



## Dropping acid at school: Hydrochloric acid exposures in chemistry class

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## LETTER TO THE EDITOR

### Dropping acid at school: Hydrochloric acid exposures in chemistry class

*To the Editor:*

Injury from hydrochloric acid (HCl) may vary in several ways. Coagulation necrosis of the esophagus, stomach, and eye are worrisome consequences.<sup>1,2</sup> Additionally, life threatening dermal and inhalational injury may follow significant exposures.<sup>3,4</sup> The purpose of this study is to report 9 years of our regional poison center's (RPC) experience with HCl exposures occurring in school chemistry classes.

Using generic codes for HCl exposure, Crystal Reports (Version 11) was utilized to retrospectively search all cases from January 1, 2002 through December 31, 2010 within our RPC database. Cases were determined by reading each chart's notes, and all exposures occurring in the context of a chemistry class or school experiment (grades 1–12) were included. Demographics, identity of the caller to the RPC, type and context of exposure, referrals to a health care professional, therapy recommended, and outcome were recorded.

A total of 830 cases of HCl exposures were coded by our RPC with 127 (15.3%) meeting inclusion. Mean age was 16 years (median 15 years; range, 11–68 years) with a majority occurring in females (63%). Three teachers (age 27, 44, and 68-year-old) were also included. A school nurse was the most frequent caller (87%). Others included a parent (n = 8), nanny (n = 1), family physician (n = 1), pharmacist (n = 1), and unknown (n = 3). All exposures were accidental except one malicious event where a student poured HCl onto another student's neck. The majority of cases were dermal exposures. Of these, 64% occurred in the upper extremities while others affected the scalp, face, lip, trunk, groin, and leg. All dermal exposures were treated with dilution; however, baking soda neutralization (n = 4), aloe (n = 4), and silvadene (n = 1) were additionally utilized. Six patients were referred for evaluation and four experienced mild dermal blistering. Ocular exposures accounted for 14% of exposures. All were referred for evaluation (four patients had corneal abrasions); however, four did not follow-up. Management in all patients consisted of irrigation with water. Accidental oral ingestions occurred in eight patients. None were referred for evaluation and all were treated with dilution. Finally, inhalational exposures occurred in 15 patients (12%) with the majority requiring no specific therapy. Two of the four patients referred for evaluation presented to an emergency department. Both of these patients were wheezing and managed with albuterol resulting in favorable outcomes.

School chemistry classes, like an industrial worksite, can be defined settings of HCl exposure. Poison center surveillance has provided essential information regarding adolescent toxic exposures occurring in the workplace.<sup>5</sup> Over 15% of all HCl exposures reported to our RPC were secondary to chemistry class mishaps. These exposures were generally benign, rarely required emergent referral, and universally managed with dilution or removal of the source. Because this is a retrospective poison center study, these data are limited in that exposures may not be reported to our RPC. Coding errors and utilizing second hand historical data may also be problematic. However, our data confirm that the poison center offers a valuable resource for school nurses regarding the on-site management of chemistry class exposures to hydrochloric acid.

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