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Outbreak of acute fluoride poisoning caused by a fluoride overfeed, Mississippi, 1993.

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Abstract

OBJECTIVE: To determine the extent and confirm the cause of an August 1993 outbreak of acute fluoride poisoning in a small Mississippi community, thought to result from excess fluoride in the public water supply.

METHODS: State health department investigators interviewed patrons of a restaurant where the outbreak first became manifest and obtained blood and urine samples for measurement of fluoride levels. State health department staff conducted a random sample telephone survey of community households. Public health environmentalists obtained water and ice samples from the restaurant and tap water samples from a household close to one of the town's water treatment plant for analysis. Health department investigators and town water department officials inspected the fluoridation system at the town's main water treatment plant.

RESULTS: Thirty-four of 62 restaurant patrons reported acute gastrointestinal illness over a 24-hour period. Twenty of 61 households that used the community water supply reported one or more residents with acute gastrointestinal illness over a four-day period, compared with 3 of 13 households that did not use the community water supply. Restaurant water and ice samples contained more than 40 milligrams of fluoride per liter (mg/L), more than 20 times the recommended limit, and a tap water sample from a house located near the main treatment plant contained 200 mg/l of fluoride. An investigation determined that a faulty feed pump at one of the town's two treatment plants had allowed saturated fluoride solution to siphon from the saturator tank into the ground reservoir and that a large bolus of this overfluoridated water had been pumped accidentally into the town system.

CONCLUSIONS: Correct installation and regular inspection and maintenance of fluoridation systems are needed to prevent such incidents.

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