



## EM® Applications for Zoos

**The Honolulu Zoo.** A good example of the sustainable applications of Effective Microorganisms™ for animal health and odor control is the Honolulu Zoo located on Waikiki Beach. EM•1® Microbial Inoculant has been used throughout the zoo since 1997. Applications first began for odor control, as the zoo is located right in the heart of the resort district. The zoo staff first began using EM•1® for the composting of manure, as the facility produces approximately 6 cubic yards of animal waste per day. The zoo discovered that when they began adding EM•1® to the conventional composting procedure, the composting time was cut in half. In addition, the odor and fly problems were substantially reduced – virtually eliminating complaints from the nearby resorts. As an additional benefit, the overall quality of the compost was significantly improved – making it a marketable byproduct that is easily sold.

The zoo staff then began adding Effective Microorganisms™ to the display ponds and discovered that the health of the animals began to improve, especially for the hippos and penguins that live under water most of the time. The algae growth in the ponds and moats began to disappear and the time for cleaning the pools was cut in half – saving the zoo time and money.

In addition, the zoo is required to store a large volume of wastewater from the hippo exhibit in a holding tank and leak it into the sewer line during non-peak hours, so as not to overtax the lines. Previous to using EM•1®, Zoo staff would have to regularly enter the holding tank to remove solids to be hauled away to the landfill. With the daily use of Effective Microorganisms™, the solids have been reduced to the point of significantly reducing – if not altogether eliminating the need to clean the holding tank.

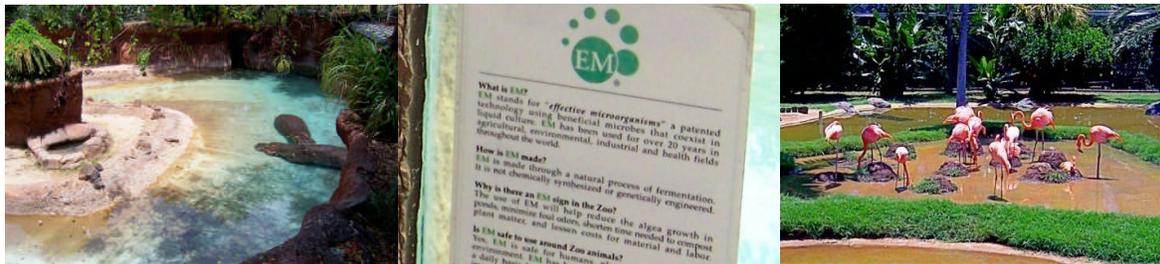
Assistant Director of the Honolulu Zoo, Tommy Higashino, affirms that *"EM® has been effective in its use at the Honolulu Zoo. The Zoo has procured a 50% reduction time in its composting cycle as well as the reduction of odors, a 50% reduction in man hours required to clean its pools and moats, and a healthier environment for the animals, staff and visitors."*

Overall, the use of EM•1® at the Honolulu Zoo has resulted in the following benefits:

1. The reduction of manure odor and significant reduction in the time to produce compost.
2. The reduction of chemical dependency for algae control.
3. Savings of man-hours to clean moats and holding tanks due to a reduction in algae growth and organic matter.

Additional applications in the Zoo will likely include the following:

1. Use of EM•1® in restroom odor management and cleaning.
2. Use of EM® bokashi as a replacement for chemical fertilizers on the Zoo's lawns and for its landscaping.



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