

# The Tasmanian Foulbrood **BEST MANAGEMENT PRACTICE** Guideline

**In Tasmania, this document replaces Section 4 of the  
Australian Honey Bee Industry Biosecurity Code of Practice**

*Section 4: Beekeepers Must Control or Eradicate Pests and Diseases  
and Must Manage Weak Hives.*

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This Best Management Practice (BMP) Guideline is intended as a guide for people responsible for the welfare and husbandry of the managed honey bee (*Apis mellifera* spp.).

It sets out expectations of Tasmanian beekeepers under Section Four of the *Australian Honey Bee Industry Biosecurity Code of Practice*, which has been developed in consultation with beekeepers and governments to provide a clear framework for Australian beekeepers to engage in best-practice biosecurity. This document replaces the former Tasmanian ‘*Oxytetracycline (OTC) Code of Practice*’.

The Australian Honey Bee Industry Biosecurity Code of Practice in full is available on the “AHBIC” website: [www.honeybee.org.au](http://www.honeybee.org.au). PART B of the **Code** (sections 1 – 8) applies to ALL **beekeepers** and specific requirements are marked in green. Throughout the **Code**, defined words are in ***bold italics*** (see last page for definitions in the **Code**).

If a beekeeper or apiary manager finds any pest or disease in a hive, they must take appropriate steps to manage its impact on the infected hive(s) and to prevent its spread to other hives. Robber bees provide a major pathway for spread of infectious diseases so maintaining strong hives is an important preventative measure.

The Tasmanian Foulbrood BMP guideline outlines the **approved** methods in the control and eradication of two **notifiable**\* honey bee diseases:

- **American foulbrood disease (*Paenibacillus larvae*); or AFB, and**
- **European foulbrood disease (*Melissococcus plutonius*), or EFB.**

\*According to the **Animal Health Act 1995** you must notify an Animal Health Officer when these (List B) diseases are present in your **apiary**. This is also a requirement in the **Code** – see Part B, 2.1. Either of these diseases, if left unmanaged, can spread to other hives, and AFB can cause the death of the hive.

The following also includes details of acceptable methods for sterilising **hives** and **appliances**, and guidelines on how the antibiotic Oxytetracycline (OTC) should be used to assist in foulbrood disease management. Improper use of OTC can result in antibiotic residues ending up in the honey and may also result in the spread of antibiotic resistant strains.

This BMP guideline is based on the knowledge and technology available at the time of publication and will undergo periodic review in conjunction with the National **Code**.

## Honey Bee Health

Those responsible for the care of managed honey bees should be aware of the signs of ill health. A full inspection of all brood combs in all colonies several times from spring through to autumn (from September to April) is best practice. If the person in charge is not able to identify bee pests or diseases, advice should be sought from those with experience and training. Refer to contact details at the end of this document. If in doubt: ask!

Visit the Department of Primary Industries, Parks, Water and Environment (**DPIPWE**) website for further information: <http://dPIPWE.tas.gov.au/biosecurity/animal-biosecurity/animal-health/bees>

Information on how to perform inspections and identify pests and disease is available on the “Bee Aware” website: <http://beeaware.org.au/biosecurity/keeping-honey-bees-healthy>

The National **Code** states:

### REQUIREMENT

- 4.1 A **beekeeper** must take all reasonable actions required to minimise the likelihood that a pest or disease detected in their **hive** will either weaken the **hive** or be transferred to another **hive**.
- 4.2 Any weak **hive** must be managed to ensure that it does not become attractive to robber bees.
- 4.3 Any dead **hive** or any **hive** with insufficient bees to prevent robbing by other bees must be immediately removed from the **apiary** and/or managed in a way that prevents robbing and renders the **hive** and any honey that may leak from the **hive** impervious to robber bees.
- 4.4 If a **beekeeper** identifies **American foulbrood** in a **hive** they must, after the field bees have returned to the **hive**, immediately isolate the affected **hive** and any contaminated **appliances** and take steps to prevent the risk of spread of disease from the **hive**. This includes:
  - (a) Destruction of all bees in the **hive**, (**Alternatively DPIPWE approves the management methods described in this document**) and
  - (b) rendering and maintaining the **hive** and **appliances** bee-proof until they are cleaned, sterilised or destroyed as appropriate. In this context “bee-proof” means eliminating bee access to the affected **appliances**, **hive** and **hive** contents including honey that may leak from the **hive**.
- 4.5 If it is not reasonable to immediately implement the steps in 4.4 and the **hive** is not in danger of being robbed, they must be completed within seven (7) days.
- 4.6 A **beekeeper** must eliminate **American foulbrood** from an infected **hive** by sterilisation or destruction as soon as is reasonable but, in any case, before sale of the **hive**.

