REPORT

Technical Panel on Forest Quarantine

October 2014

Virtual Meeting
7 October 2014
15:00 to 17:00 GMT

Food and Agriculture Organization of the United Nations

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1. OPENING OF THE MEETING

1.1 Orientation Refresher for Adobe Connect[1]

[1] Before beginning the meeting, the International Plant Protection Convention (IPPC) Secretariat gave an overview of the virtual meeting software connection program Adobe Connect and also noted the etiquette and ground rules for participants to follow during the meeting. The IPPC Secretariat also introduced further guidance for resolving problems with connection quality during virtual meetings using Adobe Connect.

1.2 Welcome by the IPPC Secretariat[2]

[2] The IPPC Secretariat welcomed the participants to the meeting. The following two stewards, five members of the Technical Panel on Forest Quarantine (TPFQ) and Secretariat staff participated in the meeting:

[3] - Mr. Victor **AGYEMAN** (Member), Ghana

[4] - Ms Julie **ALIAGA** (Steward), USA

[5] - Mr. Eric **ALLEN** (Member), IFQRG Chair

[6] - Mr. Sven Christer **MAGNUSSON** (Member), Norway

[7] - Mr. Mamoru **MATSUI** (Member), Japan

[8] - Mr. Michael **ORMSBY** (TPFQ Lead, IPPC Secretariat)

[9] - Mr. Thomas **SCHRÖDER** (Member), Germany

[10] - Mr Piotr **WLODARCZYK** (Assistant Steward), Poland

[11] The following members were unable to attend due to previous engagements or technical issues:

[12] - Mr Marcos Beéche **CISTERNAS** (Member), Chile

[13] - Mr Edson Tadeu **IEDE** (Member), Brazil

[14] - Mr Shane **SELA** (Member), Canada

[15] The Secretariat noted the primary purpose of the meeting was to consider the TPFQ-relevant outcomes of any Standards Committee (SC) e-decisions, reports from September 2014 meetings of International Forest Quarantine Research Group (IFQRG) 12 and the Expert Working Group (EWG) on *Wood and bamboo products (including handicrafts)* (2008-008), and consider and agree all documents from this panel that will be tabled at the November 2014 meeting of the SC.

[16] The panel approved the agenda and list of documents for this meeting (see Appendix 1 to this report).

1.3 Introductions

[17] The meeting participants introduced themselves and agreed to update their contact information on the International Phytosanitary Portal (IPP, www.ippc.int) if necessary[3]. The TPFQ Secretariat Lead was elected as a chair for this virtual meeting as well as future virtual meetings.

[1] https://www.ippc.int/core-activities/standards-setting/virtual-tools

[2] 01_TPFQ_2014_Oct

[3] The TPFQ membership list, which includes contact information, can be found on the IPP at https://www.ippc.int/publications/membership-tpfq

1.4 Review and Agree Record of last Virtual Meeting[4]

[18] The panel members present agreed to the record of the July 2014 Virtual Meeting of the TPFQ subject to a final review by the Steward.

[19] Action items from the July 2014 meeting were added to the agenda of this meeting: moisture content of wood and methyl bromide penetration (see agenda item 5.2), the review of the forest seed annex to the draft ISPM for the international movement of seed (see agenda item 5.4), and the proposal for a workshop on ISPM 15 implementation (see agenda item 7.1).

2. UPDATES FROM THE SECRETARIAT AND OTHER RELEVANT BODIES[5]

[20] The Secretariat reported on SC e-decisions and the EWG on wood and bamboo products and noted the following key issues related to the TPFQ:

[21] **a)** The SC by e-decision has approved the following draft phytosanitary treatments for member consultation: *Sulfuryl fluoride fumigation of wood packaging material* (2007-101) and *Heat treatment of wood using dielectric heating* (2007-114). It was noted that two schedules were approved for sulfuryl fluoride fumigation of wood: one for insects only and one for insects and nematodes, the latter requiring a higher dose and a higher minimum temperature (20°C).

[22] **b)** The SC by e-decision has approved for member consultation the draft specification: *Requirements for the use of phytosanitary treatments as phytosanitary measures* (2014-008).

[23] An EWG met in Rome in September to develop an International Standard for Phytosanitary Measures (ISPM) for *Wood and bamboo products (including handicrafts)* (2008-008). This item was discussed further under agenda item 5.3.

