacy. There are a number of references that may assist in providing further information on dielectric heat as a phytosanitary treatment. References 1. Torgonikov G; Vinden P, 2010. Microwave Wood Modification Technology and Its Applications, Forest Products Journal, Vol 60, No 2: 173-182. 2. Torgonikov G; Vinden P, 2009. High-intensity microwave wood modification for increasing permeability, Forest Products Journal, Vol 59, No 4: 84-92. 3. Korkut S. 2007. The effects of heat treatment on some technological properties in Uludag fir (Abies bornmuellerinana Mattf.) wood, Building and Environment 43 (2008) 422-428. This may mean this application is unsuitable for many packaging functions.	
[5]	G	Substantive	General Comments: We read through the document and had the following concerns	It has been found that plywood is vulnerable to infestation. It is found that IPPC compliant	Jamaica

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			Plywood should be removed from the list of items exempted from treatment. It was suggested that the treated wood be stamped with the date (at least the year) of treatment or accompanied by a document containing that information. The expectation that the effects of the treatment will last for a lifetime should be reviewed.	wood has been re-infested.	
[6]	G	Substantive	1) Both, the Annex to ISPM 15 and the draft Annex to ISPM 28 have very similar information and text when discussing wood treatments. It is repetitive to have this information in more than one standard. It may be confusing to countries looking for wood treaments in ISPM 28 when ISPM 15 Annex has all the wood treaments, explained in more detail. If the decision is not to move this information, at least it should be referenced to the other document, i.e. "Additional treatments can be found in ISPM 15" (or ISPM 28). 2) Change any instance of "shall" to "should". The IPPC cannot place requirements on countries. The use of "shall" should be limited to quoting the Convention.		United States of America
[7]	G	Substantive	The EU and its 27 Member States (hereinafter referred to as the "EU") support the adoption of dielectric heating as a treatment for ISPM 15 as soon as possible. However, EU has some specific concerns which may need further consideration. Therefore, we request that the existing scientific evidence is reviewed in order to verify whether all aspects important for the effective application of the dielectric heat treatment have been sufficiently addressed in the current draft revision of Annex 1 to ISPM 15 and that the draft is modified accordingly, if deemed necessary. Some specific concerns relate to the final distribution of temperature throughout the profile of the wood as a result of the application of the dielectric heat treatment, e.g. whether the surface of wood will always be the coldest, which relates further to the placement of temperature sensors during the treatment (e.g. should they be placed on two opposite sides of the wood or inside the piece of wood). Specific attention may also be needed to the application of the dielectric heating to frozen wood or to dry wood that has become wet at the surface. Another aspect that may require further consideration is the possible need to specify requirements for the uniformity of the electromagnetic field during the treatment and methods or standards relating to its measuring and verification. The ability of microwaves to penetrate stacks of wood may also need to be further considered to clarify whether there is a need for requirements for spacing of wood during the treatment.	The EU has received a scientific paper [Henin et al.: Implementing a Microwave Irradiation Treatment of Wood Packaging Material in ISPM15: Practical Issues of Concern (under submission to the Forest Products Journal)], which presents the results of the application of dielectric heating to frozen wood; the results show that in some cases the surface of wood reached the required temperature while the temperature of the core was lower than required.	European Union
[8]	2	Editorial	**4. Draft revision to Annex 1: Approved treatments associated with wood packaging material. ISPM 15:2009, Regulation of wood packaging material in international trade**	Correct use of Spanish. In the Spanish version to change the actual word used: "PROJECTO" by the following: "PROYECTO"	Mexico

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
[9]	3	Editorial	**Date of this document**: 2011-06-20 **Document category**: Revision of Annex 1 to ISPM 15:2009 **Current document stage**: SC 2011-05 revised and approved for MC **Origin**: The CPM-1 (2006) added topic: 2006-011: Draft revision to Annex 1: Approved treatments associated with wood packaging material. ISPM 15: 2009 Related subjects: SC 2010 added subjects: 2007-101 and 2007-114 under topic:2006-015: Wood packaging material treatments **Major stages**: 2003-03 ICPM-4 adopted ISPM 15:2002 and requested that methyl bromide was to be reviewed SC 2004-11 approved Specification 31 2005-02 TPFQ requested Annex 1 to ISPM 15 to be modified based on recommendation by IFQRG 2005-04 SC approved revised Annex 1 to ISPM 15 for MC under fast track process 2005-11 SC-7 recommended Annex 1 to ISPM 15 to go to the SC without modifications (no formal objections received) 2005-11 SC recommended Annex 1 to ISPM 15 to go to CPM. CPM-1 (2006) adopted modifications to Annex 1 to ISPM 15 with modifications but requested that CPM members submit technical data to further revise and added revision of ISPM 15:2002 to the work programme 2006-06 TPFQ revised ISPM 15 2007-07 TPFQ revised ISPM 15 2008-05 SC-7 (acting as SC) approved ISPM 15 for MC 2008-11 SC recommended ISPM 15 to go to CPM CPM-4 (2009) adopted ISPM 15:2009 but	About the spanish version. 1) The contents of the table "major stages" in the second paragraph which states: "El CN aprobó la especificación en 2004-11" Number 31 was omitted, so it should be changed as follows: El CN aprobó la especificación número 31 en 2004-11 2) About the contents of the table "Notes", Two paragraphs were omitted to translate in the spanish version, the 2 missing paragraphs are: Grey text is original paragraphs which have not been changed. Commenting is not open for paragraphs. Changes proposed for member consultation are marked with underline (additions) or strikethrough (deletions).	Mexico

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			retained the following subtopics on the work programme 1) criteria for treatments, which needed further research and 2) further guidance on fumigation in Annex 1 2009-06 TPFQ revised Annex 1 to ISPM 15 2010-09 TPFQ revised Annex 1 to ISPM 15 considering dielectric heat and sulfuryl fluoride treatments 2011-05 SC approved revision of Annex 1 to ISPM 15 to go for MC		
			Notes: Formatted in template of 2011-02; edited 2011-02-27. Formatted for SC 2011-05 on 2011-03-01; copy edited after SC 2011-05 on 2011-05-07. Sent to translation 2011-05-17. Grey text is original paragraphs which have not been changed. Commenting is not open for paragraphs. Changes proposed for member consultation are marked with underline (additions) or strikethrough (deletions).		
[10]	4	Editorial	This annex was adopted by the ~~Interim~~Commission on Phytosanitary Measures in [Month Year]. The annex is a prescriptive part of ~~the standard~~ ISPM 15:2009.	The term ISPM includes "standard" so there is no need to repeat the word.	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[11]	4	Editorial	This annex was adopted by the ~~Interim~~Commission on Phytosanitary Measures in [Month Year]. The annex is a prescriptive part of ~~the standard~~ ISPM 15:2009.	The term ISPM includes "standard" so there is no need to repeat the word.	European Union
[12]	9	Substantive	For methyl bromide treatment, the removal of bark must be carried out before treatment as~~because~~ the presence of bark on the wood may affect~~s the efficacy of the methyl bromide~~ treatment efficacy. For heat treatments, the removal of bark ~~can~~may be carried out before or after treatment, any bark remaining must be taken into account in the 20 cm smallest dimensional measurement of paragraph 20..	Note paragraph 20 refers to dielectric heating where a maximum wood thickness of 20 cm in one dimension is stipulated. If bark is allowed to be present during dielectric heating the maximum thickness of 20 cm in one dimension must include any bark present in this measurement.	Australia
[13]	9	Technical	For methyl bromide and heat treatments, the removal of bark must be carried out before treatment as~~because~~ the presence of bark on the wood may affect~~s the~~	Consistency with the prescribed previous recommendation (paragraph 8) to improve	Ghana

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~efficacy of the methyl bromide~~ treatment efficacy. ~~For heat treatments, the removal of bark can~~may ~~be carried out before or after treatment.~~	efficacy of heat treatment. There is no use to remove the bark after treatment	
[14]	9	Technical	For methyl bromide and heat treatment, the removal of bark must be carried out before treatment as~~because~~ the presence of bark on the wood may affect~~s the efficacy of the methyl bromide~~ treatment efficacy. For heat treatments, the removal of bark ~~can~~may be carried out before or after treatment.	Consistency with the prescribed previous recommendation, paragraph. 7 to improve efficacy of heat treatment	Nigeria
[15]	9	Technical	For methyl bromide and heat treatments, the removal of bark must be carried out before treatment as~~because~~ the presence of bark on the wood may affect~~s the efficacy of the methyl bromide~~ treatment efficacy. ~~For heat treatments, the removal of bark can~~may ~~be carried out before or after treatment.~~	Consistency with the prescribed previous recommendation (paragraph 8) to improve efficacy of heat treatment. There is no use to remove the bark after treatment	Gabon ,Cameroon
[16]	11	Editorial	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, kiln-drying, ~~heat-enabled chemical pressure impregnation~~, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.		Korea, Republic of ,Lao People's Democratic Republic,Japan ,India
[17]	11	Editorial	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example,conventional steam, kiln-drying, heat-enabled chemical pressure impregnation, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.	It should be discussed first because it is the first method discussed in the next paragraph	Ghana
[18]	11	Editorial	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, kiln-drying, ~~heat-enabled chemical pressure impregnation~~, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.		Viet Nam
[19]	11	Editorial	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, conventional steam, kiln-drying, heat-enabled chemical pressure impregnation, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.	It should be discussed first because it is the first method discussed in the next paragraph	Nigeria
[20]	11	Editorial	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, conventional steawm, kiln-drying, heat-enabled chemical pressure impregnation, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.	It should be discussed first because it is the first method discussed in the next paragraph	Gabon ,Cameroon
[21]	11	Substantive	~~Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, kiln-drying, heat-enabled chemical pressure~~	Here is no details on how to do heat-enabled chemical pressure impregnation in this	China

