

Evaluation of Select Pathogen Reduction in the Interior of Large Animal Carcasses during Composting

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The ability to predict bacterial and viral pathogen reduction internally in large animal carcasses was evaluated. While many studies have evaluated the feasibility of composting as means of carcass disposal, incomplete data is available on the survivability of microbial pathogens within the carcass. Pathogen reduction in the composting substrate from vegetable and food waste, small carcasses, or from the surface of large animal carcasses has been documented. Pathogen reduction has also been demonstrated following long term composting at or near a stable end-point.

In the event of a large scale animal infectious disease emergency, composting of large animals might be necessary. It would be crucial to know when pathogens in the interior of large animal carcasses were inactivated. Such knowledge would be needed to prior to aeration of any large scale compost sites to hasten the composting process, or prior to the movement of any partially composted material to incineration or long term disposal sites.

A series of fully mature cattle which died of natural causes were monitored during composting. The abdomen and the thorax of these cattle were seeded with rayon patches with known quantities of target bacteria and viruses. The test patches were retrieved at prescribed intervals and the viability of the bacteria or virus evaluated. Concurrently several temperature probes monitored the temperature. These sites included; the interior of the carcass, the surface of the carcass, the composting substrate, as well as the ambient temperature. Initial data indicates that the temperature within the carcass tends to be approximately 10° F (2.1° C) less than the temperature in the composting substrate. Further it appears that it requires approximately 10 times longer for bacteria to be inactivated from the interior of a carcass (30 days) versus bacteria seeded in the composting substrate (3 days).

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Key Points to be discussed

- Evaluation of time needed to inactivate target microbial agents from large animal carcasses during composting
- Evaluation of temperature differences between the interior of carcasses and other regions of composting substrate
- Recording of temperatures of compost sites of large animals with different substrates.