3. UPDATE ON THE IFQRG/TPFQ WORK PROGRAMME 2014[6]

[24] The 12th meeting of IFQRG was held from the 8th to 12th September in Rome. The meeting discussed a number of issues including:

[25] **a)** ISPM 15 workshop requests for advice and information regarding contaminating pests and infestations following treatment of wood packaging material, and probe sensor placement for the application of heat treatments.

[26] The IFQRG agreed to develop a report on contaminating pests and pests that may infest wood packaging material post-treatment as a reference resource for National Plant Protection Organisations (NPPOs) to use when managing non-compliant wood packaging material. The IFQRG considered that adequate information was already freely available on temperature treatment probe use, such as the ISPM 15 Explanatory Document (2014).

[27] **b)** Further development of the Cardiff Protocol for the ISPM 15 treatment criteria.

[28] The IFQRG agreed to modify the Cardiff protocol slightly to enable more general implementation by focusing on infestation rates and volume of trade. Two subgroups were established to develop appropriate infestation rates for each group of contaminating pests, and volumes of wood packaging material in international trade that may be found at a single site.

[29] The panel discussed various issues related to the discussions held at IFQRG. The panel discussed the potential opportunity to develop guidance material to aid NPPOs in dealing with contaminating pests

[4] 03_TPFQ_2014_Jul_February 2014_Meeting_Report

[5] 03_TPFQ_2014_Oct_Secretariat Update

[6] 04_TPFQ_2014_Oct_IFQRG 12 Reporting

and pests that may infest wood packaging material post-treatment. An example that is known to occur is the surface contamination of wood by soil dwelling nematodes that can blow or wash onto the wood and be mistaken for the only wood nematode pest (pine wood nematode). These contaminating pests could still quarantine pests and require action, but may not be a failure in pest management under ISPM 15. It was considered that any such guidance material could deal with contaminating pests in general (not just on wood packaging material) given this issue was relevant to many different pathways. The response from NPPOs to the detection of contaminating pests on wood packaging material could then be in the appropriate context rather than as being a problem with ISPM 15 (2009), and lessen the burden associated with non-compliance notifications.

[30] **ACTION:** The issue of the development of guidance material for contaminating pests will be raised at a later meeting once IFQRG has reported back.

4.1 Amending Annex 1 DH schedule for ISPM 15 (2009)[7]

[31] A discussion at IFQRG raised issues with the currently approved schedule for dielectric heating (DH) in ISPM 15 (2009). It was noted that:

[32] **a)** the restrictions on 20 cm dimension limit is unnecessary because whether using microwave (MW) or radio frequency (RF), a minimum temperature of 60 °C for 1 minute through the profile must be achieved regardless of the size of the material. Evidence that this is the case must be demonstrated by using temperature probes to verify the treatment has met the required temperature for 1 minute. Further pests are unlikely to become more tolerant to heating temperatures as high as 60°C. The TPPT considered that evidence of heat tolerances in insects exposed to heating is only relevant to much lower temperatures (e.g. 47°C).

[33] **b)** the 30 minute time limit to complete the treatment would significantly impact the economic viability of dielectric heating, especially for RF. Research has shown that as wood thickness increases, the time taken to achieve the target temperature throughout the wood increases more for microwaves than RF. Both microwaves and RF can heat to the target temperature wood greater than 20cm in thickness; however microwaves may take longer to do so than RF.

[34] It was noted by a member that DH has been in use in industrial applications for various purposes. Examples include wood drying or treatment other (non-wood) products such as walnuts. It was also noted by a member that if you remove the heating-up time restriction from DH you could achieve the same heating schedules using conventional (kiln) heating methods. The panel considered that the heating process for DH was at least in part not based on diffused heat (as per conventional heating) but through direct heating of the pest itself. This difference means that the schedules should remain separate for heating types until both types of heating (DH and conventional) have been shown to achieve the same levels of efficacy under similar schedules.

[35] The TPFQ considered the issue in a forum before the meeting and at the meeting and agreed to invite the SC to consider amending the DH schedule in Annex 1 of ISPM 15 to remove the restrictions on wood dimensions and heating up time. The Steward noted that this issue had been added to the agenda of the SC meeting in November 2014.

4. DISCUSSION/STATUS ON IPSM 15 TREATMENT CRITERIA[8]

[36] The Steward for the treatment criteria annex to ISPM 15 (2009) noted that the text of the draft annex had been updated based on discussions at IFQRG and the ISPM 15 Workshop in China.