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~impregnation, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.~~ Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, kiln-drying, dielectric radiation (microwave, radio frequency etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.	standards, so it may mislead member country to use it in international trade.	
[22]	11	Substantive	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, kiln-drying, heat-enabled chemical pressure impregnation, dielectric radiation (microwave, radio frequency, conventional hear etc.) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.	Conventional heat should be added as an example because it is specifically referred to in the following paragraph 13	South Africa
[23]	11	Technical	Various energy sources or processes may be suitable to achieve the required treatment parameters. For example, kiln-drying, heat-enabled chemical pressure impregnation, dielectric radiation (microwave, radio frequency ~~etc.~~) or other treatments may all be considered heat treatments provided they meet the heat treatment parameters specified in this standard.	there is only microwave and radio frequency options available for dielectric radiation.	United States of America
[24]	12	Editorial	NPPOs shall ensure that the treatment temperatures ~~are~~ is monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment throughout the batch of the wood being treated. The point at which a piece of wood is coldest ~~part of the wood~~ may ~~differ~~ vary depending on the energy sources or processes applied and the moisture and initial temperature distribution in the wood. When using microwaves as a heating source, the coldest part of the wood is usually the surface.	Better English and clarity.	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[25]	12	Substantive	NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using microwaves as a heating source, the coldest part of the wood is the surface.	SC to provide examples of the location of the coldest part of the wood when other energy sources are used as heat treatment.	Singapore
[26]	12	Technical	NPPOs ~~shall~~should ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment and other sensors evenly spaced in the commodity may be used to indicate even heating of the commodity. The coldest part of the wood may differ depending on the energy sources or processes applied . ~~When using microwaves as a heating source, the coldest part of the wood is the surface.~~	1st sentence - 'Shall' is treaty language and should not be used unless directly refering to Convention text. May need to use additional sensors to be able to verify this. 3rd sentence - DELETE. Suggest delete since last sentence is not correct under all circumstances. For example, Fleming et al. (2003) used a domestic multimode microwave at 2.45 GHz claimed power applied at 1280 W to heat	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				blocks of eastern white pine (100 x 100 x 100 mm & 89 % moisture content) over 180 seconds. They measured temperature at the surface and at centre of a block and somewhere between the centre and surface. They reported results from four blocks (their Figure 4) that showed there was no consistency in the temperature profile for the three sensors among the four blocks. In two blocks the surface temperature was the highest over the heating period and in the other blocks the highest temperature was between the surface and centre. In two blocks the centre was the coolest throughout the heating period. They ascribed the inconsistencies to "…local variations in MC, density, defects or other parameters." The possibility of uneven power distribution in the oven was not considered. Brodie (2007) also shows that internal wood temperatures can be lower than those of the surface (his Figures 5 & 8) during 2.45 GHz heating, particularly when small temperature changes are involved i.e. taking wood from 30˚C to the 60˚C as might occur when applying this standard. Refs: Brodie G (2007) Simultaneous heat and moisture diffusion during microwave heating of moist wood. Applied Engineering in Agriculture 23, 179-187. Fleming, M., Hoover, K., Janowiak, J., Fang, Y., Wang, X., Liu, W., Wang, Y., Hang, X., Agrawal, D., Mastro, V., Lance, D., Shield J. & Roy, R. 2003. Microwave irradiation of wood packing material to destroy the Asian longhorned beetle. Forest Products Journal, 53 (1): 46–52.	
[27]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. ~~When using microwaves as a heating source, the coldest part of the wood is the surface.~~	The coldest part is depending on water content not location.	Korea, Republic of
[28]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the	Effect of microwave depends on the water	Philippines ,Thailand

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using microwaves as a heating source, the coldest part of the wood is generally the surface.	content of the wood.	,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[29]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location in the chamber likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using dieletric radiation ~~microwaves~~ as a heating source, the coldest part of the wood is the surface.	To clarify. Paragraph was split in two to further clarify where the temperature should be monitored. To be consistent to paragraph 11.	Costa Rica ,Mexico ,El Salvador
[30]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment, which will be the location taking longer to reach the temperature. The coldest part of the wood may differ depending on the energy sources or processes applied. When using ~~microwaves~~ dielectric radiation as a heating source, the coldest part of the wood is the surface.	1) Text added to clarify. 2) Microwaves was replaced by dielectric radiation for consistency with paragraph 11	Uruguay
[31]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment, which will be the location taking longer to reach the temperature. The coldest part of the wood may differ depending on the energy sources or processes applied. When using ~~microwaves~~ dielectric radiation as a heating source, the coldest part of the wood is the surface.	Text "which will be the location taking longer to reach the temperature" was added to clarify. "Microwaves" was deleted and "dielectric radiation" added to be consistent to para 11.	COSAVE,Paraguay ,Chile,Brazil
[32]	12	Technical	NPPOs ~~shall~~should ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using microwaves as a heating source, the coldest part of the wood is usually the surface.	Standards are guidelines and do not place demands on NPPOs. Change "shall" for "should". The surface will not be the coldest part of the wood 100% of the time. Wood from warm areas of the world will have higher surface temperatures for part, if not all of the treatment. It would also depend on where the wood is wet, so it may not always be the surface.	United States of America
[33]	12	Technical	~~NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using microwaves as a heating source, the coldest part of the wood is the surface.~~ NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the	In rare case, if the consignment of wood is too thick to let the the microwave reach the wood core, the coldest part will be in the core wood but not be in the surface.	China

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using microwaves as a heating source, the coldest part of the wood is generally the surface.		
[34]	12	Technical	NPPOs shall ensure that the treatment temperature~~s are~~ is monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment throughout the batch of the wood being treated. The point at which a piece of wood is coldest ~~part of the wood~~ may ~~differ~~ vary depending on the energy sources or processes appliedas well as on the initial temperature and moisture distribution in the wood. When using microwaves as a heating source, the coldest part of the wood is usually the surface.	Better English and clarity. The last sentence may require further revision pending the outcome of the review of the scientific evidence (see our general comment).	European Union
[35]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. which will be the location taking longer to reach the temperature.The coldest part of the wood may differ depending on the energy sources or processes applied. When using ~~microwaves~~dielectric radiation as a heating source, the coldest part of the wood is the surface.	"which will be the location taking longer to reach the temperature " - To clarify " dielectric radiaion " - To be consistent to para 11	Argentina
[36]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored by providers at the~~a~~ location in the chamber that is likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the load of wood in the chamber may differ depending on the energy sources or processes applied. When using microwaves as a heating source, the coldest part of the wood is the surface.	New suggested text in sentence 1 and sentence 2 adds precision and suggested wording is consistent to other sections in the standard.	Canada
[37]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location in the chamber likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using dieletric radiation ~~microwaves~~ as a heating source, the coldest part of the wood is the surface.	To clarify. To be consistent to paragraph 11.	Nicaragua
[38]	12	Technical	NPPOs shall ensure that the treatment temperatures are monitored at a location in the chamber likely to be the coldest to ensure that the target temperature is maintained for the duration of treatment. The coldest part of the wood may differ depending on the energy sources or processes applied. When using dielectric radiation ~~microwaves~~ as a heating source, the coldest part of the wood is the surface.	1) To clarify 2) To be consistent to paragraph 11	OIRSA
[39]	13	Substantive	**Heat treatment using a conventional ~~steam~~ heat or dry kiln heat chamber (treatment code for the mark: HT)**	For consistency with paragraph 14(…using conventional heat chamber…)	South Africa

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
[40]	14	Editorial	When using conventional heat chamber technology, the basic requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time-temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat-enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~	Same comment.	Philippines
[41]	14	Editorial	When using conventional heat chamber technology, the ~~basic~~ fundamental requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time-temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat-enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~	Unnecessary word.	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[42]	14	Editorial	When using conventional heat chamber technology, the basic requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time-temperature schedule that achieves~~ a minimum core temperature of 56 °C for a minimum duration of 30 continuous minutes. ~~throughout the entire profile of the wood (including at its core)~~. ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat-enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~		Thailand ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[43]	14	Editorial	When using conventional heat chamber technology, the ~~basic~~ requirement is to achieve ~~Wood packaging material must be heated in accordance with a specific time-temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat-enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~	This is the requirement of ISPM 15 :2009 and it is not nessesary to describe the requirement.	Costa Rica ,Mexico ,Nicaragua ,El Salvador
[44]	14	Editorial	When using conventional heat chamber technology, the basic requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time-temperature schedule that achieves~~ a minimum temperature of 56 °C is maintained for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of~~	For the purpose of clarity	Singapore

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~processes may be suitable to achieve these parameters. For example, kiln drying, heat enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~		
[45]	14	Editorial	When using conventional heat chamber technology, the ~~basic~~ fundamental requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~	Unnecessary word.	European Union
[46]	14	Substantive	When using conventional heat chamber technology, the basic requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~	The primary concern is for the wood to reach a core temperature of 56C and maintain it for a minimum of 30 minutes continuosly. There are multiple time/temperature combinations that could achieve this outcome. Requiring to be specific is not necessary to meet the requirement of this standard. Expanding on additional energy sources is not required. The primary stipulation is the 56C for 30 minutes. How that requirement is met will be evaluated by the NPPO certifying the treatment. There is no reason to list possible options, especially with the research being undetaken to increase these options in the future.	United States of America
[47]	14	Technical	When using conventional heat chamber technology, the ~~basic~~ requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be suitable to achieve these parameters. For example, kiln drying, heat enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~	This is the requirement of ISPM 15, and it is not necessary to describe the requirement	Uruguay
[48]	14	Technical	When using conventional heat chamber technology, the ~~basic~~ requirement is to achieve~~Wood packaging material must be heated in accordance with a specific time temperature schedule that achieves~~ a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood (including at its core). ~~Various energy sources of processes may be~~	This is the requirement of ISPM 15, and it is not necessary to describe the requirement	OIRSA

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~suitable to achieve these parameters. For example, kiln drying, heat-enabled chemical pressure impregnation, microwave or other treatments may all be considered heat treatments provided that they meet the treatment parameters specified in this standard.~~		
[49]	15	Editorial	This temperature can be measured by placing/inserting temperature sensors at ~~in~~ the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations inside the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.		Philippines
[50]	15	Editorial	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to demonstrate ~~prove~~ that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	This is clearer language.	New Zealand
[51]	15	Editorial	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature.This is to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	Sentence is too lengthy.	Jamaica
[52]	15	Editorial	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes ~~throughout the entire profile of the wood is achieved.~~ Treatment schedules should be specified or approved by the NPPO.		Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[53]	15	Editorial	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with	For the purpose of clarity	Singapore

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			chamber air temperature to prove that a minimum temperature of 56 °C is maintained for a minimum duration of 30 continuous minutes throughout the entire profile of the wood ~~is achieved~~. Treatment schedules should be specified or approved by the NPPO.		
[54]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature taking into account the moisture content of wood and other substantial parameters (such as species, thickness of wood, air flow rate and humidity) to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	These parameters should be mentioned as they are important for the successful application of the treatment.	EPPO,Norway ,Ukraine ,Morocco ,Uzbekistan
[55]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, when using kiln dry heat chamber treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	To clarify	Costa Rica ,Nicaragua ,El Salvador
[56]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, when using kiln dry heat chamber, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	Text added to clarify	Uruguay
[57]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, when using dry kiln heat chamber, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	To clarify	COSAVE,Paraguay ,Chile,Brazil
[58]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at	For consistency with para21.	Japan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedulesshall ~~should~~ be specified or approved by the NPPO.		
[59]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature taking into account the substantial parameters, such as moisture content, species, thickness of wood, air flow rate and humidity, to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	These parameters should be mentioned as they are important for the successful application of the treatment.	European Union
[60]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, when using dry kiln heat chamber, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	To clarify	Argentina
[61]	15	Technical	This temperature can be measured by placing temperature sensors in the core of the wood. Alternatively, when using kiln dry heat chamber, treatment schedules may be developed based on a series of test treatments during which the core temperature of the wood at various locations in the heat chamber has been measured and correlated with chamber air temperature to prove that a minimum temperature of 56 °C for a minimum duration of 30 continuous minutes throughout the entire profile of the wood is achieved. Treatment schedules should be specified or approved by the NPPO.	To clarify	OIRSA
[62]	16	Substantive	Treatment providers shall be approved by NPPO. When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in treatment:		Indonesia
[63]	16	Substantive	Treatment providers shall be approved by NPPO. When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in treatment:	Clarification.	Philippines ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japa

