

Hive Equipment Sterilization

Plan now to irradiate your American Foul Brood (AFB) infected or potentially infected equipment. Please contact Mark Antunes to confirm your spot. See below for the details and costs to participate.

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Hive Equipment Sterilization - A Regional Gamma Irradiation Program for PA Beekeepers -

Mark Antunes and Brian Marcy are the coordinators of an emerging program that allows PA and regional beekeepers to sterilize their hive wooden ware and other contaminated equipment using gamma irradiation. The program goals are to provide a viable, sustainable & cost effective alternative to burning hive equipment to control AFB and to allow the safe use of contaminated or otherwise suspect supers, frames & honeycomb after treatment.

What is Gamma Irradiation?

Gamma irradiation is a physical means of decontamination – it kills bacteria by breaking down bacterial DNA, inhibiting bacterial division, using high-energy photons that are emitted from an isotope source (Cobalt 60). Energy (gamma rays) passes through hive equipment, disrupting the pathogens that cause contamination. These photon-induced changes at the molecular level cause the death of contaminating organisms or render such organisms incapable of reproduction. The gamma irradiation process does not create residuals or impart radioactivity in the processed hive equipment. The process has been used for years to sterilize imported leather goods, spices, wine corks, medical dressings and devices, pharmaceuticals, etc.

Advantages & Benefits

ALL hive components can be sterilized using gamma irradiation – boxes, frames, comb and honey. Hive equipment is ready for immediate use after processing. The process is clean; no chemical residues are produced. Most importantly, gamma irradiation destroys, not just suppresses, the pathogens (bacteria, viruses, fungi) that may contribute to CCD and other biological threats that contaminate hive equipment. The process also eliminates the need to replace equipment or comb contaminated by American Foul Brood (AFB). There is also some evidence that gamma irradiation reduces levels of toxins (i.e., pesticides) present in honeycomb by modifying their chemical structures.

A Proven Strategy

Long-standing gamma irradiation programs for hive equipment have been operating in Massachusetts, California, Florida, Canada, and in Australia. While in Florida, Dave Hackenberg, one of Pennsylvania's largest commercial beekeepers, uses gamma irradiation to sterilize selected hive equipment. During spring 2008, Penn State University cooperated with MCBA in the successful processing of hive equipment that was known or thought to be contaminated with AFB, IAPV and

other honey bee pathogens. Subsequent testing of the processed equipment proved it to be completely clear of all biological contaminants that could have threatened our honey bees!

Location:

The commercial facility for gamma irradiation in our area is the **Sterigenics Corporation; located at 75 Tilbury Road, Salem, NJ 08079**. This location offers beekeepers in Pennsylvania and southern New Jersey, and perhaps Delaware, the opportunity to clean their known and suspect contaminated equipment.

Preparing Equipment for Irradiation

If you are interested in participating in our irradiation program, you will need to prepare your equipment as follows:

- It is the responsibility of each beekeeper to deliver his/her equipment to the irradiation facility or make arrangements to have that done by someone else.
- Groups or multiple individuals should select a regional staging site located away from known apiaries to load their equipment on to whatever common carrier they have selected.
- Print your full name and phone number on each piece of equipment if you are combining equipment with other beekeepers on one pallet – if you are wrapping your equipment because it contains honey, label it on the outside of the wrapping.
- Thoroughly clean & repair all hive boxes. **Do not send equipment with ants, insects, mouse nests, or other loose debris. It will be rejected from the load.**
- Extract honey or be prepared to bag supers individually (see separate printable instructions on MCBA Irradiation page).
- Pack frames in their respective hive boxes.
- Use standard **4-way** pallets (40" X 48").
- **Pallets must be in good repair and free of debris, stones, or soils.**

Stacking & Wrapping Pallets

Sterigenics will allow hive equipment to be stacked and wrapped on site. Therefore you can haul hive equipment in pickup trucks and low bed trailers that is not palletized and shrink wrapped. For processing all collected equipment must be stacked onto standard **48" X 40" pallets**, shrink wrapped, with a top and bottom sheet of 4 mil plastic before processing by Sterigenics, can occur. Please follow these necessary steps to prepare your equipment for processing:

1. Cover pallet top with a cardboard sheet.
2. Cover cardboard with enough 4 mil clear plastic sheeting that extends 12" up each side of your stack.
3. **Stack the hive boxes in a 6-column configuration.** Supers may over hang the 48" dimension by ½ inch. **There can be no overhang on the 40" dimension at all. If that occurs the pallet can not be processed.**
4. **The total height of the stacked hive equipment including the pallet cannot exceed 6 feet.**
5. Top-sheet stack with enough 4 mil clear plastic sheeting to extend 12" down each side of your stack.
6. Shrink-wrap stacked hive boxes tightly from top to bottom before wrapping the top and bottom sheet plastic.
7. Extend bottom sheet of plastic up the stack on the outside of the shrink-wrap.

8. Shrink-wrap stack again, making sure that the top & bottom sheets of plastic are sealed under the second wrap.
9. **The total weight of a pallet may not exceed 1,500 Lbs. due to the carriers used in the irradiation chamber.**
10. **Your hive equipment and pallet may not have any live insects or mice in it.** If so it will be rejected and not processed and it could cause the entire run to be rejected.

Transporting Equipment to Sterigenics

A sufficient quantity of equipment is needed to make an irradiation “run” practical and economical. Persons who will be responsible for consolidating prepared equipment and delivering it to Sterigenics must follow these preparation and shipping rules:

- Clearly label & ID all equipment on each side of the stack with a full size sheet of 9” X 11” paper that has bold print on it. Tape it on to the equipment before you shrink wrap the equipment at eye level. If you are hauling in rain or bad weather have a second set of labels to insert at the loading dock in case the first set is not legible or have your labels sleeved in sealed plastic jacket.
- Label each box with the first & last name of the owner on any mixed beekeeper equipment pallets.
- Maximum allowable height of stack, including pallet, is 6 feet tall.
- Advise Mark Antunes that a shipment is planned so that a shipment/processing date can be confirmed.
- Loading dock height trucks unload in the rear of the building, low trucks and trailers unload in front of the building. You may also stack and wrap equipment there as well. You should line delivery vehicles with plastic or cardboard to prevent contamination of that vehicle – destroy the liner after delivery.
- Arrive at the agreed time at Sterigenics 75 Tilbury Road, Salem, NJ 08079

Costs & Payments

Please contact Mark Antunes if you have hive equipment that you wish to process at Sterigenics. Without exception, all expected processing costs for prepared pallets must be prepaid before equipment is transported to Sterigenics. A certified bank check or money order made out to Sterigenics International Inc. is required as payment.

- **\$164.38/pallet** (full or partial) based on a full capacity equipment run of 8 or more pallets.
- 1 pallet can accommodate 42 deeps @ \$3.90 per box or 66 mediums @ \$2.45 per box.
- **Payment in full for all pallets you deliver must be with a certified bank check, or money order made out to Sterigenics International Inc. This is required before or upon drop off of pallets at Sterigenics.**

Thanks,

Mark S. Antunes
Montgomery Co. Beekeepers Association