[37] **ACTION:** The panel will review the updated text of the draft treatment criteria annex to ISPM 15 (2009).

[7] 05_TPFQ_2014_Oct_ISPM 15 edit; 12_TPFQ_2014_Oct_DH ISPM 15 Justification SC

[8] 06_TPFQ_2014_Oct_Draft treatment annex

5. WORK PROGRAMME FOR 2014[9]

[38] The work programme provided was updated from the July virtual meeting of the TPFQ.

5.1 ISPM 15 (2009) explanatory document

[39] Not discussed at this meeting.

5.2. Wood moisture content and methyl bromide penetration[10]

[40] The paper on the effect of moisture content on the efficacy of methyl bromide has been re-drafted for the November 2014 meeting of the SC. A draft was reviewed by the TPFQ in an online forum and again in the meeting. The members present agreed to the final text of the document (see Appendix 3 to this report).

[41] **ACTION:** The draft SC paper on the effect of moisture content on the efficacy of methyl bromide will be added to the agenda of the SC meeting in November 2014.

5.3. Wood handicrafts ISPM EWG[11]

[42] From the draft report of the EWG it was noted that the EWG:

[43] - *Agreed* that bamboo products and handicrafts should be included as their management was similar to that of wood products and handicrafts, and proposed that the title should reflect this (former title *International movement of wood products and handicrafts made from wood*).

[44] - *Identified* a number of wood and bamboo products that should be excluded from the requirements of the ISPM, including aged and valuable products.

[45] - *Agreed* that the phytosanitary risks posed by wood and bamboo products could most efficiently and effectively be managed by exporting countries.

[46] - *Agreed* to phytosanitary measures that would be verified through the use of a *certificate of compliance* (manufacturing or treatment certificate) rather than a phytosanitary certificate.

5.4. Tree seed annex to (draft) Seed ISPM[12]

[47] An updated draft of the forest seed annex has been provided to the panel. Review of the final document can occur through a TPFQ forum if needed.

[48] Some guidance from TPFQ members would be appreciated on aspects of the draft, especially related to the tropical seeds and various tables such as seed treatments.

[49] A member noted that some of text seems to relate to seed quality rather than phytosanitary risk, and the terms used are quite technical. The authors noted that many of the seed quality activities are important to the management of phytosanitary risks. This text was simplified to ensure the issues raised relate to phytosanitary aspects only. The Steward commented on the potential value of tables in the text of the annex however these often create other difficulties if they are expected to be comprehensive rather than examples only.

[50] It was also noted that the harvesting or collecting of forest seed was usually very different from that of agricultural seed such as maize or wheat. In many cases harvesting forest seed utilized particularly unsophisticated methods.

[9] 07_TPFQ_2014_Oct_Work Programme

[10] 08_TPFQ_2014_Oct_SC Paper MC MBr penetration

[11] 09_TPFQ_2014_Oct_Reporting

[12] 10_TPFQ_2014_Oct_Draft ISPM of Seed Annex for forestry

[51] **ACTION:** Members to review the draft provided to the panel and send comments to ALLEN/SCHRODER directly or make comments into the document during a TPFQ Forum that will be established by the Secretariat before the next meeting.

5.5. Emerging phytosanitary issues in forestry

[52] A member noted some recent issues with the trade of plant medicines which may be a phytosanitary risk but may not be managed under current ISPMs or under the IPPC.

[53] **ACTION:** Secretariat to review existing ISPMs to identify if the phytosanitary risks of these products are covered.

6. RECOMMENDATIONS TO THE SC

[54] The TPFQ:

[55] *invited* the SC to consider amending the DH schedule in Annex 1 of ISPM 15 (2009) to remove the restrictions on wood dimensions and heating up time.

[56] *invited* the SC to consider the TPFQ document on the effect of moisture content on the efficacy of methyl bromide against pests in wood packaging material.

[57] *invited* the Steward of the TPFQ to table at the SC meeting in November 2014 the paper supporting the holding of an International Workshop on the Implementation of ISPM 15 (2009).

7. OTHER BUSINESS[13]

[58] A draft paper (white paper) supporting the holding of an International Workshop on the Implementation of ISPM 15 was provided to TPFQ for comment in an online forum. The TPFQ agreed to the paper and recommended the Steward table the paper at the SC meeting in November 2014.

