

Needs assessed for marine waste disposal facilities

The Clean Vessel Act of 1992 (P.L. 102-587) provides for the distribution of grants to states for construction, operation, and maintenance of pump-out stations for portable toilets on boats in the United States. The article “Environmental management of human waste disposal for recreational boating activities” (Shafer, E. L., and J. Yoon. *Environmental Management* 22(1):99-107) is the description of a method that



Pennsylvania used to estimate the number of pump-out facilities and dump stations it needed to service power boats of 16 feet in length to more than 40 feet during the May-November boating season on seven major water bodies. The estimation required the collection of information about the number and type of power boats on the water bodies; the number of boats with portable toilets or type III marine sanitation devices; the means by which boaters disposed of human waste; the number of marinas, boat docks, yacht clubs, and areas of congregation of boats in the state; the number, type, and condition of human waste pump-out facilities and dump stations; and the number of additional facilities the state needed to adequately service the current number of power boats. The information was collected by mailed questionnaires from a sample of 28% of 9,770 boaters and from 33% of all 212 marinas and boat docks in the coastal zone and inland waters of Pennsylvania. Statewide averages of the number of times a boat emptied a portable toilet or a holding tank, marina service time per sanitation device, number of hours of marina operation per weekend and weekdays, and number of weekends a marine operated during the boating season were used to estimate the required waste reception facilities for each of seven major water bodies. The study also revealed valuable information about various aspects of waste disposal. The authors discuss the limitations of the results and make suggestions for the improvement of the method.