

# **Destruction Protocol for Honey Bee Colonies Found with American Foulbrood**

## **Infosheet**

APRIL 2010

American Foulbrood (AFB) is a bacterium that affects and is fatal to the developing bees in a colony. The spores are highly contagious and easily spread by bee-to-bee contact or with the use of infected tools or bee equipment. Inspectors appointed under the Bees Act may order the disinfection or destruction of bees and beekeeping equipment infected with AFB. Below is a detailed protocol for destroying honey bee colonies afflicted with AFB.

### **Cleaning Gloves, Hive Tool and Smoker**

A beekeeper's gloves, hive tool and smoker are unlikely to carry sufficiently large numbers of spores to be a major factor in the spread of AFB. Nevertheless, when an AFB hive is found, precautions should be taken to appropriate beekeeping equipment hygiene.

- Scrape excess propolis and wax off the wooden parts of the smoker bellows with a hive tool.
- Scrub the outside of gloves with soapy water containing household bleach (250 millilitres per five litres of water). The soap will not destroy spores on the gloves, but it will help to remove materials such as wax, propolis and honey that might contain significant concentrations of spores.
- Scrub the bellows and base of smoker with the same soapy water.
- Scrape all propolis off the hive tool.
- Scorch the hive tool by putting it into the smoker and pumping on the bellows to produce a flame or flame with a small propane torch.

### **Closing Hives with AFB**

- Block the entrance to the hive with dirt or crumpled newspaper. It is also important to seal all the cracks in the hive, since bees will use these cracks to fly out during the killing process. Cracks can be filled by covering with duct tape or by pushing small pieces of newspaper into the cracks with the end of the hive tool.
- Hives infected with AFB are usually closed and destroyed either in the evening, or during rainy weather, when the bees are not flying. This is done to avoid field bees from the AFB hive flying into neighbouring colonies and possibly spreading the disease.

## **Killing AFB Colonies**

Remove the lid of the colony when bees are not flying and sprinkle diesel fuel over the entire cluster of bees in the colony. It may be necessary to split the chambers and add diesel to the lower chamber as well. The volume of diesel fuel used will depend on the size of cluster to be killed. Recommendation:

- 300-500 millilitres. of diesel fuel for one-two storey hive; or
- one litre of diesel fuel for three-four storey hive.

Close the colony by replacing the lid firmly on the hive so the bees do not escape for a minimum of 10 minutes. It is important to remember that the diesel fuel is put into the hive to kill the bees, not as a fire accelerant. There is sufficient wax in the combs to fuel the fire.

Check to see if all the adult bees are immobilized. If additional treatment is needed, repeat with sufficient diesel fuel to wet the remaining adult bees.

## **Burning AFB Colonies**

- 1) Obtain a fire permit from the local authorities.
- 2) Dig a hole that will contain the fire and will also ensure that any infected material not completely destroyed by burning will be buried so that foraging bees will not find it. The site should be far enough away from healthy hives and fences or buildings to avoid accidents, since beehives burn very vigorously and flames can reach two-three times the height of the stack. Windy conditions should also be avoided and especially swirling winds around sheltered apiaries. It is also very important to clear the surrounding area of any combustible material, since the fire, once under way, will become very intense.
- 3) The hole should be about one metre (three feet) in diameter (or larger if there are several hives to be burned) and at least 30 centimetres (one foot) deep. The bottom should slope to provide a sump for unburned, infected honey so that it does not choke the fire.
- 4) The diseased hive should then be carried to a position nearby the hole, about three metres (nine feet), but far enough away so that the hive does not ignite once the fire gets under way. Care should be taken to avoid dropping dead bees or honey on the ground. If practical, the complete hive should be carried into position in the hole. Otherwise, individual boxes can be brought to the site one by one in the upturned lid.
- 5) It is also very important to take safety precautions should the fire begin to get out of hand. A fire extinguisher is recommended, and a shovel and water should always be within easy reach.
- 6) To start the fire, it is best to use rolled up newspaper and a few dried twigs to create a small blaze. Once this is under way, two frames should be chosen that are relatively free of honey. These are propped up against each other in an A-frame over the blaze. The fire will begin to melt and then ignite the beeswax in the frames, and the flames and heat will intensify. The fire can then be fed several frames at a time, taking care to ensure that the fire does not become too intense.

