National Bee Unit

FAQ 20

The Food and Environment Research Agency

PDB, Napthalene
& the storage of comb

For many years beekeepers used Paradichlorbenzene E680 (PDB) for the protection of stored comb against the ravages of Greater and Lesser Wax Moth. Many older textbooks suggest this preventative method and it is still recommended on some web sites elsewhere in the world. In the past PDB and Napthalene E6631 were found in mothballs. Both of these chemicals have been used for the storage of insect specimens as a preventative against 'Museum beetle' but because of health dangers there is now a move away from such use. Current scientific opinion is that its use is potentially injurious to health and as a result it is now unacceptable to store beeswax comb using either chemical.

What are the health risks of using PDB and Napthalene?

Inhalation of fumes, eating and touch can cause you to ingest both PDB and Napthalene. They have a significant potential to damage, blood, liver, kidneys, sight, the nervous system and other parts of the body. Problems have particularly been recorded where blankets stored with mothballs have come into contact with children resulting in rashes, skin complaints and other health problems.

How does it get into honey?

Both PDB and Napthalene are wax and water-soluble. In use they are absorbed into the wax and then released into honey when it is stored in the treated comb.

Are any residues permitted in honey?

Today, both in the UK and other EU member states, no trace of these chemicals is permitted in honey.

Are checks carried out?

Honey is routinely analysed for traces of chemical residues. Imported honey occasionally tests positive for PDB or Napthalene resulting in its immediate exclusion from the EU food chain by destruction or return to its country of origin. During 2007 two routine English honey samples tested positive for Napthalene. Positives have also been recorded in 2008 & 2009.

What happens if my honey tests positive for PDB or Napthalene residues?

Further checks are carried out and if confirmed will lead to the destruction of any contaminated honey and may result in prosecution or the destruction of relevant colonies.

P.T.O.

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Comb being destroyed by Greater Wax Moth infestation

How can comb be stored without using PDB or Napthalene?

To store comb there are two effective methods that are commonly used, one is freezing and the other a product called B401. A basic understanding of the life cycle of Greater Wax Moth, Galleria mellonella and Lesser Wax Moth Achroia grisella is helpful in controlling the potential ravages of these bee pests. These are described in FAQ 19 'Wax Moth'.

Super Comb.

It is important to realize that super comb, that has not had any brood in it whatsoever, and foundation are generally un-infested. Sometimes a small larva may be found but generally these die because there are insufficient nutrients for survival in the 'pure' beeswax. Many beekeepers suggest that storing supers 'wet' is a good preventative, a few store dry and ensure that the stack is moth proof.

Brood Comb.

More often than not brood comb contains wax moth eggs, larvae or pupae so any attempt to store it without treatment is to court disaster. Probably the most effective and safe treatment is to deep freeze the comb.

Freezing Comb.

No life stage of Greater Wax Moth can survive freezing for the periods given in this table

4.5 hours	-7c.
3 hours	-12c.
2 hours	-15c.

Remember to add time to allow the combs to reach the treatment temperature and be careful, as comb is very brittle at low temperatures. A chest type deep freeze is ideal.

B401.

Or 'Certan' as it used to be called, is a form of *Bacillus thuringiensis*, which kills the larvae as they attempt to feed on comb. It is a biological control which only attacks lepidopteron larvae and is harmless to honeybees and humans. In use it is diluted with 19 parts water and sprayed onto combs for storage. One bottle is sufficient to treat 70 – 100 Langstroth combs. Other forms of *B. thuringiensis* are not as effective.

Does heat kill Greater Wax Moth?

No life stage of Greater Wax Moth can survive heating at 46c. for 80 minutes. However accurate temperature control is difficult and you must be careful that hot spots are not created melting the wax!

Can I fumigate the comb using Acetic Acid?

Using comb fumigation by acetic acid is a useful tool to destroy disease pathogens and is also effective against all life stages of wax moths if carried out correctly. See FAQ 9 'Fumigating Comb'.

Should I store old Brood Comb?

The storage of old brood comb and super comb that has had brood in it must be questionable as these combs retain disease pathogens. Generally it is considered better practice to render the combs and use the wax recovered to exchange for new foundation or make into something useful. Considered with the cost of treatment, rendering such comb is a safe approach.

Should I put barriers between boxes of comb?

It is a sensible precaution to put barriers such as crown or clearer boards with the holes closed off between a number of boxes. This will reduce the potential damage if one box is infested.

Regular checking of stored comb once a month is advisable.

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