

DELAWARE HEALTH UPDATE #509: High Blood Lead Levels in Children Consuming Recalled Cinnamon Applesauce Pouches: Chromium Found in Recalled Applesauce Pouches

The Delaware Division of Public Health (DPH) is forwarding this health alert from the Centers for Disease Control and Prevention (CDC) to advise clinicians and health departments to consider the possibility of illness due to lead and chromium exposure and report cases to their local health authorities.

Summary

Multiple states have reported potential cases to the U.S. Food and Drug Administration (FDA) of high blood lead levels (BLLs) in children consuming [recalled cinnamon-containing applesauce](#) products that have high levels of lead. The CDC is issuing this Health Alert Network (HAN) Health Advisory to advise clinicians and health departments to consider the possibility of illness due to lead exposure and report cases to their local health authorities. Further FDA product testing has also identified high levels of chromium in cinnamon samples and recalled apple cinnamon purée pouches.

Background

FDA, CDC, and state and local partners are investigating a potential link between high BLLs and consuming certain cinnamon-containing apple purée and applesauce products.

State partners tested multiple lots of the reported products, and test results indicated the products contained extremely high levels of lead. WanaBana, Schnucks, and Weis have initiated voluntary recalls of certain lots of the following products:

- WanaBana brand apple cinnamon fruit purée pouches
- Schnucks brand cinnamon applesauce pouches
- Weis brand cinnamon applesauce pouches

FDA product testing has also identified high levels of chromium in cinnamon samples and recalled apple cinnamon purée pouches. Chromium is a naturally occurring element with trace levels normally found in the diet. The most common forms of chromium found in chromium compounds are trivalent chromium (chromium(III)) and hexavalent chromium (chromium(VI)). Chromium(III) is considered an essential nutrient and can be found in dietary supplements. Chromium(VI), however, is a known carcinogen. Chronic, prolonged inhalational and skin exposure to chromium(VI) has been associated with chronic lung disease and ulceration of skin and mucous membranes. Lead chromate, which contains chromium(VI), has been used to adulterate turmeric and other spices. While harm resulting from ingesting lead-contaminated food is relatively [well researched](#), the effects of eating food contaminated with chromium(VI), as a constituent of lead chromate, are not well understood. Chromium(VI) compounds may be converted to chromium(III) in acidic environments. Currently, FDA testing cannot identify whether the chromium in the cinnamon and recalled apple cinnamon purée pouches is chromium(III) or chromium(VI).

More information about the specific recalled products may be found on the FDA's website: [Investigation of Elevated Lead Levels: Applesauce Pouches \(November 2023\) | FDA](#)

As of January 19, 2024, CDC has received reports of 97 confirmed cases, 253 probable cases, and 35 suspected cases for a total of 385 cases from 42 different states through their reporting structure. The following states have reported cases: AL, AR, AZ, CA, CO, CT, FL, GA, IA, ID, IL, IN, KS, KY, LA, MA, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NM, NY, OH, OK, OR, PA, RI, TN, TX, UT, VA, VT, WA, WI, WV. For more information, visit [CDC's page](#) to review their case reporting methodology and findings. Cases experienced signs and symptoms including headache, nausea, vomiting, diarrhea, change in activity level, and anemia.

No safe level of lead in children's blood has been identified. [CDC does not use the term "elevated blood lead levels"](#) when recommending what actions to take based on a child's blood lead level (BLL). CDC uses a [blood lead reference value \(BLRV\)](#) of 3.5 µg/dL to identify children with BLLs that are higher than most children's levels. The BLRV is based on the 97.5th percentile of the BLLs among U.S. children ages 1 to 5 years. The BLL can be obtained using a capillary or venous blood draw. Capillary lead levels ≥3.5 µg/dL require confirmatory testing with a venous blood level to rule out contamination. Children who have eaten the recalled products or have other suspected sources of lead exposure should be tested.

