6th WORLD CONFERENCE

Injury Prevention and Control

6e CONFÉRENCE MONDIALE

Prévention et contrôle des traumatismes

ABSTRACTS • RÉSUMÉS

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INJURIES, SUICIDE AND VIOLENCE:
Building Knowledge, Policies
and Practices to Promote a Safer World

TRAUMATISMES, SUICIDE ET VIOLENCE :
Construire un savoir, des politiques
et des pratiques pour promouvoir
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QUIET DEATH ON THE LAKE – OUTDOOR BOAT-RELATED CARBON MONOXIDE POISONINGS RECOGNIZED AT LAKE POWELL

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PROBLEM UNDER STUDY: The rapid fatal poisoning of two brothers (aged 8 and 11) who were swimming at the back of their family's houseboat on Lake Powell led to a Federal investigation of fatal and non-fatal boat-related carbon monoxide (CO) poisonings. The boys' deaths, occurring in August 2000, were the eighth and ninth fatal boat-related CO poisonings occurring on Lake Powell since 1994.

OBJECTIVES: This study was initiated to examine risk factors associated with fatal and severe CO poisonings occurring on Lake Powell so that effective preventions programs could be designed.

METHOD OR APPROACH: Records related to Emergency Medical Services (EMS) provided by USA National Park Service (USNPS) medics were collected for epidemiological analysis. In addition, hospital records related to Emergency Department treatment of these patients, as well as any other patient for whom a carboxyhemoglobin (COHb) analysis was done, were collected for review. Records for patients meeting the CO poisoning case definition were included in the study. Data related to symptoms and circumstances of CO poisonings occurring between 1990-2001 on Lake Powell were abstracted for analysis. CO was measured in locations on the boats where people were poisoned. These measurements were confirmed through the use of several sampling methods, and on boats on lakes in other locations.

RESULTS: More than 110 poisonings requiring emergency medical treatment occurred on Lake Powell between 1990-2001. The predominance of the poisonings (approximately 70%) occurred on houseboats, and most of these poisonings were related to the use of an onboard gasoline-powered generator used to supply electricity for appliances and air-conditioners. Most strikingly, more than half of the poisonings identified on all boats occurred outside of the boat. All fatal houseboat-related poisonings resulted in drowning of people swimming near or occupying the back of boats of similar design. During the course of this study, 64 additional outdoor poisonings associated with houseboats on water bodies other than Lake Powell were reported to the authors. As a result of this study, the USA Coast Guard recalled all boats of this design. One outdoor fatal poisoning (and as many as three non-fatal poisonings) on a ski boat at Lake Powell was related to an activity referred to as "teak surfing". Within weeks of the investigation of the teak surfing death, the authors had collected reports of 14 other severe poisonings related to this same activity elsewhere in the USA.

CONCLUSION: Previously unreported outdoor boat-related CO poisonings are an emerging public health issue in the USA. Such poisonings are preventable, but not without adequate recognition and characterization.

LIMITS: The authors were only able to identify incidents requiring emergency medical care for which good data about circumstances of the poisoning were available. People who were poisoned and did not seek medical assistance were not identified. The symptoms of CO poisoning are non-specific (headache, nausea, vomiting, seizures, loss of consciousness) and easily explained away as being related to conditions such as heat stress and alcohol consumption, for which symptoms are similar. In addition, it is difficult for people to believe that CO exposure in open air could be a problem. As such, many fatal and non-fatal CO poisonings are unrecognized and unreported. Recognition of the poisoning depends upon thorough investigation of both symptoms and circumstances of the poisoning, including where the person was on the boat, and what was operating on the boat at the time of poisoning. Because severe poisonings occurring outdoors were previously unreported, investigators may have failed to recognize and list such relevant information.

CONTRIBUTION OF THE PROJECT TO THE FIELD: This project was instrumental in establishing outdoor severe boat-related CO poisonings as a significant public health issue in the USA, and perhaps elsewhere. The authors assisted in the development of effective prevention programs, including development and evaluation of engineering controls to reduce CO exposures on boats, and public awareness programs.