It is important with any infected hive to get a positive identification of either AFB or EFB. If unsure, manage as for American foulbrood until proven otherwise. All hives that have died out should be carefully inspected to identify the cause of death. Do not allow robbing of weak or dead hives under any circumstances.

Accurate diagnosis of the presence of AFB can be obtained by submitting samples to an apiary officer who will forward to an **Approved laboratory**. When either of these brood diseases has been identified, an apiary officer must be notified\*, and a management plan put in place by the beekeeper. *\*Commercial beekeepers may notify annually using the form on the Biosecurity Tasmania webpage or in writing to an Apiary officer. A written acknowledgement will be provided for annual notifications (see section 2 of the Code).*

As part of any plan, the decision must be made whether to destroy or treat an infected hive using the antibiotic Oxytetracycline (OTC). If the hive is to be treated with OTC, **all** brood combs showing **any** infected cells should be removed and destroyed.

General colony health and management should be considered as part of any management plan. Tools to consider are: re-queening, regular sterilisation of appliances and hives, barrier management, and breeding hygienic lines of queens (see 'Further Information' on page 12).

## Sterilisation of Infected Hives, Equipment and Appliances

Proper apiary hygiene should be observed at all times to reduce the risk of spreading disease, and especially when handling infected material: the beekeeper is a very effective means of spreading disease in an apiary! The spore stage of AFB is extremely resilient to heat, cold and drying.

If American foulbrood cannot be eliminated through management or sterilisation, the **hive** must be destroyed by burning and burial of the remnants so that they are covered by at least 30 cm of soil. Details on how to effectively destroy bees, hives and other equipment can be found on the DPIPWE website. Note: If AFB infection has progressed to an advanced infection (see 'AFB Management'), **all** material, hive body inclusive, should be burnt rather than recovered.

The National **Code** states:

- If a **beekeeper** elects to sterilise an infected hive it must be either:
  - (a) Subjected to gamma irradiation at a minimum radiation dose of 10 kiloGray, (this option is not currently available to beekeepers in Tasmania), or
  - (b) dipped for a minimum of 10 minutes in hot wax held at a minimum temperature of 150oC. Complete records of the process including observed temperatures of the wax at the start and end of each dipping must be maintained, or
  - (c) treated by another method approved by the **relevant state or territory authority**.
- **Appliances** likely to be contaminated with **American foul brood** must be scrubbed or steam cleaned to remove all traces of honey, beeswax and propolis prior to rinsing in clean water.

## **Sterilisation of Infected Hives, Equipment and Appliances (continued)**

After handling infected equipment, gloves, bee suits and the tray of trucks etc, which are all likely to be carrying low numbers of spores, are best cleaned by washing them thoroughly.

**Caution:** dipping hives in hot wax is an extremely hazardous activity and should only be carried out by experienced operators (see 'Further Information'). It is suitable for most equipment made from wood.

Until commercial hot wax dip facilities or better methods are available in Tasmania, in addition to the above the following options are **approved**.

Frames, combs, hive mats and any plastic parts must not be dipped in hot wax but must be destroyed by burning or another **approved** method that kills the spore (inactive) stage of AFB.

Sodium hypochlorite is the active ingredient in household bleach (usually present in such products at about 3% concentration). Sterilisation of appropriate **hive** parts and **appliances** is described in AUSVETPLAN and is acceptable when carried out using the following precautions:

- sodium hypochlorite will only kill what it comes into contact with, so any material to be sterilised must be very clean before treatment.
- some plastics, metals, and leather can degrade when in contact with sodium hypochlorite solutions. Testing is recommended before carrying out any major sterilisation of **appliances**.
- Sodium hypochlorite solutions must be kept in the dark because the chemical breaks down in sunlight.
- the solution breaks down quickly. Refresh after 24hrs, disposing safely after use.
- soaking equipment will only kill any AFB spores on the surface.
- it is not recommended for gloves or smokers, since the contact time is crucial to successful destruction of AFB spores. Leather is best washed in soapy water to dislodge wax and spores that may be present.
- protective clothing and eye protection are recommended. Some individuals react adversely (dizziness, fainting) to sodium hypochlorite fumes.
- It is effective against bacterial spores on clothing and small equipment.
- It is not effective for comb or wax because there are too many air pockets.