8. FOLLOW-UP ACTIONS FOR NEXT TPFQ VIRTUAL MEETING

[59] At its next virtual meeting, the panel will consider the outcomes of the SC meeting in November 2014, any documents going to the SC meeting in May 2015, and progress on the work programme.

9. CLOSE OF THE MEETING

[60] The TPFQ agreed that the next virtual meeting should take place around the beginning of December 2014. The IPPC Secretariat will select a meeting time and confirm with TPFQ members.

[61] The TPFQ members will adopt outstanding virtual meeting reports via an e-forum or at their next meeting.

[13] 11_TPFQ_2014_Oct_ISPM 15 Workshop Proposal

APPENDIX 1 – AGENDA

AGENDA (DRAFT)

(last updated 01 October 2014)

AGENDA ITEM	DOCUMENT NO.	PRESENTER
1. Opening of the meeting		
1.1 Orientation Refresher for Adobe Connect	https://www.ippc.int/core-activities/standards-setting/virtual-tools	DUBON/ ORMSBY
1.2 Welcome by the IPPC Secretariat	01_TPFQ_2014_Oct_Agenda	ORMSBY
1.3 Introductions	https://www.ippc.int/publications/membership-tpfq	ORMSBY
1.4 Review and agree record of last meeting	02_TPFQ_2014_Oct_Jul 2014 Meeting Report	ORMSBY
2. Secretariat Maintenance and Updates from relevant Bodies (inc Standards Committee)	03_TPFQ_2014_Oct_Secretariat Update	ORMSBY
3. Update on IFQRG/IPPC work programme 2014	04_TPFQ_2014_Oct_IFQRG 12 Reporting	ALLEN
3.1 Amending Annex 1 DH schedule for ISPM 15 (2009)	05_TPFQ_2014_Oct_ISPM 15 edit 12_TPFQ_2014_Oct_DH ISPM 15 Justification SC	ORMSBY
4. Discussion/status on IPSM 15 Treatment Criteria	06_TPFQ_2014_Oct_Draft treatment annex	WLODARCZYK
5. Work Programme for 2014	07_TPFQ_2014_Oct_Work Programme	ALL
5.1 ISPM 15 (2009) explanatory document		SELA
5.2 Wood Moisture content and MBr penetration	08_TPFQ_2014_Oct_SC Paper MC MBr penetration	ALLEN/ ORMSBY
5.3 Wood handicrafts ISPM EWG	09_TPFQ_2014_Oct_EWG Report Handicrafts	SELA
5.4 Tree seed annex to Seed ISPM	10_TPFQ_2014_Oct_Draft ISPM of Seed Annex for forestry	ALLEN/ SCHRODER
5.5 Emerging Phytosanitary Issues in Forestry		ALL
6. Recommendations to the SC (if applicable)		ORMSBY
7. Other business		ORMSBY
7.1 ISPM 15 Workshop Recommendation	11_TPFQ_2014_Oct_ISPM 15 Workshop Proposal	SELA
8. Follow-up Actions for next TPFQ Virtual Meeting		ORMSBY
9. Close of the meeting		ORMSBY

APPENDIX 2 – WORK PROGRAMME FOR 2014

(last updated 20 September 2014)

2014-15 Task Descriptions for the TPFQ

Task Description	Expected delivery date
Review forest seed annex to the Draft ISPM for the movement of seed for propagation.	Prior to SC Meeting Nov 2014
ISPM 15 (2009) Treatment Criteria	Prior to SC Meeting May 2015
Developing the "Cardiff Protocol" with IFQRG working group	Prior to SC Meeting May 2015
High moisture content in wood and penetration of methyl bromide	Prior to SC Meeting Nov 2014
Recommendation for an ISPM 15 Workshop on Implementation	Prior to SC Meeting Nov 2014
Recommendation for a minor review of annex 1 of ISPM 15	Prior to SC Meeting Nov 2014
Manage IFQRG/IPPC Joint Work Programme	On-going