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
					n ,India
[64]	16	Substantive	~~When approving and auditing a heat treatment provider,~~ the NPPO ~~shall ensure that the following factors are appropriately addressed by those involved in treatment~~: Numerous processes exist in achieving the required core temperature over the prescribed time period. NPPO's should consider whether the following factors may affect the effectiveness of the treatment and where appropriate, ensure that the heat treatment provider has addressed the factor(s):	Clarifies that these criteria should be examined and used whenever possible. Removes the commanding "shall" from the instructions therefore making it less prescriptive.	United States of America
[65]	16	Substantive	~~When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in treatment:~~ Treatment provider have to be approved by NPPO. When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in treatment:	To clarify.	China
[66]	16	Substantive	~~When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in treatment:~~ Numerous processes exist in achieving the required core temperature over the prescribed time period. The following factors should be considered by the NPPO when evaluating the capacity of a heat chamber to meet phytosanitary requirements for heat treatment. However, failure to meet the factors specified below is not an indication that a heat chamber fails to meet phytosanitary treatment standards.	The NAPPO Forestry Panel suggests the following change to paragraph 16 of proposed revision to Annex 1 or ISPM 15	NAPPO
[67]	16	Technical	Numerous processes exist in achieving the required core temperature over the prescribed time period~~When approving and auditing a heat treatment provider, the~~. NPPOs should consider whether ~~shall ensure that~~ the following factors may affect the effectiveness of the treatment and, where appropriate, ensure that the heat treatment provider has adressed the factor(s)~~are appropriately addressed by those involved in treatment:~~	It is correct that not all situations may require verification of each of these components. Rewording the two sentences in para. 16, as indicated, would suffice in ensuring that the bullets are not prescriptive, but are useful guidance.	Canada
[68]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to ensure maximum~~ize~~ air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location.	Bullet 3: Consistency with bullet 2 (see bullet 2 of technical comments to this paragraph).	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[69]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed ~~at this location.~~ there. 6. Where the treatment is determined based upon temperature sensors	coldest location..... at this location (repetitive).	Jamaica

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[70]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These	For consistency with the indent 4 of para23.	Japan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[71]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures.	In the Spanish version. In number 7, insert a separation between the words "se" and the word "invierte"	Mexico

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[72]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to ensure adequate~~maximize~~ air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a	Bullet 3: Consistency with bullet 2 (see bullet 2 of technical comments to this paragraph).	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[73]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature	To set a minimum requirement on the frequency of recording of the temperature readings. Setting a time interval where probe temperature is recorded will provide a timely information of what is the happening inside the chamber where the operator can use as reference during treatment or even after treatment. (Before reaching the required temp)-Erratic tempearture reading can be an indication of malfunction in the operating elements of the chamber.	Singapore

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. Temperature readings can be recorded at a minimum of every 30 minutes, until the specified core temperature is reached and held at all measuring points in the chamber. During the treament period, temperature reading can be recorded at a mínimum of every 5 minutes. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[74]	17	Editorial	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These	It is grammatically correct to use “measuring” rather than “measurement”.	South Africa

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measuring~~ement~~ and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[75]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures.	Bullet 8 (now 7 - see numbering changes under technical comments): Moisture content of wood is an important factor, that should be taken into account.	EPPO,Ukraine ,Morocco ,Uzbekistan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the moisture content of wood, species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[76]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified for each load and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures.	5. In paragraph 4 of this section above, fans are used to circulate air, suggest that placement of the load and loads of different size and shape may influence the distribution of air and therefore the location of the coldest area 9. additional requirement	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO and in accordance with manufacturer's instructions. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[77]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Heat chamber shall be placed fixed temperature sensors to measures to the highest temperature required to be reached during treatment. Fixed temperature sensors must be positioned in the lowest temperature of the chamber. Fixed temperature sensors must be positioned in such of a manners as to provides records of air temperature throughout the chamber to within +/- 0.5 degree celsius. 4. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 5. Fans are used to circulate air during treatment.		Indonesia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			6. The coldest location within the chamber is identified and temperature sensors placed at this location. 7. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted ~~at least 30 cm from the end of a board~~ and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 8. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 9. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 10. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 11. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 12. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO~~.~~ 13. Heat treatment should be conducted by competent operator certified by NPPO		
[78]	17	Substantive	1. Heat chambers ~~are~~should be sealed and well insulated, including insulation in the floor. 2. Heat chambers ~~are~~should be designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated ~~is~~should be loaded into the chamber in a manner ~~that maximizes~~to ensure adequate air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units	Insulation, air flow, spacing, etc., all address efficiency, not the ability to complete a successful treatment. The language is to clarify that they are options to be considered but are not absolutely mandatory. 6. The thermacouple insertion directions made the assumption all treated wood would be longer than 60 cm. The current wording generalizes	United States of America

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~are~~should be used as required to ~~maximize~~ ensure adequate air flow. 4. Fans ~~are~~should be used to circulate air during treatment. 5. The coldest location within the chamber ~~is~~should be identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are ~~used~~recommended. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors ~~are~~should be inserted in an area of~~at least 30 cm from~~ the ~~end of a~~ board conducive to heat treatment compliance and must penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors ~~are~~should be used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors ~~are~~should be used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, ~~are~~should be calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	the guidance for any sized material treated.	
[79]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units	There are instances that the NPPO is not the agency conducting calibration.	Japan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO or its accredited agency. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[80]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units	Heat transfer along metal objects might affect temperature reading of the sensors.	Singapore

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Temperature sensors should not be inserted near to metal objects such as nails. 7. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 8. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 9. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 10. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 11. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 12. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[81]	17	Substantive	1. ~~Heat chambers are sealed and well insulated, including insulation in the floor.Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack.Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow.Fans are used to circulate air during treatment.The coldest~~	to make clear in practice how to place the temperature sensors.	China

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~location within the chamber is identified and temperature sensors placed at this location. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature.If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area.Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules.Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO.Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements.For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified b~~ 1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed in the selected wood from consignment at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature		

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[82]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in	Bullet 8 (now 7 - see numbering changes under technical comments): Moisture content of wood is an important factor that should be taken into account.	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the moisture content of wood, species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[83]	17	Substantive	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed with a heat resistant substance to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in	To further emphasize that the loss of heat should be minimized and the use of a heat resistant substance would ensure this.	South Africa

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[84]	17	Technical	1. Heat chambers are sealed and well insulated, including ~~insulation in~~ the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is ~~loaded~~ stacked in the chamber in a manner that ensures maxim~~izes~~um air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed either in the wood or in the chamber at this location. 6. Where the treatment is ~~determined based upon~~ monitored using temperature sensors inserted into the wood, at least two temperature sensors ~~are~~ must be used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a ~~board~~ piece of wood and must penetrate to the centre of the wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest ~~dimensions~~ cross-section should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. ~~If the air flow in the chamber is routinely reversed during treatment, an~~	Bullet 1: There is no need to repeat the word. Bullet 2: More accurate language Bullet 5: For clarity. The addition makes it clear that the coldest location is identified whether temperature monitoring is done in the wood or in the chamber Bullet 6: More accurate language and a verb seemed to be missing. As anywhere else in this Annex, it is the cross-section that matters for treatment efficacy , whereas the 3rd dimension is irrelevant Bullet 7: Move after bullet 8 as it applies to temperature measurements both in the wood and in the chamber. Adjust the numbering of bullet points as appropriate. Bullet 8: is now 7 Bullet 9: is now 8 - Moved from bullet 7 because it applies to temperature measurements both in the wood and in the chamber. In many cases the coldest location is in the middle of the chamber and in that case the temperature in this place does not depend on the direction of the air flow. Bullet 11: Simpler language to prevent confusion.	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~increased number of temperature sensors are used to account for a change in the location of the coldest area.~~ 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors may have to be used to account for a possible change in the location of the coldest area. 10. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 11. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the ~~treatment should be~~ temperature should be raised until the required temperature has been reached and maintained for the required duration. ~~restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements.~~ 12. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[85]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. Air flow from fans must be sufficient to ensure the core temperature of the wood is maintained at the specified level for the required duration. 5. The ~~coldest~~ location likely to be the coldest within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, ~~at least two~~ more than one temperature sensors are ~~used~~ recommended. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a	4. Clarification 5. Clarification 6. Some countries are already implementing the use of one sensor only, depending on the size of the treatment facility; clarification to achieve a good result of treatment. 8. Some countries are already implementing the use of one sensor only, depending on the size of the treatment facility. 9. There are instances that the NPPO is not the agency conducting calibration	Philippines ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,India

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood ~~to place the~~for temperature sensor ~~are~~ should be sealed (using wood, silicon, etc) to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. ~~A minimum of two~~ More than one temperature sensors are ~~used~~ recommended in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, ~~are~~ should be calibrated at a frequency specified by the NPPO or its accredited agency. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[86]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation ~~in~~ on the floor of chamber. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. Air flow from fans must be sufficient to ensure the core temperature of the wood is maintained at the specified level for the required duration. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used . These	1. Clarification 4. Clarification 9. There are instances that the NPPO is not the agency conducting calibration	Thailand

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, ~~are~~ should be calibrated at a frequency specified by the NPPO or its accredited agency. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[87]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These	To clarify and to be consistent with cahanges proposed in paragraph 15	Costa Rica ,Nicaragua ,El Salvador

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature (kiln dry heat chamber) sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[88]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These	To clarify and to be consistent with changes proposed in paragraph 15.	Uruguay

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature (kiln dry heat chamber) and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[89]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These	To clarify and to be consistent with changes proposed in para 15	COSAVE,Paraguay ,Chile,Brazil

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature (kiln dry heat chamber) and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[90]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded into the chamber in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors	For clarification.	United States of America

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[91]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood,more than one ~~at least two~~ temperature sensors are	If the calibration of temperature sensor is ensured, it is not necessary to use two sensors. (See IFQRG report 2008-14 P8)	Japan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			recommended~~used~~. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. More than one~~A minimum of two~~ temperature sensors are recommend~~used~~ in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[92]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These	the word ‘should’ in English [will] be interpreted to mean a type of moral or political commitment. It creates an expectation (though non-binding) that something will be done	Mexico

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions ~~should~~must be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules ~~should~~ must take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment ~~should~~ must be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration ~~should~~ must be retained by treatment providers for a period of time specified by the NPPO.		
[93]	17	Technical	1. ~~Heat chambers are sealed and well insulated, including insulation in the floor.Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack.Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow.Fans are used to circulate air during treatment.The coldest location within the chamber is identified and temperature sensors placed at this location.Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be~~	to clarify which material can be used to preventing the loose in holes when the sensors are inserted.	China