Therefore, properly cleaned **hives** and **appliances** to be treated must be immersed in fresh solution of sodium hypochlorite (in water) applied at concentrations of at least 0.5% for 30 minutes. This solution can be made by mixing at least one part bleach (3% concentration) to five parts water (refreshed every day).

*Other sterilisation methods include scorching boxes and steam chests. These methods are not recommended as their effectiveness is too variable.*

Organic producers may refer to the 'National standard for organic and bio-dynamic produce' (Edition 3.5, section 3.21.14) for information on products for use in pest and disease control and hive disinfection.

## What is Oxytetracycline or OTC?

Oxytetracycline HCL (OTC) is a **Schedule 4 prescription only drug** that must be prescribed by an authorised professional. Tasmania is the only Australian State permitted to use OTC to treat American Foulbrood. It is also the only antibiotic that is presently available to assist in the management of American foulbrood disease and European foulbrood disease. Antibiotics do not kill AFB spores.

Therefore, care must be taken to ensure OTC is used properly. Improper use can result in antibiotic residues ending up in the honey and may also result in the spread of antibiotic resistance. OTC use does not extend to hive components, tools or equipment which can provide a source of reinfection for colonies.

### .How OTC (Oxytetracycline) works

Oxytetracycline is a broad spectrum antibiotic which has anti-microbial activity against a wide range of gram-positive and gram-negative bacteria. It acts by inhibiting the synthesis of protein in the ribosomes of the bacteria. Treating a colony with OTC assists in breaking the disease cycle. In most cases this enables the bees to clean up brood disease and improve in health.

Both AFB and EFB are bacterial diseases, but there is a big difference: OTC will kill the bacterium causing an EFB infection, but OTC will only kill the active stage of the American foulbrood bacterium (*Paenibacillus larvae*), and not the spore stage, which remains as a source of reinfection. Only sterilisation or destruction will kill the spore stage of AFB.

To treat an active infection, one dose of the antibiotic is split into three treatments, to be given at 10 – 14 day intervals. These three doses over 30-42 days ensure that a whole cycle of brood (eggs and larvae) are exposed to the antibiotic, allowing the colony a chance to recover from the active infection.

Antimicrobial resistance is the ability of a microorganism (like the *Paenibacillus* bacteria) to stop an antimicrobial (such as OTC) from working against it. As a result, standard treatments become ineffective. Each time antibiotics are used, bacteria either die or adapt by acquiring resistance.

## ‘Shaking Bees’ or the Shook Swarm Method

**Note:** This method is included to provide an option for management and recovery of bees without the use of OTC. Use of the method is only acceptable for light infection (see Table 1), and is not suitable for small colonies. Be prepared to repeat this process three or more times for successful eradication of AFB.

The method requires a skilled beekeeper and extreme care, planning and organisation to minimise the danger of shedding or spreading spores, although if done properly can be successful without the use of antibiotics. This method requires a completely new or freshly sterilised hive including frames with new foundation.

This manipulation method has become a useful tool overseas when a colony is heavily infested with *Varroa* mite and an option that may also be used in Tasmania to treat a colony with brood disease, although success is not guaranteed – burning is the preferred option.

**You will need:** fresh brood box; floor with entrance block; lid; inner cover; sugar syrup; full set of frames and foundation; spare queen excluder; internal sugar feeder; large container and spare bags to contain infected combs and equipment. Use disposable rubber gloves so they can be double bagged and burnt.