2014-15 Work Programme for the TPFQ

Date	TPFQ Action	Responsible Person(s)
2014		
2014 October		
10/~06	**TPFQ October 2014 Virtual Meeting**– Review IFQRG 12 report, prepare for November SC.	TPFQ
2014 November		
11/10 – 11/14	2014 November Standards Committee Meeting	Aliaga/Forest / Wlodarczyk
2015 February		
02/~06	**TPFQ February 2015 Virtual Meeting** – Set Calendar for 2015, finalise documents for May SC meeting.	TPFQ
2015 March		
03/16 – 03/20	(April) CPM 10	Aliaga/Forest / Wlodarczyk
2015 May		
05/04 – 05/08	May 2013 Standards Committee Meeting	Aliaga/Forest / Wlodarczyk
05/11 – 05/15	2013 Standards Committee 7 Meeting	
2015 July		
First weeks	**TPFQ July 2015 Virtual Meeting**– Review CPM 9 and SC reports, prepare for IFQRG 13.	TPFQ
2015 September		
Tentative	IFQRG 13 – Manchester, England (Tentative)	TPFQ
2015 October		
First week	**TPFQ October 2015 Virtual Meeting**– Review IFQRG 13 report, prepare for November SC.	TPFQ

APPENDIX 3 – THE IMPORTANCE OF MOISTURE CONTENT ON THE PENETRATION OF METHYL BROMIDE INTO WOOD

Prepared by the Technical Panel on Forest Quarantine

Summary

During the April 2012 meeting of the Standards Committee Working Group (SC-7), a member noted that tropical wood species may contain high moisture contents which may affect the permeability of methyl bromide treatment as prescribed in ISPM 15:2009. The Secretariat indicated that sawn wood dries relatively rapidly once bark has been removed and therefore moisture content of wood was unlikely to affect treatment. The SC-7 requested that the Technical Panel on Forest Quarantine (TPFQ) consider the effects of high levels of moisture on methyl bromide penetration. The TPFQ in cooperation with members of the International Forest Quarantine Research Organization (IFQRG) has subsequently reviewed current literature.

The TPFQ considers that it is evident that methyl bromide can penetrate into wood with reasonably high moisture contents (MC). However, there are limits to depth of penetration due to other factors addressed within the guidance already provided in ISPM 15:2009. High moisture content wood can be found in both tropical and temperate zones. Wood drying occurs because of a moisture gradient in the wood. The MC of sawn wood components used in the manufacture of wood packaging material (WPM) will decline rapidly under normal air-drying conditions. It is therefore likely that the MC of these sawn wood components will be below that of freshly sawn wood at the time of treatment, and within a range that allows for sufficient methyl bromide penetration.

Technical Considerations

1. Moisture Content of Wood Explained

MC of wood is defined as the weight of water in the wood expressed as a fraction, usually a percentage, of the weight of oven dried wood. Simpson and TenWolde (1999) have shown that the MC of more than half of American wood species immediately after harvest (green wood) of both temperate and tropical origins can vary between 30% and 200%. Species of wood, density, specific gravity, relative humidity, temperature and other factors contribute to variability in MC. Individual boards of sawn wood can vary in MC. Moisture exist in wood as free water, as water vapor in cell lumens and cavities and as bound water within cell walls. Green wood is often defined as freshly sawn wood in which the cell walls are completely saturated with water (Simpson, 1991).

2. Wood Drying

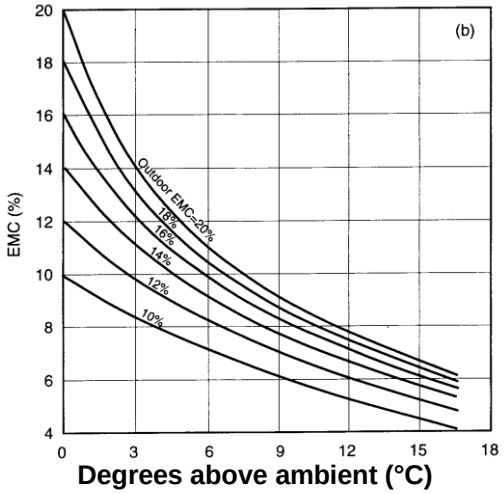
Water in wood normally moves from zones of higher to zones of lower MC, referred to moisture gradients. When the outer portions of a board are drier than the interior, water moves to the surface of the board. Drying of wood is broken down into two phases: diffusion and capillary movement of water from the interior to the surface of the wood, and evaporation of water from the surface. Water moves through wood only as a liquid or vapor. Panshin and de Zeeuw (1980) described the movement of water through passageways within the wood including the cavities of fibers and vessels, ray cells, pit chambers and corresponding pit membrane openings, resin ducts of certain softwoods, other intercellular spaces, and transitory cell wall passageways. Water moves through the wood both laterally and with the grain, although movement along the grain is often much faster. Moisture moves to the surface more slowly in heartwood than sapwood because chemicals within the wood may plug the pits of heartwood. In general, less dense wood species dry faster because wood structure contains more openings per unit volume. Previous reporting has established that moisture content in WPM ranges from 4% to 60% (TPFQ, 2007).