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature.If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area.Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules.Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO.Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements.For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.~~ 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any new holes drilled in the wood to place the temperature sensor are sealed (such as wood) to prevent interference in temperature measurement by entry of air at ambient temperature.		
[94]	17	Technical	1. Heat chambers are sealed and well insulated, including ~~insulation in~~ the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is ~~loaded~~ stacked in the chamber in a manner that ensures adequate~~maximizes~~ air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed either in the wood or in the chamber at this location. 6. Where the treatment is ~~determined based upon~~ monitored using temperature sensors inserted into the wood, at least two	Bullet 1: There is no need to repeat the word. Bullet 2: More accurate language. Bullet 5: For clarity. The addition makes it clear that the coldest location is identified whether temperature monitoring is done in the wood or in the chamber Bullet 6: More accurate language and a verb seemed to be missing. As anywhere else in this Annex, it is the cross-section measured across the smallest dimension that matters for treatment efficacy, whereas the 3rd dimension is irrelevant Bullet 7: Move after bullet 8 as it applies to temperature measurements both in the wood and in the chamber. Adjust the numbering of	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature sensors ~~are~~ must be used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a ~~board~~ piece of wood and must penetrate to the centre of the wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest ~~dimensions~~ cross-section when measured across the smallest dimension should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. ~~If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area.~~ 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors may have to be used to account for a possible change in the location of the coldest area. 10. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 11. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the ~~treatment should be~~ temperature should be raised until the required temperature has been reached and maintained for the required duration. ~~restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements.~~ 12. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	bullet points as appropriate. Bullet 8: is now 7 Bullet 9: is now new bullet 8 - Moved from bullet 7 (and modified) because it applies to temperature measurements both in the wood and in the chamber. Reason for modifications in thye sentence: in many cases the coldest location is in the middle of the chamber and in that case the temperature in this place does not depend on the direction of the air flow. Bullet 11(bullet 10 in the draft text): Simpler language to prevent confusion.	
[95]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow.	To clarify and to be consistent with changes proposed in para 15	Argentina

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature (kiln dry heat chamber) and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[96]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units are used as required to maximize air flow.	New paragraph to emphasise the importance of avoiding probing close to nails as this has been observed to affect heat transfer.	South Africa

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. Probing close to the nails should be avoided as heat transfer along nails will interfere with temperature recorded by the temperature sensors. 8. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 9. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 10. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 11. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 12. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[97]	17	Technical	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units	1) More appropriate terms 2) To clarify and to be consistent with changes proposed in paragraph 15	OIRSA

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The coldest location within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The greater thickness piece of wood ~~with the largest dimensions~~ should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature (kiln dry heat chamber) and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[98]	17	Translation	1. Heat chambers are sealed and well insulated, including insulation in the floor. 2. Heat chambers are designed in a manner that permits uniform flow of air around and through the wood stack. Wood to be treated is loaded in a manner that maximizes air flow around and through the wood stack. 3. Air deflectors in the chamber area and spacers between wooden units	It is difficult to identify the coldest location accurately. Furthermore, for consistency with the 1st sentence of para12.	Japan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			are used as required to maximize air flow. 4. Fans are used to circulate air during treatment. 5. The ~~coldest~~ location likely to be the coldest within the chamber is identified and temperature sensors placed at this location. 6. Where the treatment is determined based upon temperature sensors inserted into the wood, at least two temperature sensors are used. These temperature sensors should be suitable for measuring wood core temperatures. The use of multiple temperature sensors ensures that any failure of a temperature sensor is detected during the treatment process. The temperature sensors are inserted at least 30 cm from the end of a board and penetrate to the centre of wood, or in the centre of pallet blocks, to ensure that the temperature at the core is measured. The piece of wood with the largest dimensions should be used for this. Any holes drilled in the wood to place the temperature sensor are sealed to prevent interference in temperature measurement by entry of air at ambient temperature. 7. If the air flow in the chamber is routinely reversed during treatment, an increased number of temperature sensors are used to account for a change in the location of the coldest area. 8. Where treatment schedules are based on monitoring chamber air temperature and used for treatment of different wood types (e.g. specific species and sizes), these schedules should take into account the species and thickness of wood being treated. A minimum of two temperature sensors are used in chambers treating wood packaging according to treatment schedules. 9. Temperature sensors, including the measurement and recording equipment, are calibrated at a frequency specified by the NPPO. 10. Temperatures should be monitored and recorded during each treatment to ensure that the prescribed minimum temperature is maintained for the required period of time. If temperatures are not maintained, the treatment should be restarted or the treatment time extended and the temperatures raised to ensure that all wood has been treated to meet the requirements. 11. For purposes of auditing, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[99]	18	Substantive	**~~Heat treatment using a dielectric heat chamber (treatment code for the mark: DH)~~**	We have concerns regarding the effective delivery of dielectric heat. If these reservations can be addressed, this is the appropriate place to provide guidance to NPPOs for effective treatment of wood packaging.	Australia
[100]	18	Technical	**Heat treatment using ~~a~~ dielectric radiation ~~heat chamber~~ (treatment code for the mark: DR~~H~~)**	Heating is achieved using dielectric radiation. To be consistent with paragraph 19	Costa Rica ,Uruguay

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
					,Nicaragua ,El Salvador
[101]	18	Technical	**Heat treatment using ~~a~~ dielectric radiation ~~heat chamber~~ (treatment code for the mark: DR~~H~~)**	Heating is achieved using dielectric radiation. To be consistent with para 19	COSAVE,Paraguay ,Chile,Brazil
[102]	18	Technical	**Heat treatment using ~~a~~ dielectric radiation ~~heat chamber~~ (treatment code for the mark: DR~~H~~)**	Heating is achieved using dielectric radiation. To be consistent with para 19	Argentina
[103]	18	Technical	**Heat treatment using a dielectric heat chamber (treatment code for the mark: ~~D~~HT)**	The source of heating should not affect the code. There may be situations where a facility uses both conventional and microwave technology to achieve heat treatment. The wood once treated may be mixed but the treatement carried out achieved 56/30 regardless of the process.	Canada
[104]	18	Technical	**Heat treatment using ~~a~~ dielectric radiation ~~heat chamber~~ (treatment code for the mark: DR~~H~~)**	Heating is achieved using dielectric radiation. To be consistent with para 19	OIRSA
[105]	19	Substantive	~~Dielectric heating is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.~~	Move this explanation of the physics behind the treatment to the associated Annex of ISPM 28. It is irrelevant in ISPM 15, where similar explanations have not (and should not) be provided for conventional heat treatment or MB treatment. Generally speaking, ISPMs should not serve as textbooks of physics, chemistry etc.	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[106]	19	Substantive	~~Dielectric heating is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.~~	DELETE strikethrough not showing	Australia
[107]	19	Substantive	~~Dielectric heating is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.~~	Move this explanation of the physics behind the treatment to the associated Annex of ISPM 28. It is irrelevant in ISPM 15, where similar explanations have not (and should not) be provided for conventional heat treatment or MB treatment. Generally speaking, ISPMs should not serve as textbooks of physics, chemistry etc.	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
[108]	19	Technical	~~Dielectric h~~Heating in this case is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.	Heating can be achieved with different sources and it is better not to describe the term heating	Costa Rica ,Uruguay ,Mexico ,Nicaragua ,El Salvador
[109]	19	Technical	~~Dielectric h~~Heating in this case is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.	Heating can be achieved with different sources and it is better not to qualify the term heating	COSAVE,Paraguay ,Chile,Brazil
[110]	19	Technical	~~Dielectric~~ heating in this case is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.	Heating can be achieved with different sources and it is better not to qualify the term heating.	Argentina
[111]	19	Technical	Dielectric heating is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave, ~~or~~ radio frequency, etc). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.	Suggested changes are reflective that other options are available for achieving HT through dielectic heating. Similar comment is also being submitted for paragraph 15 of the proposed draft Annex to ISPM 28 - Heat treatment of wood packaging material using dielectric heat.	Canada
[112]	19	Technical	~~Dielectric h~~Heating in this case is based on the alternating electrical field of the electromagnetic wave emitted by the dielectric radiation source (e.g. microwave or radio frequency). Chemical compounds with asymmetric charge distribution, so-called dipole characters (e.g. water), tend to orientate along this electrical field and oscillate with the electrical field (e.g. 2.45 MHz causes 2.45 million oscillations per second). The friction generated through this process converts electric energy into heat energy.	Heating can be achieved with different sources and it is better not to describe the term heating.	OIRSA
[113]	20	Editorial	Where ~~the application of~~ heat treatment is ~~undertaken~~ applied using dielectric ~~radiation~~ heating (e.g. using microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. ~~Heating to t~~The prescribed	Consistent wording and simpler and more direct language. Suggest the term dielectric heating is used wherever possible to prevent confusion. NB: this is in fact a TECHNICAL comment but OCS restricts to only 1 comment	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperature must ~~occur~~ be reached within 30 minutes from ~~ambient temperature~~the start of the treatment [FOOTNOTE 1]. Footnote 1: Currently only microwave technology is capable of achieving the required temperature within the time scale.	of this type for each paragraph.	,Uzbekistan
[114]	20	Editorial	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. ~~Heating to the prescribed temperature must occur within 30 minutes from ambient temperature~~.Heating from ambient temperature to the prescribed temperature must occur within 30 minutes.	Last sentence modified for better undestanding.	Costa Rica ,Nicaragua
[115]	20	Editorial	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood (including its surface). Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	For consistency with the 1st sentence of para14.	Japan
[116]	20	Editorial	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum temperature of 60 °C for 1 minute throughout the profile of the wood. ~~Heating to the~~ The prescribed temperature must be achieved ~~occur~~ within 30 minutes after heating from ambient temperature.	For purpose of clarity	Singapore
[117]	20	Editorial	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating from ambient temperature to the prescribed temperature must occur within 30 ~~minutes from ambient temperature~~.	Last sentence modified for better understanding	OIRSA
[118]	20	Substantive	~~Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.~~	1st sentence - DELETE. Complete redraft required to justify penetration depth. Also there is no such thing as dielectric radiation. Penetration of microwave power and extent of its attenuation is dependent on a number of interacting parameters including frequency, and wood density, moisture content, temperature, and alignment of the electric field relative to fibre direction (Torgovnikov 1993). It is not apparent how the figure of 20 cm has	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				been arrived at nor is it apparent as to how this size limit relates to RF dielectric heating which this standard appears to permit? Ref: Torgovnikov (1993) (Dielectric Properties of Wood and Wood-Based Materials. New York: Springer-Verlag) provides an extensive treatment of heating wood with electromagnetic energy. 2nd sentence - DELETE. Complete redraft required to justify 30 minute time frame. It is not apparent from an examination of the literature of how the period of 30 minutes has been arrived at.	
[119]	20	Substantive	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile (including its surface) of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	To be consistent with paragraph 23.	Costa Rica ,Nicaragua
[120]	20	Substantive	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile (including its surface) of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	Text added to be consistent with paragraph 23.	Uruguay
[121]	20	Substantive	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile (including its surface) of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	To be consistent with para 23. Last sentence needs to be clarified. Treatment requires that the wood must be heated to achieve 60°C for one minute. So, it is not clear why this requirement must occur within 30 minutes from ambient temperature. Does it mean that if this is not achieved, the treatment should be reinitiated? If not clarified, this sentence should be deleted.	COSAVE,Paraguay ,Chile,Brazil
[122]	20	Substantive	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile (including its surface) of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	To be consistent with para 23. Last sentence needs to be clarified. Treatment requires that the wood must be heated to achieve 60°C for one minute. So, it is not clear why this requirement must occur within 30 minutes from ambient temperature. Does it mean that if this is not achieved, the treatment should be reinitiated? If not clarified, this sentence	Argentina