**Method:**

- a) Shift hive to be shaken to one side and put the clean floor fitted with entrance block in the original position
- b) If desired, place the queen excluder on the floor (to act as a queen includer and prevent the colony from absconding)
- c) Sit fresh brood box with frames containing new foundation on the queen excluder
- d) Remove several frames from the centre of the box to create space for the bees.
- e) Dismantle the original hive. Remove honey supers. If possible, cage the queen or place her in new box.
- f) Remove each brood frame in turn, lower into the space created between the frames and with a sharp shake, dislodge the bees diagonally across the new brood box and allow them to move down to the foundation below. Do not use a bee brush or feather or twig to dislodge bees (to avoid sweeping spores into new box).
- g) Replace the removed (new) frames gently in the central space in the new brood box.
- h) Release the queen into the new brood chamber if she was caged.
- i) Package and seal the old frames for destruction. Seal all infected hive boxes. Sterilise or burn them as soon as possible (see 'Sterilising hiveware').
- j) When as many bees have been transferred as possible, close the now empty infected hive and seal the entrance.
- k) Remove entrance plug on the fresh hive, allowing bees to fly.
- l) If possible, don't feed the bees for 24 hours. There is potential for millions of spores to exist in the bees' stomachs, continuing the infection. Allow time for these to pass through, and hopefully be voided outside the hive. After 24 hours, feed until combs are drawn and filled with brood, honey and pollen (internal feeders are best - it may be necessary to use an empty super to accommodate this).
- m) The excluder should be removed when the colony has started to build comb and the queen has laid eggs.
- n) An alternative is to insert a frame of brood from a clean hive after 3 days. Do not put brood in earlier than 3 days as spores may still be present in the crops of the bees, and these may be fed to any day-old larvae.
- o) 21 days after first eggs appear or once a frame of brood is inserted, monitor regularly – every 7-10 days – for AFB.
- p) If AFB breaks out again in the hive, then start again, and consider all options, including destruction. Notify an Apiary Officer of the result, good or bad.

**Options using OTC with Shaking Bees:**

- a) If a frame of brood is added, **one** dose of OTC may be given at that stage.
- b) If the hive is left to develop on its own, a **single\*** dose of OTC may be given as soon as larvae are visible, but not before this.
- c) \*A single dose means 1/3 of the total amount an infected hive would receive (see below for amounts).

## American foulbrood (AFB) Management

American foulbrood (AFB) is the most significant bee disease already present in Australia and it can have a devastating impact on individual apiaries. If AFB is detected, a beekeeper is required to take action to bee-proof the infected hive(s) and to destroy or sterilise the hive(s) as soon as practicable. Antibiotics do not kill AFB spores but may mask the symptoms of the disease.

All brood combs showing any sign of infected cells must be destroyed, including any brood combs containing scale. Ensure no robbing of the old frames takes place before they are destroyed. If an AFB infection has progressed to an advanced infection, **all** material, **hive** body inclusive, should be burnt rather than recovered (see Table 1).

**Table 1:** Stages of AFB Infection

<b>Initial or light Infection</b> <b>&lt;50 brood cells affected</b>	<b>Intermediate Infection</b> <b>&gt;50 brood cells affected</b> <b>&lt; 50% brood cells affected</b>	<b>Advanced Infection</b> <b>&gt;50% brood cells affected</b>
<ul style="list-style-type: none"> <li>• small number of infected brood (less than 50 cells)</li> <li>• majority of brood healthy</li> <li>• odd brood cell with soft brown decayed brood amongst healthy brood</li> <li>• a stick inserted into decayed brood ropes out ('rope test').</li> <li>• Some cappings discoloured, darker than cappings on healthy brood</li> <li>• Few cappings sunken</li> <li>• cappings partly chewed or perforated (an attempt by nurse bees to remove cappings)</li> </ul>	<ul style="list-style-type: none"> <li>• adult bee population still reasonable</li> <li>• numerous sunken dark cell cappings obvious amongst healthy brood</li> <li>• brood cells with soft brown decayed brood</li> <li>• infected brood continues to rope</li> <li>• increasing number of scales</li> <li>• cappings chewed or perforated</li> <li>• break in brood cycle</li> </ul>	<ul style="list-style-type: none"> <li>• adult population declining</li> <li>• over 50% of brood infected</li> <li>• dark sunken cell caps common</li> <li>• cappings appear greasy and perforated</li> <li>• infected brood drying out, harder to 'rope test'</li> <li>• scale common (brittle)</li> <li>• distinct odour</li> <li>• colony dies</li> </ul>

If recovery is possible and OTC treatment is the chosen form of management, the protocol below must be followed. See 'Precautions with the use of Oxytetracycline (OTC)' and 'Sterilisation of Infected Hives, Equipment and Appliances'. If OTC is not preferred, see 'Shaking bees'.

