

Enteric Illness — Continued

The recent New York State outbreaks may be related to periods of heavy rain and flooding. Run-off at these times, especially when sewage systems overflow, characteristically increases coliform counts in monitored coastal waters. However, the numerous outbreaks in New York before the May-June flooding suggest an endemic degree of clam contamination, some of which may be attributable to harvesting from uncertified, sewage-contaminated waters. This practice is likely to continue, because taking clams from highly populated, polluted beds is economically profitable and difficult to prevent. These outbreaks emphasize that clams may contain multiple enteric pathogens, including viruses, and consumption of clams—especially raw or partially cooked—continues to pose substantial risk of transmitting disease. Although the most effective way of avoiding the problem is to prevent the distribution of illegally gathered, untagged clams, such measures are not always possible. Therefore, because steaming or other forms of cooking do not always kill the enteric viruses in clams (13,14), the most effective means of preventing clam-associated illness is to adequately dehydrate them.

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Employee Illness from Underground Gas and Oil Contamination — Idaho

The National Institute for Occupational Safety and Health (NIOSH) recently completed an evaluation of an office building in Boise, Idaho, in which workers were experiencing symptoms of headache and nausea related to intermittent noxious odors (1). The cause of the problem was gasoline vapors entering the building from an underground aquifer contaminated with petroleum products leaking from a nearby oil storage tank.

The affected employees worked in the basement of a five-story medical office building and had been experiencing the symptoms—which in one case included vomiting—intermittently for 10 months. The symptoms were occasionally associated with a petroleum odor that the

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NIOSH investigator found coming through cracks in the floor and the joints at which the floor met the foundation and the support pillars connected to the floor. Laboratory analysis confirmed the source of the odor as gasoline. The vapor concentrations at the cracks and inside one wall were above the lower explosive limit for gasoline of 14,000 ppm, and the vapor concentrations in the rooms ranged up to 280 ppm.

To determine the source of the contamination, six test holes were drilled around the building. A water sample from one of these holes had petroleum products floating on the surface. An evaluation has determined a large gas and oil tank farm, located two blocks from the building, is the source of the water table contaminants.

Based on recommendations by the NIOSH investigator, immediate steps were taken to correct the hazards. All accessible cracks and joints have been sealed, and the building ventilation system has been adjusted to pressurize the building relative to the outside air. Since these corrections were made, petroleum-product vapors are no longer detectable, and the employees' symptoms have ceased.

Reported by the Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, NIOSH Region X, CDC.

Editorial Note: The employees' symptoms are consistent with the gasoline vapor concentrations found in the building and with the higher concentrations that probably existed intermittently in the past.

NIOSH has evaluated or is currently evaluating over 100 complaints of various symptoms among office employees. Although a large majority of these evaluations have found that the complaints derive from inadequate office ventilation, occasionally symptoms can be linked to substances measured in the environment, e.g., fibrous glass (2), fumes from spirit duplicators (3), and emissions from urea-formaldehyde foam insulation (4). In the Idaho situation, prompt correction was required to prevent a possible explosion of gasoline vapors. Although such situations are unusual, building occupants in areas near petroleum storage facilities (including gasoline service stations) should be alert to the possibility of environmental contamination—particularly of the water table by petroleum products.

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International Notes

Yellow Fever Surveillance — Africa

The epidemics of yellow fever (YF) in Africa in recent years have stimulated research on the survival mechanisms of the YF virus during interepidemic phases. Virologic surveillance in West and Central Africa has led to the isolation of numerous YF virus strains, particularly from *Aedes africanus*, *A. opok*, *A. furcifertaylori*, and *A. luteocephalus*, outside of any declared epidemic. Forest-savanna mosaics, undifferentiated savannas of relatively moist type, differentiated

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Epidemiologic Notes and Reports

Enteric Illness Associated with Raw Clam Consumption — New York

Since June 1, 1982, the New York State Health Department has received reports of at least 14 separate outbreaks of gastroenteritis associated with consumption of raw clams. Approximately 150 persons have been affected. Typical symptoms have included diarrhea and abdominal cramps beginning 12-72 hours after eating clams, with nausea, vomiting, and fever occurring less often. In three of these outbreaks, seven individuals subsequently developed hepatitis A 21-37 days after eating clams. Three other persons developed hepatitis A without initial gastrointestinal symptoms. Eight of the 10 cases were verified by the presence of IgM antibody to hepatitis A virus (HAV); results on the others are pending.

A summary of four of these outbreaks follows:

Outbreak A: On May 29, 24 individuals attended a private party in Albany County at which raw clams were served. Within 6-24 hours, 18 (90%) of 20 persons who had eaten clams developed diarrhea and abdominal cramps, which lasted 1-3 days. None of four persons who remained well had consumed clams. Stool specimens obtained shortly after onset of illness from seven persons with gastroenteritis were negative for *Salmonella*, *Shigella*, and *Campylobacter*. Two persons who ate clams and developed gastroenteritis contracted hepatitis A 21 and 27 days later. Clams from the same lot as those consumed at the party were evaluated at the New York State Health Department's laboratory. Although cultures of extracts from these clams did not grow enteric bacterial pathogens, both 27 nm and 40 nm virus-like particles were observed by electron microscopy.

Outbreak B: On May 30, fourteen people attended a private party in Rensselaer County at which clams were served. Five (83%) of six persons who ate raw clams developed diarrhea, nausea, vomiting, and abdominal cramps 36-72 hours later; symptoms persisted for 1-2 days. None of the eight persons who did not eat raw clams became ill. One of the five individuals with gastroenteritis, who worked as a food handler, developed hepatitis A (confirmed by the presence of HAV-specific IgM antibody) 34 days after eating clams, prompting county health officers to administer immunoglobulin (IG) as a preventive measure to 850 people exposed to foods he had prepared.

Outbreak C: On June 5, members of multiple bowling leagues attended a picnic in Albany County. Many of the approximately 200 attendees developed diarrhea, nausea, vomiting, and abdominal cramps 12-72 hours after the event. Forty-five of 126 persons interviewed reported gastroenteritis; 42 (89%) of these had eaten raw clams. Only raw clams were significantly associated with illness ($p < 0.001$). Four persons who consumed clams and were affected by gastroenteritis developed hepatitis A 29-37 days later. This outbreak was not recognized in time to obtain specimens from persons with acute gastrointestinal illness.