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				should be deleted	
[123]	20	Substantive	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile (including its surface) of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	To be consistent with para 23.	OIRSA
[124]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material ~~composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece~~ must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature. Wood packaging material composed of wood exceeding 20 cm in cross section should not be treated using dielectric heating [FOOTNOTE 2]. Footnote 2: This 20cm limit is based on the efficacy data available to date.	The original, condensed sentence is misleading, as if there is one requirement for wood < 20 cm and another for wood < 20 cm. It is more understandable to clearly state the required limit to the wood dimension for the treatment to work.	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[125]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material ~~composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece~~ should be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	Even though usually WPM is made of think wood, heat treatment is not restricted by the thickness of the wood.	Korea, Republic of
[126]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	The specifiaction on the size of the wood (not exceeding 20cm in cross section) needs to be clarified with the TPPT.	Malaysia ,Philippines ,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[127]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of [wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece] must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	The specifiaction on the size of the wood (not exceeding 20cm in cross section) needs to be clarified with the TPPT or add more pictures as annex.	Thailand
[128]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the	Last sentence needs to be clarified. Treatment requires that the wood must be heated to achieve 60°C for one minute. So, it is not clear why this requirement must occur within 30	Costa Rica ,Nicaragua ,El Salvador ,OIRSA

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	minutes for ambient temperature. Does it mean that if this is not achieved, the treatment schuld be reinitiated? If not clarified, This sentence should be deleted.	
[129]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (e.g. microwaves), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	Last sentence needs to be clarified. Treatment requires that the wood must be heated to achieve 60°C for one minute. So, it is not clear why this requirement must occur within 30 minutes from ambient temperature. Does it mean that if this is not achieved, the treatment should be reinitiated?. If not clarified, this sentence should be deleted.	Uruguay
[130]	20	Technical	Where the application of heat treatment is undertaken using dielectric radiation (~~e.g.~~ microwaves or radio frequency), wood packaging material composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. Heating to the prescribed temperature must occur within 30 minutes from ambient temperature.	There are only microwave and radio frequency options available for dielectric radiation. Suggest to expand on the last sentence. It is not clear.	United States of America
[131]	20	Technical	Where ~~the application of~~ heat treatment is applied ~~undertaken~~ using dielectric heating ~~radiation~~ (e.g. using microwaves), wood packaging material ~~composed of wood not exceeding 20 cm in cross-section when measured across the smallest dimension of the piece~~ must be heated to achieve a minimum of 60 °C for 1 minute throughout the profile of the wood. ~~Heating to t~~The prescribed temperature must ~~occur~~be reached within 30 minutes from ~~ambient temperature~~the start of the treatment [FOOTNOTE 1]. Wood packaging material composed of wood exceeding 20 cm in cross section should not be treated using dielectric heating [FOOTNOTE 2]. Footnote 1: Currently only microwave technology is capable of achieving the required temperature within the time scale. Footnote 2: This 20cm limit is based on the efficacy data available to date.	Consistent wording and simpler and more direct language. Suggest the term 'dielectric heating' is used wherever possible to prevent confusion. Changes re 20 cm: The original, condensed sentence is misleading, as if there is one requirement for wood < 20 cm and another for wood > 20 cm. It is more understandable to clearly state the required limit to the wood dimension for the treatment to work.	European Union
[132]	21	Substantive	~~Treatment schedules shall be specified or approved by the NPPO.~~	Most if not all NPPOs are familiar with kiln type heat treatments or fumigation treatments, dielectric heating of wood is very different to any of these types of treatment. This standard provides several pages of information concerning how a kiln heat or fumigation treatment should be carried out. However, it only provides a few misguided and inadequate paragraphs concerning the introduction of a new treatment, which for many NPPOs there	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				is likely to be little to no previous experience or background to call on.	
[133]	21	Substantive	Treatment schedules ~~shall~~should be specified or approved by the NPPO.	The IPPC cannot impose requirements on the NPPOs.	United States of America
[134]	21	Substantive	Heat treatment using a dielectric chamber may be achieved by a number of means. NPPOs should carefully consider the operational conditions to ensure that the treatment achieves the prescribed temperature and time requirements throughout the wood being treated. Treatment schedules that include the operational conditions to ensure effective treatment shall be specified or approved by the NPPO~~Treatment schedules shall be specified or approved by the NPPO~~.	Delete current sentence in para. 21. New text added to ensure a more appropriate reflection of the need to have specific operational conditions prescribed by the NPPO.	Canada
[135]	22	Substantive	~~When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in the treatment:~~		Australia
[136]	22	Substantive	Treatment provider shall be approved by the NPPO. When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in the treatment:		Indonesia
[137]	22	Substantive	Treatment provider shall be approved by the NPPO. When approving and auditing a heat treatment provider, the NPPO shall ensure that the following factors are appropriately addressed by those involved in the treatment:	Clarification.	Philippines ,Thailand ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[138]	22	Technical	When approving and auditing a provider of dielectric heat treatment ~~provider~~, the NPPO shall ensure that the following factors are appropriately addressed by those involved in the treatment:	Improved wording and the list of factors does not apply to all heat treatment providers.	EPPO,Ukraine ,Morocco ,Uzbekistan
[139]	22	Technical	When approving and auditing a provider of a dielectric heat treatment ~~provider~~, the NPPO shall ensure that the following factors are appropriately addressed by those involved in the treatment:	Improved wording and the list of factors does not apply to all heat treatment providers.	European Union
[140]	23	Editorial	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, it is very important for the operator to ~~f the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have~~ initially validate~~d~~ through testing, that the internal wood temperatures meet or exceed 60 °C for 1 minute, through the entire profile of the wood (including its surface). For		Philippines

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			measuring the surface temperature, at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[141]	23	Editorial	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to ~~estimate~~ monitor compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		Thailand ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[142]	23	Editorial	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified	After the number 4, there was a paragraph in the Spanish version: "Appendix 2 contains additional guidance for conducting an effective heat treatment" This paragraph is not displayed on the English version, which suggests that it was accepted its deletion, while it stills pointing in the Spanish version as a proposal, and not as a final correction.	Mexico

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[143]	23	Editorial	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing ~~the treatment provider~~, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	For purpose of clarity and consistency with para 17 sub para 11.	Singapore
[144]	23	Editorial	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing ~~the treatment provider~~, records of heat treatments and calibration should be retained by treatment providers for a period of time	Bullet 4: Unnecessary repetition.	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			specified by the NPPO.		
[145]	23	Editorial	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measur~~ement~~ing and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	It is grammatically correct to use “measuring” rather than “measurement”	South Africa
[146]	23	Substantive	1. ~~Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used.~~ 2. ~~For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating.~~ 3. ~~Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO.~~ ~~4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.~~	DOT POINT 1. 1st sentence - Complete redraft required. Specify how this should be done it is not apparent that the standard appreciates the complexity of this task. Some of the challenges associated with monitoring the treatment temperature are below. Monitoring treatment temperature. Penetration of microwave power and extent of its attenuation is dependent on a number of interacting parameters including frequency, and wood density, moisture content, temperature, and alignment of the electric field relative to fibre direction (Torgovnikov 1993). The interaction of these parameters will be one factor determining the temperature achieved at any point in the heated timber. Moisture content, density, temperature and fibre direction can vary within a length of timber or between pieces of timber. The distribution of power in a microwave system is not even (eg Bradshaw et al. 1997), it is also influenced by shape (Chamchong and Datta 1999), size and placement of the load in the system. Wood is not a perfect load and some	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				power is reflected from the wood, this energy bounces off the wood on to, and then off the walls of the chamber setting up standing waves. The resultant interference pattern creates uneven energy distribution as waves of energy add and cancel out at different points in the chamber including in the wood. Hence energy will not be distributed evenly in the wood and therefore hot and cold areas will occur during heating. In laboratory experiments involving microwave heating, temperatures are either measured at the surface or internally. 1. Surface temperatures – experimenters usually measure one or more surfaces with probes (there seems to be no obvious approach for determining the optimal places for attaching probes), or with forward looking infrared technology (FLIR). 2. Internal temperatures – inferred from surface temperature measurements, or measured by probes inserted into the wood (there seems to be no obvious approach for determining the optimal places spatially for inserting probes), or potentially measured by magnetic resonance imaging (see Amin et al. 2007, Nott et al. 1999 although it seems unlikely this could be applied outside of a research laboratory). The industrial/commercial application of microwave dielectric heating seems likely to use one of three process scenarios. 1. Batch processing in a multimode chamber, potentially in equipment such as shown for example made by Ferrite Microwave Technologies http://www.ferriteinc.com/products_multimode.html 2. Conveyor processing through a multimode chamber eg Bisceglia et al. 2010 3. Conveyor processing through a waveguide applicator eg systems described in Torgovnikov & Vinden (2009, 2010) To gain the best chance of having an even and repeatable distribution of heat in the wood using any of the process scenarios identified, it seems likely that timber of uniform	

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				dimensions and quality be treated in batches. Sending timber of different moisture contents, density and thickness through a commercial process line seems likely to achieve uneven heating and potentially poor treatment of the timber. Given the often poor quality and high variability in dimensions and composition of wood packing material it seems critical that some form of effective temperature monitoring be implemented. However, it is not obvious how this can be done at the scale it is needed. It is also not obvious from the experimental data how much tolerance exists around the 60˚C for 1 minute requirement before treatment ceases to be effective. Amin MHG, Nott KP, Hall LD (2007) Quantification by magnetic resonance imaging of heating commercial baby foods in glass jars. International Journal of Food Science and Technology 42: 1408-1415. Bisceglia B, De Leo R, Diaferia N (2010) MW pallets disinfestations. Journal of Microwave Power and Electromagnetic Energy 43: 4-16. Bradshaw S, Delport S, Wyk E.van (1997). Qualitative measurement of heating uniformity in a multimode microwave cavity. Journal of Microwave power and electromagnetic energy 32 (2) 87-95. Chamchong M, Datta AK (1999) Thawing of foods in a microwave oven: II Effect of load geometry and dielectric properties. Journal of Microwave power and electromagnetic energy 34 (1) 22-32. Nott KP, Hall LD, Bows JR, Hale M, Patrick ML (1999) Three-dimensional MRI mapping of microwave induced heating patterns. International Journal of Food Science and Technology 34: 305-315. Torgovnikov G, Vinden P (2009) High-intensity microwave wood modification for increasing permeability. Forest Products Journal 59 (4): 84-92. Torgovnikov G, Vinden P (2010) Microwave wood modification technology and its applications. Forest Products Journal 60 (2): 173-182. DOT POINT 1 2nd sentence	

