Nosema

Nosema is a genus of Microsporidia that infects insects.
Nosema is fungi.
Two major species:

1. Nosema Apis – only infects Apis mellifera. First found in the US in 1909.
2. Nosema Ceranae – infects both Apis Mellifera and Apis Cerana. Found in the US in 1996.

Honey Bees start showing the symptoms of Nosema once they have digested the spores. The fungi come from eating infected food, cleaning the cells, or grooming other Honey Bees..
When Nosema becomes serious dark brown feces will streak on the frames, foundation and on the outside of the hive boxes.
When the Honey Bee starts to clean up the feces it will digest the spores and the disease will spread.

Nosema Ceranae is well established in the US.
It is hard to tell the difference between N. Apis and N. Ceranae using a compound microscope. Both appear the same using this microscope. An electron microscope is need to determine the difference.
It takes from one to two weeks for the Nosema spores to grow.
To process the Honey Bee for determing the severity of infection, the following steps should be used:

1. Collect 100 live Honey Bees. They should be workers taken away from the brood area.
2. Freeze the Honey Bees for 24 hours. Do not use alcohol in this process.
3. Count and record the number of frozen Honey Bees.
4. Dissect the Honey Bee cutting off the abdomen and placing it a bowl.
5. For every Honey Bee that has been dissected add one mL of distilled water to the bowl.
6. Crush the abdomens. This will produce a brown milking fluid.
7. Strain the fluid through a filter.
8. Using a hemocytometer place a drop on each side of the hemocytometer.
9. The dissecting microscope should be set at 400X magnification.
10. The spores when viewed through the compound microscope should look like a jelly bean.
11. A black line will from the outside surface and the interior will be clear as the surrounding area.
12. Checking the four corner squares and the center square you will see a number of spores. Count them.
13. Using a mathematical equation, that came with the hemocytometer, determine the number of spores found in the sample.
14. Check both sides of the hemocytometer. The count should be within 10%. If not repeat the process.