Honey can be extracted from an AFB infected hive **before** OTC treatment, and is safe for human consumption. Clean any extraction equipment used for infected honey with steam or hot water to prevent reintroduction or cross contamination.

Restrictions apply to exporting and selling infected honey and equipment. For further information, see the **DPIPWE** website.

**Any** hive that has a history of AFB must be marked, and all combs and materials from this hive should be kept separate from other hives ('barrier management') for a period of at least two years or until the infection is adequately controlled.

If further infections of AFB occur in a hive treated with OTC, the **hive** must be dealt with as for a new infection. Do **not** simply rely on using more OTC to prevent the AFB re-occurring or to keep it in check: this is bad practice as it will encourage OTC resistant strains of AFB to develop. Any continuing or recurring infection must be notified to an Apiary Officer.

OTC treats only the vegetative (or active) stage of the AFB bacterium and it has no effect on the spores, which remain dormant on combs and other hive components, ready to initiate disease after the drug treatment is discontinued. AFB develops when the antibiotic is no longer effective. If no barrier management methods are in place, it can result in more widespread AFB than before treatment

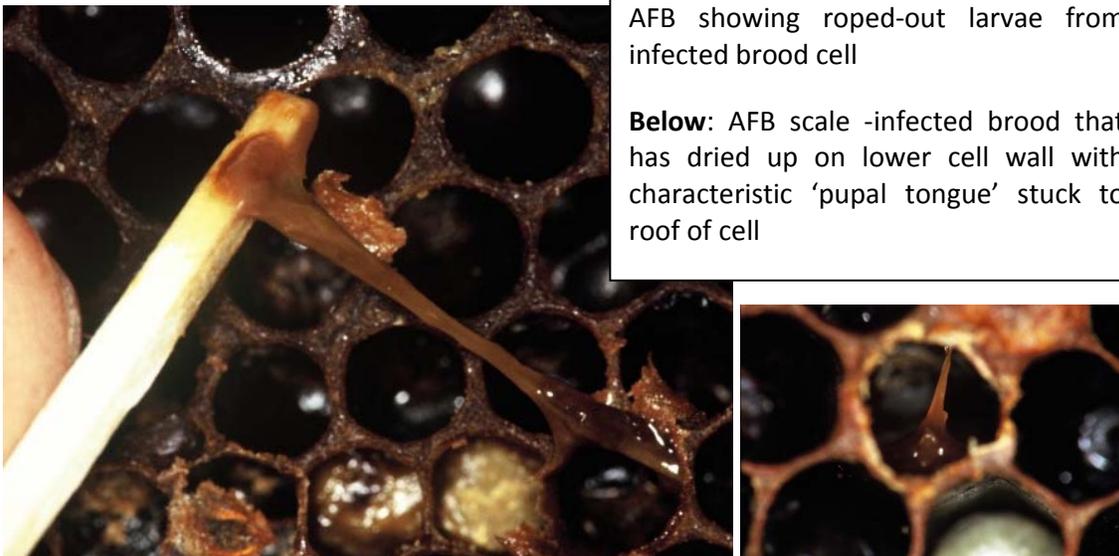


*All AFB images courtesy of the Department of Economic Development, Jobs, Transport and Resources, Victoria*

**Above:** Sunken, perforated and dark cell cappings

**Left:** The Ropiness or matchstick test for AFB showing roped-out larvae from infected brood cell

**Below:** AFB scale -infected brood that has dried up on lower cell wall with characteristic 'pupal tongue' stuck to roof of cell



## European Foulbrood (EFB) Management

All brood combs showing **any** infected cells should be removed and destroyed. Infected hive material should be sterilized or destroyed as set out above.

EFB is most common in weak or stressed hives. Before resorting to treating with OTC, check the general health of the infected hive, and implement suitable measures to improve it if necessary. Also consider such measures for the entire apiary.

If a honey flow is expected, OTC treatment is not recommended due to the risk of OTC residues in the honey produced, and because the change in conditions itself may assist with controlling the infection.