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				DELETE - Measuring the surface temperature with two temperature sensors might be fine if the wood is a small uniform sphere and only one surface is present, but with a rough sawn piece of green wood with variable: density (heartwood - sapwood, branch insertions); thickness; moisture content; and a metre or more long being used as dunnage, where on which of the six sides would the two temperature sensors be placed? Matters relevant to temperature measurement are considered below. Monitoring treatment temperature. Penetration of microwave power and extent of its attenuation is dependent on a number of interacting parameters including frequency, and wood density, moisture content, temperature, and alignment of the electric field relative to fibre direction (Torgovnikov 1993). The interaction of these parameters will be one factor determining the temperature achieved at any point in the heated timber. Moisture content, density, temperature and fibre direction can vary within a length of timber or between pieces of timber. The distribution of power in a microwave system is not even (eg Bradshaw et al. 1997), it is also influenced by shape (Chamchong and Datta 1999), size and placement of the load in the system. Wood is not a perfect load and some power is reflected from the wood, this energy bounces off the wood on to, and then off the walls of the chamber setting up standing waves. The resultant interference pattern creates uneven energy distribution as waves of energy add and cancel out at different points in the chamber including in the wood. Hence energy will not be distributed evenly in the wood and therefore hot and cold areas will occur during heating. In laboratory experiments involving microwave heating, temperatures are either measured at the surface or internally. 3. Surface temperatures – experimenters usually measure one or more surfaces with probes (there seems to be no	

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				obvious approach for determining the optimal places for attaching probes), or with forward looking infrared technology (FLIR). 4. Internal temperatures – inferred from surface temperature measurements, or measured by probes inserted into the wood (there seems to be no obvious approach for determining the optimal places spatially for inserting probes), or potentially measured by magnetic resonance imaging (see Amin et al. 2007, Nott et al. 1999 although it seems unlikely this could be applied outside of a research laboratory). The industrial/commercial application of microwave dielectric heating seems likely to use one of three process scenarios. 4. Batch processing in a multimode chamber, potentially in equipment such as shown for example made by Ferrite Microwave Technologies http://www.ferriteinc.com/products_multimode.html 5. Conveyor processing through a multimode chamber eg Bisceglia et al. 2010 6. Conveyor processing through a waveguide applicator eg systems described in Torgovnikov & Vinden (2009, 2010) To gain the best chance of having an even and repeatable distribution of heat in the wood using any of the process scenarios identified, it seems likely that timber of uniform dimensions and quality be treated in batches. Sending timber of different moisture contents, density and thickness through a commercial process line seems likely to achieve uneven heating and potentially poor treatment of the timber. Given the often poor quality and high variability in dimensions and composition of wood packing material it seems critical that some form of effective temperature monitoring be implemented. However, it is not obvious how this can be done at the scale it is needed. It is also not obvious from the experimental data how much tolerance exists around the 60˚C for 1 minute requirement before treatment ceases to be effective. Amin MHG,	

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				Nott KP, Hall LD (2007) Quantification by magnetic resonance imaging of heating commercial baby foods in glass jars. International Journal of Food Science and Technology 42: 1408-1415. Bisceglia B, De Leo R, Diaferia N (2010) MW pallets disinfestations. Journal of Microwave Power and Electromagnetic Energy 43: 4-16. Bradshaw S, Delport S, Wyk E.van (1997). Qualitative measurement of heating uniformity in a multimode microwave cavity. Journal of Microwave power and electromagnetic energy 32 (2) 87-95. Chamchong M, Datta AK (1999) Thawing of foods in a microwave oven: II Effect of load geometry and dielectric properties. Journal of Microwave power and electromagnetic energy 34 (1) 22-32. Nott KP, Hall LD, Bows JR, Hale M, Patrick ML (1999) Three-dimensional MRI mapping of microwave induced heating patterns. International Journal of Food Science and Technology 34: 305-315. Torgovnikov G, Vinden P (2009) High-intensity microwave wood modification for increasing permeability. Forest Products Journal 59 (4): 84-92. 2nd dot point - DELETE - Complete redraft required . Does this only apply to 2.45 GHz? As this standard does not appear to restrict the frequencies to be used. What is this 5 cm limit based on and how subject is it to differences in wood characteristics such as shape, density, moisture content and temperature? Furthermore, more than one port does not guarantee uniformity of heating. For example, Vinden et al. (2010) used a four port 922 MHz system (applied power 25 kW each top and bottom port and 20 kW each side port) to heat radiata pine sleepers (130 x 260 x 2700 mm & 34% moisture content) moving at 14 mm/S. They measured temperature at 15 points across the face of the sleeper. Temperature in the centre was 102 ˚C and temperatures at 20 mm from the surface ranged from 88-103 ˚C. The paper by Bisceglia et al. (2009) appears	

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
				to show uneven temperature distribution among pallets (his Figure 1) using both multiple waveguides (separate magnetrons) and a mode stirrer (his Figures 2-4) in an attempt to even-out microwave power distribution in the chamber. Refs: Bisceglia B, De Leo R, Diaferia N (2010) MW pallets disinfestations. Journal of Microwave Power and Electromagnetic Energy 43 4-16. Vinden P, Torgovnikov G, Hann J (2010) Microwave modification of Radiata pine railway sleepers for preservative treatment. European Journal of Wood and Wood Products DOI 10.1007/s00107-010-0428-8. Torgovnikov G, Vinden P (2010) Microwave wood modification technology and its applications. Forest Products Journal 60 (2): 173-182. 2ND DOT POINT - DELETE - Why doesn't the sentence also apply to wood greater than 5 cm in thickness? NPPOs are going to need some detailed guidance on how this should be done, it seems desirable that approaches used be consistent across NPPOs to help provide some surety in the application of the standard across countries. 3RD DOT POINT - DELETE - Complete redraft required based on guidance provided by the IPPC on how frequently this calibration should be done. In the case of microwaves, the power source that provides the energy that produces the heat is a magnetron this has a limited lifespan which depends on: inherent characteristics set at manufacture; how the magnetron is used; and how often it is used. Any calibration process and its frequency of occurrence would need to ensure any deterioration in magnetron output could be detected. The same concerns should apply for RF dielectric heating if RF power tubes are the source of RF energy. Also it is the manufacturer's requirements as this would have been considered in the design and function of the equipment, not the NPPO.	
[147]	23	Substantive	1. Irrespective of whether dielectric heat treatment is conducted as a batch	Redundant to have this information in both	United States

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO. Additional information on this treatment can be found in ISPM 28.	ISPMs 15 and 28. Some of the paragraphs are identical between these two drafts. Some treatments are in WPM standard and some are in treatment standard—it could be confusing. Some countries might not realize that there are treatments in other standards. Direct reader to ISPM 28 from here-- "Additional information can be found in ISPM 28.". At least cross-reference between the two standards.	of America
[148]	23	Substantive	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO. 5. The treatment needs to be monitored where the treatment is likely to be the col dest to ensure the target temperature is maintained.	Fore consistency with the 1st indent of para18 in Draft Annex of ISPM No.28: Heat treatment of wood packaging material using Dielectric Heat.	Japan
[149]	23	Technical	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to ~~estimate~~ ensure compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood	Bullet 1: More accurate wording Bullet 2: It is not important, whether the equipment is modified or not. Bullet 3: Sensors do not include equipment Bullet 4: Unnecessary	EPPO,Russia n Federation ,Ukraine ,Morocco

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			temperatures ~~meet~~ reach or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment should ~~modified as needed to~~ ensure uniform heating. 3. Temperature sensors ~~including~~ as well as the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing ~~the treatment provider~~, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	repetition	,Uzbekistan
[150]	23	Technical	1. Irrespective of whether ~~dielectric~~ heat treatment using dielectric radiation is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric radiation ~~heating~~ at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	To be consistent with changes proposed in paragraph 18	Costa Rica ,Uruguay ,Nicaragua ,El Salvador
[151]	23	Technical	1. Irrespective of whether ~~dielectric~~ heat treatment using dielectric radiation is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric radiation ~~heating~~ at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in	To be consistent with changes proposed in para 18.	COSAVE,Paraguay ,Chile,Brazil

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[152]	23	Technical	1. Irrespective of whether dielectric heat treatment is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to ~~estimate~~ ensure compliance with the prescribed standard, the operator should have initially validated through testing that the ~~internal~~ wood temperatures ~~meet~~ reach or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. Uniformity of heating for the chamber should be tested and the equipment should ensure uniform heating. For wood exceeding 5 cm in thickness, dielectric heating at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. ~~For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating.~~ 3. Temperature sensors ~~including~~ as well as the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	Bullet 1: More accurate wording, the word 'internal' is superfluous. Bullet 2: Changed order of sentences to put the more general requirement first. It is not important, whether the equipment is modified or not. The second sentence may need to be modified pending the result of the review of the scientific evidence (see our general comment). Bullet 3: Sensors do not include equipment	European Union
[153]	23	Technical	1. Irrespective of whether ~~dielectric~~ heat treatment using dielectric radiation is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric radiation ~~heating~~ at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO.	To be consistent with changes proposed in para 18.	Argentina

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.		
[154]	23	Technical	1. Irrespective of ~~whether~~ dielectric heat treatment using dielectric radiation is conducted as a batch process or as a continuous (conveyor) process, if the operator is measuring the surface temperature to estimate compliance with the prescribed standard, the operator should have initially validated through testing that the internal wood temperatures meet or exceed 60 °C for 1 minute through the entire profile of the wood (including its surface). For measuring the surface temperature at least two temperature sensors should be used. 2. For wood exceeding 5 cm in thickness, dielectric radiation ~~heating~~ at 2.45 GHz requires bidirectional application or multiple waveguides for the delivery of microwave energy to ensure uniformity of heating. For wood less than 5 cm in thickness, uniformity of heating for the chamber should be tested and equipment modified as needed to ensure uniform heating. 3. Temperature sensors including the measurement and recording equipment are calibrated at a frequency specified by the NPPO. 4. For purposes of auditing the treatment provider, records of heat treatments and calibration should be retained by treatment providers for a period of time specified by the NPPO.	To be consistent with changes proposed in paragraph 18.	OIRSA
[155]	25	Editorial	NPPOs are encouraged to promote the use of alternative treatments approved in this standard. Use of methyl bromide should ~~be undertaken~~ take~~ing~~ into account the IPPC~~CPM~~ ~~R~~recommendation on the r~~R~~eplacement or reduction of the use of methyl bromide as a phytosanitary measure (CPM, 2008). ~~NPPOs are encouraged to promote the use of alternative treatments approved in this standard1.~~	The "encouragement" should come first. The recommendation is probably a CPM recommendation nnot an IPPC recommendation. - The format adopted for recommendations at CPM 2009 Appendix 22 refers to CPM recommendations.	New Zealand
[156]	25	Editorial	Use of methyl bromide should be undertaken taking into account the IPPC~~CPM~~r ~~R~~ecommendation on the r~~R~~eplacement or reduction of the use of methyl bromide as a phytosanitary measure (CPM, 2008). NPPOs are encouraged to promote the use of alternative treatments approved in this standard1.	Removal of unnecessary capitalisation makes paragraph clear	Kenya
[157]	26	Editorial	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increase~~s~~ in the treatment time ~~(e.g. 1–2 hours)~~ may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24		Thailand ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.		
[158]	26	Editorial	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increase~~s~~ in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must ~~be~~ not be less than 10 °C and the minimum exposure time must ~~be~~ not be less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.	For purpose of clarity	Singapore
[159]	26	Substantive	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule, specified or approved by the NPPO, that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.	Consistency: As has been explicitly expressed for the HT schedules, it is appropriate to also highlight this requirement for MB.	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[160]	26	Substantive	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.	If the concentrations are measured in the ambient atmosphere, how would the NPPO ensure CT at core?	United States of America