- 7) **It is important not to put whole boxes of frames onto the fire. If the frames are still soaked with diesel fuel, an explosion can occur, with the potential to cause both injury and accidental fires. Diesel fuel should never be used to accelerate the fire.**
- 8) If, for whatever reason, diesel fuel-soaked material must be ignited, a diesel fuel trail should be made leading about two metres from the hole containing the material. A screwed-up piece of newspaper should then be lit and placed at the end of the diesel fuel trail. Diesel fuel-soaked material in a hole should never be lit directly, since if the operator is leaning over the material, the diesel fuel vapour trapped in the hole will create an explosion which could lead to serious injury.
- 9) **Burn all combs (including combs with honey) in the colonies identified with disease.**
- 10) Frames with honey should not be put onto the fire all at once, and should be put around the edge of the fire rather than on top of it. Full frames of honey can sometimes douse the flames. As well, the honey may not completely burn unless there is sufficient other material to fuel the fire.
- 11) Burn all bottom boards.
- 12) Lids and floorboards can be angled into the pile on the edge of the hole. A wind tunnel should be left to assist burning.
- 13) Burn any other parts of the colony that have diesel fuel on them.
- 14) It is very important to supervise the fire as long as it continues to burn. This may take two-three hours for a one-two box hive and four-five hours for a three-four box hive. When the fire has burned down to embers, the remains should be fully covered with all the soil removed from the hole and the grass sod replaced (if appropriate).
- 15) All other parts that do not have diesel fuel on them (boxes, inner covers, hive lids and queen excluders) must be well flamed with an open flame (propane torch) before allowing exposure to honey bees again.

### **Irradiation Procedure**

There is only one organization that will irradiate equipment in Ontario. Contact Steve Bowman at 905-432-1106 in Whitby, Ontario and he will make arrangements with Steris Isomedix Corporation.

- 1) All honey should be extracted prior to irradiation of equipment. Use a specially designated small extractor, that is not used for the regular honey operation, for this purpose.
- 2) Containers used for extracting honey should be labelled with "honey contains AFB".
- 3) Frames with AFB, frames with no honey, boxes, inner covers and hive lids are acceptable for irradiation. Also send smokers, coveralls and gloves to irradiation.
- 4) If irradiation is a viable option, the combs must be removed from the colony without the use of diesel fuel.

- 5) Set up the bottom board from the colony and put an empty box on it that can be burnt.
- 6) Select at least three combs from the colony to be destroyed and hang them in the empty box. Use the cull equipment to allow the bees to cluster in the empty box.
- 7) Allow the bees time to cluster within the box.
- 8) Destroy the bees as above by burning the bees and bottom boards.
- 9) Put the equipment that has not been exposed to diesel fuel in plastic bags and cardboard boxes and seal as instructed by Steve Bowman. Maximum weight per container cannot exceed 22 kilograms (50 pounds). It is important that healthy bees do not have access to any contaminated equipment.
- 10) Ship the sealed containers directly to Steve Bowman in Whitby for irradiation.
- 11) Steve Bowman will ship the equipment directly back to the beekeeper once irradiation is complete.
- 12) The beekeeper shall retain a copy of the irradiation certificate supplied by Steris Isomedix Corporation and the irradiation certificate shall be made available to the bee inspector upon request.
- 13) All irradiated equipment must be clearly marked as irradiated before being put back into use.

**This InfoSheet is provided for information purposes only. The Government of Ontario does not accept any liability for any damages or injury that result from use of or reliance upon it. Individual circumstances will dictate that you seek your own advisor or expert to determine the appropriateness of the information in this InfoSheet for your situation before making any decision regarding personal protective clothing and equipment or any protective or precautionary measures, procedures or policies. Use of this document does not relieve employers and workers of their respective obligations.**

**Contacts:**

**Paul Kozak, Apiary Specialist**  
Ontario Ministry of Agriculture, Food and Rural Affairs

1 Stone Road West, 5th Floor NW  
Guelph, Ontario N1G 4Y2  
**Tel:** (519)826-3595  
**Fax:** (519)826-4375  
**E-mail:** paul.kozak@ontario.ca