It is important with any infected **hive** to get a positive identification of either AFB or EFB. If unsure, manage as for American foulbrood until proven otherwise.

Honey can be extracted from EFB infected hives but all honey Supers must be removed before dosing with OTC. **Withholding periods must be observed.** The hive must be marked, and barrier management methods should be maintained on the hive for the rest of the season.

Any extraction equipment used for infected honey should be cleaned with steam or hot water to prevent reintroduction or cross contamination.

Restrictions apply to exporting and selling infected honey and equipment, however honey produced from hives affected with European foulbrood may be heat treated to avoid spread of this disease.

The hive health and management are at least as important in treating EFB as is the use of OTC. If OTC is used, the protocol described in this document must be followed.



Close up of European foulbrood contaminated brood food. Rob Snyder [www.beeinformed.org](http://www.beeinformed.org)



EFB infected larvae appearing contorted and 'molten'.  
Rob Snyder  
[www.beeinformed.org](http://www.beeinformed.org)



## Handling of Oxytetracycline (OTC)

OTC is available from veterinary surgeons (or from a chemist on prescription from a veterinary surgeon). It comes in a soluble powder form, usually with 100 grams of OTC per kilogram of product. Use only water-soluble powder forms of OTC. Honey for human consumption cannot be collected from a hive dosed with OTC until a minimum of eight (8) weeks after the last dose. Any other conditions or withholding periods in the instructions from the vet must be complied with.

OTC is a tool to be used carefully in dealing with AFB alongside other measures outlined in this document; **it is not a cure**. Relying just on OTC to cure or prevent outbreaks of AFB does not work!

OTC can be used as a dry treatment or as a wet treatment. In Tasmania the dry treatment is recommended. The OTC product is bulked up with the appropriate amount of pure icing sugar. Castor sugar may be used if icing sugar is not available. Proper mixing is essential to obtain an even distribution of OTC throughout the mixture.

OTC, as well as the OTC/sugar mixture, should always be kept in an airtight container, away from light and in a cool place. It begins to degrade as soon as it comes into contact with liquid and also degrades with age. Take note of the expiry date on the container.

## Precautions with the use of Oxytetracycline (OTC)

*To minimise the possibility of antibiotic residues in honey, the antibiotic must not be applied to colonies within eight weeks of any anticipated honey extraction [or for such withholding period as specified by the prescribing veterinarian]. Surplus honey should be removed before treatment. The full course of the treatment must be completed; otherwise the disease will not be controlled and may lead to the causative organism becoming resistant to the treatment.*

- Don't treat an apiary with OTC if there is no evidence of active EFB or AFB disease.
- If it is necessary to use OTC during a honey flow, all honey supers must be removed before treatment.
- Any combs left on a hive during any OTC treatment period can only be used for brood, and must stay with that hive.
- The OTC mixture should be applied at the correct dose rate (see below).
- The OTC mixture must only be applied to the top bars of frames in the brood area. It should not be sprinkled between the brood frames as this could kill exposed larvae.
- OTC only kills the active (visible) stage of AFB. **It does not kill the spores**. Infection is spread by the spores. Spores can only be killed by appropriate sterilisation.
- All use of OTC must be kept to a minimum. Dosing hives prophylactically or 'just in case' is not acceptable practice, and will lead to the spread of antibiotic resistance. (see National Antibiotic Resistance Program).
- Similarly, dosing an infected hive repeatedly is also bad practice. If the disease was not brought under control the first time, then the cleanup must be repeated. Using OTC again and again will not fix the problem.

The most effective means of controlling AFB as well as EFB is through:

- Regular hive checks – the sooner you see a problem, the better the chance of recovery;
- Proper action to destroy or sterilise infected hive ware;
- Good apiary practices and barrier management **at all times** to prevent diseases spreading.

Operator skill is an important part of all the points above, and will be a large part of success or failure in controlling brood disease.

## OTC Treatment

Hive strength: A strong hive is considered to be 4 Ideals or two deep boxes full of bees and brood. Weaker hives should be treated at proportionately lower dose rates.

To treat an active infection, one dose of the antibiotic is split into three treatments, to be given at 10 – 14 day intervals. These three doses over 30-42 days ensure that a whole cycle or generation of brood (eggs and larvae) are exposed to the antibiotic, allowing the colony a chance to recover from the active infection.