[Lead toxicity](#) primarily targets the central nervous system. Children are more vulnerable to lead poisoning than adults because their nervous systems are still developing. Children also tend to absorb a higher fraction of ingested lead than adults. Although children with lead exposure may have no apparent acute

symptoms, even low levels of lead have been associated with learning, behavioral, and cognitive deficits. A child who is exposed to large amounts of lead may develop acute lead poisoning, presenting with gastrointestinal, hematological, and neurological effects, including one or more of the following signs and symptoms: anemia, abdominal pain, weakness, and severe neurological sequelae (e.g., seizures, encephalopathy, and coma), which may result in brain damage. Some effects of lead poisoning in a child may continue into adulthood. Adults who have high BLLs may be at increased risk for high blood pressure, other cardiovascular effects, kidney problems, adverse reproductive outcomes, and gout. More information about adverse effects of lead exposure can be found in the [ATSDR Lead Toxicological Profile](#).

Managing acute lead poisoning includes eliminating the exposure, providing supportive and symptomatic care, and quantifying lead exposure by checking BLLs. Children who are symptomatic with elevated BLLs above 45 µg/dL may require hospital admission for monitoring and chelation therapy using medications such as succimer, dimercaprol, or edetate calcium disodium (EDTA). Health care providers can find acute ingestion of chromium exceeding dietary recommendations may result in abdominal pain, nausea, vomiting, diarrhea, anemia, and renal and hepatic dysfunction.

Recommendations for Clinicians

For Lead Exposure

- 1) Counsel patients or their caregivers and guardians not to eat specific cinnamon-containing apple purée or applesauce products named in the FDA recall announcements.
- 2) Educate patients or their caregivers and guardians about the [health effects of lead exposure](#) in children and the importance of seeking medical care. Most children have no obvious symptoms, but appropriate screening can detect lead in blood. Children who have consumed a recalled applesauce pouch product should be tested for lead exposure. Clinicians may refer to CDC's guidance on [testing children for lead exposure](#). The American Academy of Pediatrics has also published [clinical guidance for managing lead exposure in children](#). More specific recommendations for obtaining BLLs in your jurisdiction may be available from your local health department or regional [Pediatric Environmental Health Specialty Unit \(PEHSU\)](#).
- 3) Consider lead exposure in the differential diagnosis of patients presenting with compatible clinical findings associated with lead poisoning, which may include the following:
 - a) Constitutional symptoms such as generalized weakness, fatigue, malaise, arthralgias, myalgias, irritability, anorexia, insomnia, and weight loss.
 - b) Abdominal pain ("lead colic"), constipation, nausea, and other gastrointestinal symptoms.
 - c) Anemia (normochromic or microcytic, possibly with basophilic stippling).
 - d) Central nervous system effects, such as headache, impaired visual-motor coordination, tremor, and, in severe cases, seizure, encephalopathy, and coma.
 - e) Stunted growth, hearing problems, impaired neurobehavioral development, decreased intelligence, and failure to meet expected developmental milestones.
 - f) Impaired kidney function, such as acute tubular dysfunction.
- 4) Obtain a detailed exposure history in patients with suspected lead exposure, including those who consumed a recalled product. Also, ask about household members with known lead exposures and possible [lead sources](#) in and around the home. Parents and caregivers who work in [jobs, hobbies, or other activities that expose them to lead](#) can bring lead-containing dust home with them. Lead-containing dust can be tracked onto carpets, floors, furniture, and other surfaces that a child may touch, and expose other family members without knowing. Known risk-factors for lead exposure include the following:
 - a) Lead paint and dust in homes built before 1978.
 - b) Lead in soil, for example due to prior contamination from leaded gasoline, exterior lead paint, or old home renovations.
 - c) Nearby active lead and other types of smelters, battery recycling plants, or other industries that release lead into the air,
 - d) Certain folk remedies (e.g. Ayurvedic or traditional Chinese herbal medicines, Azarcon, Greta), cosmetics (e.g. kohl, kajal, surma), religious powders (e.g. sindoor), and other [cultural products](#).
 - e) Imported powdered spices, such as turmeric, chili, and curry powders.
 - f) Certain types of jewelry made with lead-containing metal alloys or paints.
 - g) Ceramics made with lead-containing glazes.
 - h) Older toys made with lead-based paint, lead-containing metal alloys, or certain types of plastic.