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
[161]	26	Substantive	~~The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. (iIn the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation).~~ The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. (iIn the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation).	it is no necessary to give example time, e.g. 1-2 hours, because sometimes it may take longer time. As long as the slight increase can achieve the required CT, the time is no matter.	China
[162]	26	Substantive	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at ~~a minimum at 2, 4 and 24 hours. (iIn the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation).~~ start and end time of exposure, addtional one is encouraged at any time in the middle	start and end time are important for monitoring, but a monitoring in the middle should be flexible and fumigation will be more practical	Viet Nam
[163]	26	Substantive	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule, specified or approved by the NPPO, that achieves	Consistency: As has been explicitly expressed for the HT schedules, it is appropriate to also	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.	highlight this requirement for MB.	
[164]	26	Technical	~~The~~ wWood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours from the beginning of the treatment. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.	1st - An indefinite article is needed 2nd and 3rd - More precise.	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[165]	26	Technical	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. ~~Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met~~. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.	The inclusion of this sentence does not provide additional guidelines to the NPPO.	Uruguay
[166]	26	Technical	The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. ~~Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not~~	The inclusion of this sentence does not provide additional guidelines the NPPO	COSAVE,Paraguay ,Chile,Brazil

<table>
<tr><th>Comment no.</th><th>Paragraph no.</th><th>Comment type</th><th>Comment</th><th>Explanation</th><th>Country</th></tr>
<tr><td></td><td></td><td></td><td>~~met~~. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.</td><td></td><td></td></tr>
<tr><td>[167]</td><td>26</td><td>Technical</td><td>~~The~~ ~~w~~Wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours from the beginning of the treatment. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.</td><td>1st - The article is not needed. 2nd - More precise.</td><td>European Union</td></tr>
<tr><td>[168]</td><td>26</td><td>Technical</td><td>The wood packaging material must be fumigated with methyl bromide in accordance with a schedule that achieves the minimum concentration-time product2 (CT) over 24 hours at the temperature and final residual concentration specified in Table 1. ~~Slight increases in the treatment time (e.g. 1–2 hours) may be permitted to achieve the required CT if the minimum final concentration is not met~~. This CT must be achieved throughout the wood, including at its core, although the concentrations would be measured in the ambient atmosphere. The minimum temperature of the wood and its surrounding atmosphere must be not less than 10 °C and the minimum exposure time must be not less than 24 hours. Monitoring of gas concentrations must be carried out at a minimum at 2, 4 and 24 hours. ~~(~~In the case of longer exposure times and weaker concentrations, additional measurement of the gas concentrations should be recorded at the end of fumigation~~)~~.</td><td>The inclusion of this sentence does not provide additional guidelines the NPPO</td><td>Argentina</td></tr>
<tr><td>[169]</td><td>28</td><td>Substantive</td><td><table><tr><th>Temperature (°C)</th><th>CT (g·h/m3) over 24 h</th><th>Minimum final concentration (g/m3) after 24 h#</th></tr><tr><td>21 ~~°C~~ or above</td><td>650</td><td>24</td></tr></table></td><td>It may be useful to indicate what CT is, or expand on the footnote in paragraph 39. It is confusing and may need some more clarification.</td><td>Yemen ,Oman</td></tr>
</table>

<table>
<tr><th>Comment no.</th><th>Paragraph no.</th><th>Comment type</th><th>Comment</th><th>Explanation</th><th>Country</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td>16 ºC or above</td><td>800</td><td>28</td></tr>
<tr><td>10 ºC or above</td><td>900</td><td>32</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>[170]</td><td>28</td><td>Substantive</td><td>
<table>
<tr><th>Temperature (°C)</th><th>CT (g·h/m3) over 24 h</th><th>Minimum final concentration (g/m3) after 24 h#</th></tr>
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<tr><td>10 ºC or above</td><td>900</td><td>32</td></tr>
</table>
more details in this table (monitoring time and minimum concentration) will provide more flexible for fumigation
</td><td></td><td>Viet Nam</td></tr>
<tr><td>[171]</td><td>28</td><td>Technical</td><td>
<table>
<tr><th>Temperature (°C)</th><th>CT (g·h/m3) over 24 h</th><th>Minimum final concentration (g/m3) after 24 h#</th></tr>
<tr><td>21 ºC or above</td><td>650</td><td>24</td></tr>
<tr><td>16 ºC ~~or above~~ to 21</td><td>800</td><td>28</td></tr>
<tr><td>10 ºC ~~or above~~ to 16</td><td>900</td><td>32</td></tr>
</table>
</td><td>The 3 shown intervals are meant to be completely separate (disjunctive), i.e. at e.g. 22 degrees only the uppermost row is valid and the two other rows are NOT optional alternatives to that.</td><td>EPPO,Norway ,Russian Federation ,European Union ,Ukraine ,Morocco ,Uzbekistan</td></tr>
<tr><td>[172]</td><td>28</td><td>Technical</td><td>
<table>
<tr><th>Temperature (°C)</th><th>CT (g·h/m3) over 24 h</th><th>Minimum final concentration (g/m3) after 24 h#</th></tr>
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<tr><td>16 ºC or above</td><td>800</td><td>28</td></tr>
</table>
</td><td>At what stage of the fumigation these CTs are to be checked - at the beginning or towards the end? Per definition in (39), it suggests at the end, in which case, the reading in Table 1 falls short of the CTs required for the given temperatures.</td><td>United States of America</td></tr>
</table>

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			10 ºC or above | 900 | 32		
[173]	29	Editorial	# In circumstances when the minimun final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.	How do we arrive at the 5% deviation?	Philippines
[174]	29	Editorial	# In circumstances when the minimum final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is ~~allowed~~ permitted provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.		Thailand ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India
[175]	29	Editorial	# In circumstances when the final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.	This statement would be better as a footnote. Currently, the placement makes it seem as though the footnote is part of the main text of the document.	United States of America
[176]	29	Substantive	# In circumstances when the minimum final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.	It is MFC to be reached	EPPO,Norway ,Ukraine ,Morocco ,Uzbekistan
[177]	29	Substantive	# In circumstances when the minimum final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.	It is MFC to be reached	European Union
[178]	29	Technical	~~# In circumstances when the final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.~~	The inclusion of this sentence does not provide additional guidelines the NPPO.	Uruguay
[179]	29	Technical	~~# In circumstances when the final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.~~	The inclusion of this sentence does not provide additional guidelines the NPPO	COSAVE,Paraguay ,Chile,Brazil
[180]	29	Technical	~~# In circumstances when the final concentration is not achieved after 24 hours, a deviation in the concentration of ~5% is allowed provided additional treatment time is added to the end of the treatment to achieve the prescribed CT.~~	The inclusion of this sentence does not provide additional guidelines the NPPO	Argentina
[181]	32	Technical	**Temperatu** | **Dosage** | **Minimum**	As commented also with Table 1, the 3 shown intervals are meant to be completely separate (disjunctive), i.e. at e.g. 22 degrees only the	EPPO,Norway ,Russian Federation

<table>
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<table>
<tr><th>re (°C)</th><th>(g/m3)</th><th>concentration (g/m3) at:</th><td></td><td></td></tr>
<tr><td>2 h</td><td>4 h</td><td>24 h</td><td></td><td></td></tr>
<tr><td>21 °C or above</td><td>48</td><td>36</td><td>31</td><td>24</td></tr>
<tr><td>16 °C or above to 21</td><td>56</td><td>42</td><td>36</td><td>28</td></tr>
<tr><td>10 °C or above to 16</td><td>64</td><td>48</td><td>42</td><td>32</td></tr>
</table>
</td><td>uppermost row is valid and the two other rows are NOT optional alternatives to that.</td><td>,European Union ,Ukraine ,Morocco ,Uzbekistan</td></tr>
<tr><td>[182]</td><td>33</td><td>Substantive</td><td>NPPOs shall should ensure that the following factors are appropriately addressed by those involved in the application of methyl bromide treatment under this standard:</td><td>Shall is treaty language and should not be used unless is a requirement in the Convention.</td><td>Australia</td></tr>
<tr><td>[183]</td><td>34</td><td>Editorial</td><td>1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application).
2. Fumigation enclosures are not loaded beyond 80% of their volume.
3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level.
4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor.
5. Consideration should be given to the use of a vaporizer to apply methyl bromide (“hot gassing”).Methyl bromide is often applied through a vaporizer (“hot gassing”) in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure.
6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, Wwood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.
7. The concentration of methyl bromide is must always be measured at a</td><td>Grammar and avoid the use of the present tense.</td><td>EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan</td></tr>
</table>

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			location furthest from the insertion point of the gas as well as at other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[184]	34	Editorial	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm	Last sentence is deleted because it expresses the same idea as the first one.	Costa Rica ,Nicaragua ,OIRSA

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[185]	34	Editorial	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. ~~Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece.~~ Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. ~~Therefore,~~ ~~W~~wWood stacks may need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide~~.	# 6 includes two different subjects. We split them for better understanding. First sentence was deleted and replaced by the last sentence because the same was repeated in both sentences. If change is agreed, then the paragraph should be renumbered accordingly.	Uruguay

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			8. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 9. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 10. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 11. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 12. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 13. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 14. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[186]	34	Editorial	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide (“hot gassing”)~~Methyl bromide is often applied through a vaporizer (“hot gassing”)~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide~~Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, Wwood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured~~	Number 6 include two different subjects in this para. We split them for better understanding. Besides, first and last sentences are repeated	COSAVE,Paraguay ,Chile,Brazil

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. Wood stacks may need separators to ensure adequate methyl bromide circulation and penetration 8. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 9. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 10. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 11. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 12. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 13. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 14. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[187]	34	Editorial	1. ~~Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application).~~~~Fumigation enclosures are not loaded beyond 80% of their volume.Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level.The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor.~~~~Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ ~~in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure.Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore,~~ ~~W~~wood stacks ~~may~~ need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl~~		China

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			~~bromide.The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached.~~When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates.Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes).The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment.Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant.~~The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO.~~Records of methyl bromide treatments ~~and calibration~~ are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditi 1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide (“hot gassing”)in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, Wwood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location that will represent the fumigtion enclosure . to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 C (including at the wood core) throughout the duration of the treatment.° 11. Wood packaging material to be fumigated is not wrapped or coated in materials		