### *Treating European foulbrood disease (EFB):*

The recommended treatment for EFB is 1 gram of OTC active ingredient per strong hive. This initial quantity is divided into three doses fed at 10-14 day intervals.

#### **Using OTC 100 (for EFB)**

Use one part OTC 100 (oxytetracycline HCl 100mg/g) and **ten** parts pure icing sugar by weight.

- Sprinkle forty grams of this mixture over the top bars of the brood combs.
- Repeat twice at 10-14 day intervals (total of 3 times).

### *Treating American foulbrood disease (AFB):*

The recommended treatment for AFB is 0.5 grams of OTC active ingredient per strong hive. This initial quantity is divided into three doses fed at 10-14 day intervals.

*(Procedures for treating AFB are exactly the same as for EFB except that the recommended dose is reduced to 0.5 gram of OTC active ingredient per strong hive).*

#### **OTC 100 (for AFB)**

Use one part OTC 100 (oxytetracycline HCl 100mg/g) and **twenty** parts pure icing sugar by weight.

- Sprinkle forty grams of this mixture over the top bars of the brood combs.
- Repeat twice at 10-14 day intervals (total of 3 times).

If AFB recurs, then the focus should be on removing contaminated hives and components (or shook swarm method) rather than repeating OTC treatment. OTC is toxic to bees at levels very close to the recommended dosage rates.

## Summary of OTC use

- Know your bee diseases – seek assistance if necessary.
- Notify an Apiary Officer when an infection of either AFB or EFB is confirmed or suspected. This includes ALL (even low-grade) infections.
- Draft a Treatment Plan, and have this approved by an Apiary Officer.
- Use only fresh supplies of OTC.
- Ensure thorough mixing of OTC product with icing/castor sugar.
- Always use the correct dose rate.
- Keep OTC and OTC mixture in an airtight container, away from light and in a cool place.
- Only apply the OTC mix to the top bars of brood combs in the brood nest.
- Do not sprinkle between frames.
- Always complete the full course of treatment.
- Do not keep using OTC if the infection is spreading, or ‘just in case’.
- The most important part of the treatment of both AFB and EFB is dealing with infected hives and appliances. Make sure you do this properly and responsibly.
- Check AFB treated hives monthly during the flow for a period of 2 years after treatment.
- Check EFB treated hives monthly for the rest of the season, and monitor the following season.
- Maintain a good barrier system for at least 2 years around any hives that have been infected with AFB. This includes keeping supers and their honey frames separate from other hives.
- Always follow the Treatment Plan and report any further outbreaks or recurring infections.
- If in doubt or in difficulty, contact an apiary officer for help.
- Correct and careful treatment procedures will help the management of these diseases, and will guard against OTC residues getting into the honey.

## Further information and Important Reading

### Websites

- Biosecurity Tasmania: [www.dpipwe.tas.gov.au/biosecurity](http://www.dpipwe.tas.gov.au/biosecurity) Bee health page: <http://dpipwe.tas.gov.au/biosecurity/animal-biosecurity/animal-health/bees>
- BeeAware - a hub of information about honey bee biosecurity, including templates for record keeping and informative videos. Funded by the Australian honey bee industry, pollinator-reliant plant industries, Plant Health Australia, governments and R&D agencies: [www.beeaware.org.au](http://www.beeaware.org.au)
- Australian Honey Bee Industry Council (AHBIC): [www.honeybee.org.au](http://www.honeybee.org.au)
- Plant health Australia: <http://www.planthealthaustralia.com.au/industries/honey-bees/> access to biosecurity plans, manuals and resources including an online honey bee biosecurity module that provides advice on keeping honey bees healthy using industry best practice: <http://www.planthealthaustralia.com.au/resources/training/>
- *Animal Health Act 1995*: <http://www.thelaw.tas.gov.au>
- The National Antimicrobial Resistance Strategy 2015-2019: <http://www.agriculture.gov.au/animal/health/amr>