- 5) Know that individuals with high BLLs may not be symptomatic and are identified through screening. Be familiar with CDC's [testing recommendations for lead](#), indications for confirmatory testing, and [recommended actions based on BLL](#). CDC recommends a blood lead reference value (BLRV) of 3.5 µg/dL to identify children with BLLs that are higher than most.
- 6) Obtain early consultation with or provide a referral to a medical toxicologist or pediatric specialist with expertise in managing lead exposure for medical workup and managing patients with high BLLs.

For Chromium Exposure

- 1) Medical treatment for chromium exposure is supportive as indicated from the clinical presentation. There is no specific antidote to treat chromium exposure, and there is no evidence to support the use of chelation therapy.
- 2) Consider obtaining a urinalysis and comprehensive metabolic panel (CMP) including electrolytes, liver enzymes, and BUN/creatinine to assess for hepatic and renal injury. A complete blood count (CBC) can be used to assess for anemia and iron deficiency. These tests may be indicated at the discretion of the treating physician.
 - a. Consider tests for any patients who consumed recalled applesauce products and have concerning or persistent symptoms that cannot be readily explained, such as vomiting and diarrhea or signs of anemia.
 - b. Give priority to patients with higher blood lead levels (e.g. 10 µg/dL or higher).
- 3) Clinicians may consider testing urine, blood, or serum chromium levels but results may be difficult to interpret and do not guide clinical management.
 - a. Chromium levels in blood or urine reflect recent exposures and are not reflective of body burden. These lab tests are generally used to assess workers exposed to high levels in occupational settings via dermal or inhalational routes of exposure.
 - b. Mean chromium levels in the general U.S. population are below limits of detection (LOD) in whole blood (LOD=0.41 µg/L) and urine (LOD=0.19 µg/L), as reported in the CDC [National Report on Human Exposure to Environmental Chemicals](#). There is no international consensus on a normal or acceptable range of chromium levels, and no established threshold at which toxicity occurs.
 - c. Hair and nail samples are not reliable sample types to assess chromium exposure.

Reporting

All Delaware physicians, laboratories, and other health care providers should report suspected lead poisoning to DPH.

Cases can be reported to the DPH Office of Lead Poisoning Prevention by emailing HSPContact@Delaware.gov.

Recommendations for Public Health Professionals

- 1) Know that individuals with high BLLs may not be symptomatic. Case finding may be mainly from reporting by clinicians who recognize risks of exposure and perform screening.
- 2) Consider conducting case-finding activities that leverage existing data sources such as medical encounter and hospital discharge data, electronic syndromic surveillance systems, your local poison center, and other applicable surveillance systems.

Recommendations for the Public (Parents, Caregivers, Guardians)

- 1) Do not buy, eat, sell, or serve recalled cinnamon-containing applesauce pouch products because they may contain lead.
- 2) Parents and caregivers of children who may have consumed recalled products should contact the child's health care provider about getting a blood test for lead.

For More Information

- FDA
 - [Investigation of Elevated Lead Levels: Applesauce Pouches \(November 2023\)](#)
 - [MedWatch Online Voluntary Reporting Form](#)
 - [MedWatch Consumer Voluntary Reporting Form](#)
 - [Consumer Complaint Coordinators](#)
- CDC/ATSDR

- [Childhood Lead Poisoning Prevention Program](#)
- [Guidelines and Recommendations](#)
- [Testing Children for Lead Poisoning](#)
- [Blood Lead Levels in Children](#)
- [Toxicological Profile for Lead](#)
- [Lead ToxFAQs](#)
- [Toxicological Profile for Chromium](#)
- [ATSDR Chromium ToxFAQs \(cdc.gov\)](#)
- America's Poison Centers
 - [U.S. Poison Centers](#)
- Pediatric Environmental Health Specialty Units
 - [About PEHSU / Find an Expert](#)
 - [Recommendations on Management of Childhood Lead Exposure](#)
- American College of Medical Toxicology
 - [About ACMT](#)

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The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national, and international organizations.

Categories of Health Alert Network messages

- Health Alert** Conveys the highest level of importance about a public health incident.
- Health Advisory** Provides important information about a public health incident.
- Health Update** Provides updated information about a public health incident.