In the Same Boat? Health Risks of Water Recreation Are Not Limited to Full-Contact Activities

Forty years after the Clean Water Act established a goal that the nation’s waters be suitable for recreation, many waterways still fail to meet that standard. Those deemed unsuitable for full-contact recreation are nevertheless used for limited-contact water activities such as boating, kayaking, and fishing. Although several states have started exploring site-specific standards for limited-contact recreation in waterways with high bacterial concentrations, very little is known about whether these activities are safe in such settings. The Chicago Health, Environmental Exposure, and Recreation Study, a prospective cohort study of more than 11,000 users of waterways in and around Chicago, sought to estimate the health risks associated with limited-contact recreation in potentially contaminated waters [EHP 120(2):192–197; Dorevitch et al.].

The study compared health outcomes between people who engaged in limited-contact water recreation in the Chicago Area Waterways System (CAWS), those who engaged in limited-contact recreation in “general-use” waters that had been deemed suitable for full-contact recreation, and a reference group of people who engaged in outdoor recreation near but not in contact with water. The CAWS consists primarily of wastewater, including 300 million gallons received daily from each of two wastewater plants. This effluent is treated with an activated sludge process but is not chemically disinfected. Earlier studies showed levels of Escherichia coli and Enterococcus bacteria were much higher and Cryptosporidium and adenovirus type F were detected more frequently in the CAWS than in samples from the general-use waters.

Study participants were interviewed prior to their recreation activity, with followup interviews by phone 2, 5, and 21 days afterward. CAWS users experienced more eye symptoms than those in the reference or general-use water groups, and people who engaged in water recreation activities at all were significantly more likely than the reference group to develop gastrointestinal illness in the first 3 days following recreation. The researchers found no difference in the frequency at which gastrointestinal illness developed between general-use and CAWS users. They speculate that the two groups may have received comparable average doses of ingested pathogens, with CAWS users exposed to waters with higher pathogen densities but general-use users more likely to immerse their heads and faces in the water. There was a higher risk of eye symptoms in CAWS users than in the reference or general-use groups, but no statistical differences existed between the 3 groups for development of respiratory illness, rash, or ear problems.

Heart Disease Tradeoffs The Built Environment, Air Pollution, and Activity

In many areas urban planners have begun to incorporate physical activity considerations into neighborhood design. But simply designing cities that encourage people to be more physically active may not go far enough to protect the population from heart disease, according to a study that compares the relative risks of inactivity and air pollution exposure within a large metropolitan population [EHP 120(2):247–253; Hankey et al.]. The new work is one of a small but growing number of studies to compare the health impacts of exercise and air pollution.

The researchers capitalized on geocoded self-report travel diaries from a state-funded 2001 survey of more than 30,000 Los Angeles residents to execute the new study. They estimated the survey respondents’ relative risk of ischemic heart disease based on cohort studies of activity level and exposure to air pollution, and used modeled and measured concentrations of fine particulate matter (PM$_{2.5}$), ozone, and nitrogen oxides (NO$_x$) to quantify individual exposures. They relied on geographic information system data to assess participants’ neighborhoods for land-use attributes demonstrated to encourage active modes of transportation: higher population density, higher intersection density (i.e., streets that are interlinked at multiple points), and a more diverse mix of land uses.