## Rural Industries Research and Development Corporation (RIRDC) Publications:

<http://www.rirdc.gov.au/research-programs/animal-industries/honeybee>

- [Australian Beekeeping Guide](#) (2014) RIRDC Publication No. 14/098
- [Treating European Foulbrood in Australian Honey Bees](#). Michael Hornitzky (2010). Publication No. 10/012; Project No. PRJ-000492
- [Honeybee disease barrier management](#) systems - Case studies. Russell Goodman (2001). Publication No 01/052; Project No. DAV-167A
- [Hot wax dipping of beehive components for preservation and sterilisation](#). Russell Goodman (2001). Publication No. 01/051; Project No. DAV-167A
- [Fat Bees Skinny Bees](#) – A manual on honey bee nutrition for beekeepers. Doug Somerville (2005). Project No. 05/054

## Other Publications

- World Organisation for Animal Health (OIE) Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (2009)
  - [Chapter 2.2.2. American foulbrood of honey bees](#);
  - [Chapter 2.2.3. European foulbrood of honey bees](#)
- Managing AFB. Guidelines for the identification and management of American foulbrood – a fatal disease of honey bee colonies. Dr Doug Somerville (Technical Specialist Honey Bees): [http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0011/558434/managing-afb.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/558434/managing-afb.pdf)
- Elimination of American Foulbrood Disease without the use of Drugs: A Practical Manual for Beekeepers, by Mark Goodwin. Revised Edition 2006. National Beekeepers' Association of New Zealand (Inc).
- Sterilising beekeeping equipment infected with American foulbrood disease spores. Goodwin, RM, Haine, HM (1998); New Zealand Beekeeper (5) 9:13.

## Relevant Legislation

*Animal Health Act 1995*; and *Apiaries Regulations 2011*.

## Contact

Program Coordinator (Apiary Biosecurity)  
Biosecurity Tasmania  
Department of Primary Industries, Parks, Water and Environment  
GPO Box 44, Hobart, 7001  
Phone: 03 6165 3778  
Mobile: 0407 436 230  
Email: [Karla.Williams@dpiuwe.tas.gov.au](mailto:Karla.Williams@dpiuwe.tas.gov.au)

Chief Veterinary Officer - Rod Andrewartha  
Department of Primary Industries, Parks, Water and Environment  
GPO Box 44, Hobart, 7001  
Phone: 03 6233 6836  
Email: [Rod.Andrewartha@dpiuwe.tas.gov.au](mailto:Rod.Andrewartha@dpiuwe.tas.gov.au)

## Definition of terms used in the Code

State legislation may have slightly different definitions for some of these terms but for the purposes of this Code of Practice:

**American foulbrood** means infection of a hive by *Paenibacillus larvae* spores.

**Apiary** means a group of one or more hives assembled in one area or location for beekeeping operations.

**Appliance** means any article, apparatus or implement used in connection with the keeping of bees or the extraction or storage of honey.

**Approved** means approved by the relevant state or territory authority (see definition below).

**Approved laboratory authority** means a testing laboratory approved by the **relevant state or territory authority** for the purposes of testing honey for the presence or absence of American foulbrood spores.

**Beekeeper** means any person who keeps bees or a person who is in control of bees or hives. This includes apiary managers.

**Code** means the “Australian Honey Bee Industry Biosecurity Code of Practice” (Sections A, B, C and D of the document, in which this BMP is included).

**DPIPWE** means Department of Primary Industries, Parks, Water and Environment

**Hive** means any receptacle, or any component of a receptacle, which houses bees, which has housed bees, or is intended to house bees. This includes swarm catch boxes specifically placed with the intention of catching swarming bees.

**Notifiable disease** means a pest, disease, agent, syndrome or substance declared as notifiable by the relevant state or territory authority where the bees are located.

**Relevant state or territory authority** means the person (including his or her delegate) in each Australian state or territory vested with the authority to register beekeepers and to grant approvals or exemptions in relation to this *Code*. In Tasmania this is: Tasmanian Chief Veterinary Officer.



Tasmanian  
Government

**BIOSECURITY OPERATIONS BRANCH**

BIOSECURITY TASMANIA

Department of Primary Industries,

Parks, Water and Environment

GPO Box 44, Hobart 7000

Ph: 03 6165 3777

Email: [quarantine.enquiries@dpiwte.tas.gov.au](mailto:quarantine.enquiries@dpiwte.tas.gov.au)

Web: [dpiwte.tas.gov.au/biosecurity/animal-biosecurity/animal-health](http://dpiwte.tas.gov.au/biosecurity/animal-biosecurity/animal-health)