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined and the NPPO, for auditing purposes.		
[188]	34	Editorial	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within ~~one~~ the first hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide ~~is~~ must always be measured at a location furthest from the insertion point of the gas as well as at other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature	Point 1: Better clarity. Point 7: Grammar and avoid the use of the present tense.	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			(where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[189]	34	Editorial	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. 6. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide~~Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, W~~wood stacks may need ~~separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. Wood stacks may need separators to ensure adequate methyl bromide circulation and penetration 8. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 9. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 10. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 11. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least	Number 6 include two different subjects in this para. We split them for better understanding. Besides, first and last sentences are repeated.	Argentina

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			10 °C (including at the wood core) throughout the duration of the treatment. 12. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 13. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 14. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[190]	34	Substantive	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. ~~Consideration should be given to the use of a~~ The use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure is recommended. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured ~~at a location furthest from the insertion point~~ for example at front bottom, centre middle and top back of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least	5. For effective fumigation the gas should be heated over 60 degrees to be effectively dispersed as a gas for penetration 7. More clarity in naming locations. How could you achieve equilibrium with one reading? 12 Include manufacturer's instructions to ensure instructions are followed.	Australia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO and in accordance with manufacturer's instructions. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[191]	34	Substantive	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at ~~a~~ location/s that will represent the fumigation enclosure ~~furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached.~~ 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least	7. Some countries are using more than one monitoring locations (eg. top, middle& bottom) 12. There are instances that the NPPO is not the agency conducting calibration.	Philippines ,Korea, Republic of ,Viet Nam ,Lao People's Democratic Republic,Japan ,India

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO or its accredited agency. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[192]	34	Substantive	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. ~~Consideration should be given to the~~ The use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ is essential in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. ~~The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached.~~The concentration of methyl bromide is always measured at a location/s that will represent the fumigation enclosure furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material	For point No. 5: The use of a vaporizer is compulsory when conducting MB fumigation, otherwise longer time is required and a possibility that liquid MB is released into an enclosure. For point No. 7: More appropriate.	Malaysia

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO or its accredited agency. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[193]	34	Substantive	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material	5. Revert back to original wording. The change makes the statement weaker as methyl bromide is most often applied using a vaporizer. The original statement is more appropriate. 6. Last sentence can be deleted. The first and third sentences say basically the same thing, so both sentences are not needed.	United States of America

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[194]	34	Substantive	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached(when all readings are within 15% of the lowest reading). 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material	To set a standard variation from the lowest reading . Otherwise it becomes arbitrary.	Singapore

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[195]	34	Substantive	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks ~~may~~ need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide, therefore other treatments should be considered. 7. The concentration of methyl bromide should ~~is~~ always be measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material	The use of "may" implies that the use of separators is an option whereas it should be a principle that separators should be used at all times to ensure adequate circulation and penetration. For clarity that when methyl bromide cannot be used, there are other treatment options which should be considered. To place emphasis that at all times, the concentration should be measured at the furthest location.	South Africa

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[196]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment ~~is~~ must not be carried out on pieces of wood or wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece either individually or stacked. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging material containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece ~~should~~ must not be treated with methyl bromide. 7. The concentration of methyl bromide must ~~is~~ always be measured at a location furthest from the insertion point of the gas as well as at other locations, to confirm ~~when gas equilibrium~~ that the uniform distribution of the gas throughout the chamber is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take	Bullet 6: (a) If the efficacy of the treatment is dependent on the size of the cross section of the piece, then this requirement should be a "must". (b) The insert at the end of the sentence is needed, otherwise it is not clear why the next sentence starts with "Therefore". Bullet 7: Better precision and clarity.	EPPO,Norway ,Russian Federation ,Ukraine ,Morocco ,Uzbekistan

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[197]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material	Equipment to measure gas concentration and temperature must be used always.	Costa Rica ,Nicaragua

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature ~~(where used)~~ is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[198]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes).	Equipment to measure gas concentration and temperature should always be used	Uruguay

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature ~~(where used)~~ is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[199]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever	Always should be used these equipments	COSAVE,Paraguay ,Chile,Brazil

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature ~~(where used)~~ is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[200]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least	Third sentence in indent 6 is deleted, because repeat the same idea of second sentence and will be confusing for the NPPO´s. In number 12, the equipment to measure the concentration and calibration must be used always.	Mexico

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment ~~used~~ used to measure gas concentrations and temperature (~~where used~~) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[201]	34	Technical	1. ~~Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application).~~Fumigation enclosures are not loaded beyond 80% of their volume.Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level.The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor.~~Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing") ~~in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure.Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore,~~ W~~w~~ood stacks ~~may~~ need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached.~~When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates.Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes).The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment.Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant.~~The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO.~~Records of methyl bromide treatments ~~and~~ calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for audi	To calrify when the time can be calculated in practice.	China

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide (“hot gassing”)in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. Time can not be calculated until the equilibrium has been reached. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, Wwood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 C (including at the wood core) throughout the duration of the treatment.° 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined the NPPO, for auditing purposes.		
[202]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level.	Bullet 6: (a) If the efficacy of the treatment is dependent on the size of the cross section of the piece, then this requirement should be a "must". (b) The insert at the end of the sentence is needed, otherwise it is not clear why the next sentence starts with "Therefore". Bullet 7: Better precision and clarity.	European Union

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment ~~is~~ must not be carried out on pieces of wood or wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece either individually or stacked. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging material containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece ~~should~~ must not be treated with methyl bromide. 7. The concentration of methyl bromide must ~~is~~ always be measured at a location furthest from the insertion point of the gas as well as at other locations, to confirm ~~when gas equilibrium~~ that the uniform distribution of the gas throughout the chamber is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (where used) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[203]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof	Always should be used these equipments	Argentina

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide. 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature (~~where used~~) is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[204]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level.	1) Last sentence of No. 6 was deleted because it expresses the same idea as the first one. 2) Equipment to measure gas concentration and temperature must always be used (in No. 12)	El Salvador

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			4. The fumigation site floor is either impermeable to the fumigant or gas-proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature ~~(where used)~~ is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[205]	34	Technical	1. Fans are used as appropriate during the gas distribution phase of fumigation to ensure that equilibrium is reached and should be positioned to ensure that the fumigant is rapidly and effectively distributed throughout the fumigation enclosure (preferably within one hour of application). 2. Fumigation enclosures are not loaded beyond 80% of their volume. 3. Fumigation enclosures are well sealed and as gas tight as possible. If fumigation is to be carried out under sheets, these must be made of gas-proof material and sealed appropriately at seams and at floor level. 4. The fumigation site floor is either impermeable to the fumigant or gas-	1) Last sentence of No. 6 was deleted because it expresses the same idea as the first one. 2) Equipment to measure gas concentration and temperature must always be used (in No. 12)	OIRSA

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
			proof sheets must be laid on the floor. 5. Consideration should be given to the use of a vaporizer to apply methyl bromide ("hot gassing")~~Methyl bromide is often applied through a vaporizer ("hot gassing")~~ in order to fully volatilize the fumigant prior to its entry into the fumigation enclosure. 6. Methyl bromide treatment is not carried out on wood packaging material exceeding 20 cm in cross-section when measured across the smallest dimension of the piece. Therefore, ~~W~~wood stacks may need separators to ensure adequate methyl bromide circulation and penetration. ~~Wood packaging containing a piece of wood exceeding 20 cm in cross-section when measured across the smallest dimension of the piece should not be treated with methyl bromide.~~ 7. The concentration of methyl bromide is always measured at a location furthest from the insertion point of the gas as well as other locations, to confirm when gas equilibrium is reached. 8. When calculating methyl bromide dosage, compensation is made for any gas mixtures (e.g. 2% chloropicrin) to ensure that the total amount of methyl bromide applied meets required dosage rates. 9. Initial dose rates and post-treatment product handling procedures take account of likely methyl bromide sorption by the treated wood packaging material or associated product (e.g. polystyrene boxes). 10. The measured temperature of the product or the ambient air (whichever is the lower) is used to calculate the methyl bromide dose, and must be at least 10 °C (including at the wood core) throughout the duration of the treatment. 11. Wood packaging material to be fumigated is not wrapped or coated in materials impervious to the fumigant. 12. The equipment used to measure gas concentrations and temperature ~~(where used)~~ is calibrated at a frequency specified by the NPPO. 13. Records of methyl bromide treatments and calibration are retained by treatment providers, for a period of time determined ~~and as required~~by the NPPO, for auditing purposes.		
[206]	35	Editorial	NPPOs should recommend that measures be taken to reduce or eliminate emissions of methyl bromide to the atmosphere where technically and economically feasible (as described in the IPPC~~CPM~~r ~~R~~ecommendation on the r~~R~~eplacement or reduction of the use of methyl bromide as a phytosanitary measure (CPM, 2008)).	Removal of unnecessary capitalisations making the paragraph clear	Kenya
[207]	35	Editorial	~~NPPOs should recommend that measures be taken to reduce or eliminate emissions of methyl bromide to the atmosphere where technically and economically feasible (as described in the IPPCCPM Recommendation on the rReplacement or reduction of the use of methyl bromide as a phytosanitary measure (CPM, 2008)).~~	This paragraph is redundant to paragraph 25 and should simply be removed to avoid duplication.	Canada

Comment no.	Paragraph no.	Comment type	Comment	Explanation	Country
[208]	37	Editorial	As new technical information becomes available, existing treatments may be reviewed and modified, and alternative treatments ~~and/~~or new treatment schedule(s) for wood packaging material may be adopted by the CPM~~Commission on Phytosanitary Measures~~. If a new treatment or a revised treatment schedule is adopted for wood packaging material and incorporated into this ISPM, material treated under the previous treatment ~~and/~~or schedule does not need to be re-treated or re-marked.	General consistency of ISPMs as agreed by SC	EPPO,Russian Federation ,Ukraine ,Morocco ,Uzbekistan
[209]	37	Editorial	As new technical information becomes available, existing treatments may be reviewed and modified, and alternative treatments ~~and/~~or new treatment schedule(s) for wood packaging material may be adopted by the CPM~~Commission on Phytosanitary Measures~~. If a new treatment or a revised treatment schedule is adopted for wood packaging material and incorporated into this ISPM, material treated under the previous treatment ~~and/~~or schedule does not need to be re-treated or re-marked.	General consistency of ISPMs as agreed by SC	European Union
[210]	38	Editorial	1In addition, contracting parties to the IPPC may also have obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer (UNEP, 2000). Move this endnote and make it into a footnote.	This would make it easier to find the information referenced.	United States of America
[211]	39	Editorial	2 The CT product utilized for methyl bromide treatment in this standard is the sum of the product of the concentration (g/m3) and time (h) over the duration of the treatment. Move this endnote and make it into a footnote.	This would make it easier to find the information referenced.	United States of America
[212]	39	Substantive	2 The CT product utilized for methyl bromide treatment in this standard is the sum of the products of the concentration (g/m3) and time (h) over the duration of the treatment.	Correctly according to the formula (or multiplication of the product...)	EPPO,Norway ,Ukraine ,Morocco ,Uzbekistan
[213]	39	Substantive	2 The CT product utilized for methyl bromide treatment in this standard is the sum of the products of the concentration (g/m3) and time (h) over the duration of the treatment.	Correctly according to the formula (or multiplication of the product...)	European Union