The rate and extent of wood drying is dependent on climatic conditions - temperature, relative humidity, rainfall, sunshine, and winds; and the physical properties of the wood itself (Simpson 1998; Bergman 2010). Defo & Brunette (2006) studied the drying patterns of aspen (*Populus tremuloides*)

logs and the impact of bark loss. They found that the average drying rate of aspen logs with debarked areas ranging from 25% to 100% was roughly 1.5 to 3 times greater, respectively, than for logs with no bark removed. The MC of aspen logs with no bark removed declined from 100% to 78 - 84 % after 30 days of air drying compared to 37 – 51% MZC for aspen logs will all bark. Liukkoxs and Elowsson (1999) found that when pulpwood of Norway spruce was stored under natural conditions for 14 weeks, the MC decreased from 54.8% (at felling) to 26.5%. Denig *et al*. (2000) found that the MC of red oak (*Quercus rubra*) lumber decreased by 50% after 20 days of air drying in summer months and up to 60 days in winter months. Visser *et al.* (2014) found that after 24 weeks in summer storage, the moisture content (wet basis) of radiata pine logs decreased from an initial value of 53% to between 33 and 21%. The decrease was greatest for uncovered small logs and decreased was smallest for covered large logs. Due to wet and cold weather conditions, logs stored in winter- dried very little over a 17-week period. Moisture content decreased from an initial value of 58% to between 51 and 49%, with no significant treatment differences observed in the winter trial.

Simpson (1998) calculated, using the relative humidity and temperature data from the National Oceanic and Atmospheric Administration, the average equilibrium moisture content (EMC) for each month of the year for 262 locations in the United States and 122 locations outside the United States. The maximum EMC determined at any locality was 25%. Based on this data and as an aid for storage of kiln-dried lumber, a graph was developed for determining the reduction in EMC that results from heating air in an enclosed storage space above the temperature of the outside air (see figure 1).

Figure l—Equilibrium moisture content (EMC) of wood when air in an enclosed space is heated above the temperature of the outside ambient air.



3. Wood Moisture Contents

Suzuki (1999) collected 353 samples of 286 species from lowland Indonesian tropical forests. The MC of the green wood ranged from a low of 26% in *Shorea quadrinervis* to a high of 76% in *Ficus uncinata*, *Archidendron havilandii* and others. Osunkoya *et al.* (2007) similarly found that the MC of 27 green Indonesian wood species ranged from 30 to 50 %. These MC are similar to those in wood used by Kawakami *et al.* (2004) to successfully test the efficacy of methyl bromide in killing *Bursaphelenchus xylophilis.* Barak *et al.* (2005) also used wood with high MCs (~35-45%) to effectively kill *Anoplophora glabripennis* with methyl bromide.

4. Methyl Bromide Penetration of Wood

Liese *et al.* (1981) tested the penetration of methyl bromide through the sapwood of log sections of red oak and white oak (*Quercus alba*) as a means to develop a suitable schedule for eradicating the oak wilt fungus (*Ceratocystis fagacearum*). Several concentration-time (CT) products (much higher than those prescribed in ISPM 15:2009) and temperature combinations were evaluated for oak with MCs ranging from 80 – 90%. Effective concentrations required to kill the fungus through the sapwood zone were dependant on initial dose and temperature.

5. Conclusions

The Technical Panel for Forest Quarantine considers that it is evident that methyl bromide can penetrate into wood with reasonably high MCs. However, there are limits to depth of penetration due to other factors addressed within the guidance already provided in ISPM 15:2009. High moisture content wood can be found in both tropical and temperate zones. Wood drying occurs because of a moisture gradient in the wood. The MC of sawn wood components used in the manufacture of WPM will decline rapidly under normal air-drying conditions. It is therefore likely that the MC of these sawn wood components will be below that of freshly sawn wood at the time of treatment, and within a range that allows for sufficient methyl bromide penetration.

6. References

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