CEHC FACT SHEETS: Lead

What is lead?
Lead is a naturally occurring metal. It has been used since antiquity in a wide variety of products including leaded gasoline, lead-based paint, water supply systems, folk remedies, ceramics and pottery, crystal, window blinds, bridges, cosmetics, and as a sealant for canned foods. It is also a component of many computers. Federal regulations have limited the lead content in these items because of health concerns. However, industrial use of lead in the past century has resulted in widespread environmental contamination and continued exposure to lead. More recently, lead has been found in new products such as children’s toys and jewelry.

How does lead exposure occur?
Lead-based paint chips and dust in houses and apartments built in New York City prior to 1960 and nationwide prior to 1978. Two factors related to age place children at greatest risk of exposure to lead. First, lead dust accumulates on the ground where children spend the most time crawling, walking, and playing. Also, children frequently put their hands in their mouths, directly ingesting paint chips and/or dust.

Drinking water is another potential source of exposure to lead. Lead gets into water by dissolving out of lead pipes or lead solder. Infants given formula mixed with lead contaminated tap water may be exposed to significant amounts of lead. Similarly, babies may be exposed to lead prior to birth if pregnant mothers drink lead-contaminated water. Letting the water run for 60 seconds can decrease the amount of lead in the drinking water and water used to cook. Lead-based paint is no longer used in the United States, although it is still used in certain other nations.

What are the symptoms and health effects of lead exposure?
Blood lead levels greater than 10 µg/dL (micrograms per decaliter) and even below that level have been associated with behavioral problems and decreased intelligence in children. A recent study has shown that these effects may be seen at levels even as low as 5 µg/dL. Children with blood lead levels above 20 µg/dL may exhibit gastrointestinal related symptoms. This includes poor appetite, nausea, vomiting, abdominal pain and constipation. These children may have difficulty with learning and school performance, in addition to behavioral problems such as hyperactivity. Children may develop anemia and may also have problems with growth. Severe lead poisoning, with blood lead levels above 60 µg/dL, may be associated with neurological symptoms such as changes in mental status, difficulty walking, seizures and coma.

How is lead exposure diagnosed?
All children ages one and two years old are screened for lead by a simple blood test. It tests the lead level in the child’s blood. Blood lead levels above 10 µg/dL are considered elevated. Your child’s Pediatrician can assess if risk factors are present for lead poisoning by conducting a lead screening questionnaire. This questionnaire can identify if your child needs further testing.
How is lead exposure treated?
If a child’s blood lead level is found to be elevated, the most important therapeutic measure is to identify and remove the source of exposure. It is very important that any lead paint removed be done safely because improper removal can create a hazard for children. Use of a professional contractor prevents improper removal of lead-based paint in the home. A diet high in iron, calcium and zinc helps promote removal of lead from the body. In addition to the environmental and dietary precautions, children with lead levels between 10 and 45 ug/dL are followed over time with a series of blood tests to ensure the lead level is decreasing. At levels above 45 ug/dL, urgent medical intervention including the administration of chelating agents may be indicated. Chelating agents are medications that actively bind to lead, promoting its release from the body. It has not been shown to be effective at levels less than 45 ug/dL.

How can lead exposure be prevented?
If you have a concern about old peeling paint, have your home inspected for lead. Your water supply may also be tested for lead content. Letting water run for 60 seconds and using cold water can decrease the amount of lead in the drinking water and water used to cook. Keep your home clean and free of dust to reduce the amount of exposure to lead dust. Never allow your child to put painted objects or paint chips in his/her mouth. Encourage frequent hand washing to remove lead dust and soil. During renovation and removal of lead from your home, keep children and pregnant women out of the home, until the work is completely finished and your home has successfully passed follow up testing.

How is lead exposure regulated?
In New York State, pediatricians are required by law to test children’s blood lead levels for lead exposure at the age of 1 and 2. In 1991, CDC defined the blood lead level (BLL) that should prompt public health actions as 10 µg/dL.

In New York City, the law requires landlords to inspect and fix lead paint hazards – at no cost to tenants. The law applies to your apartment if: you live in a building built before 1960 (or between 1960 and 1978 if the owner knows the building has lead paint), and the building has 3 or more apartments, and a child under the age of 6 lives with you. If the law applies to your apartment, your landlord must: send you an annual notice asking if a child under the age of 6 lives with you. Inspect your apartment once a year for lead paint hazards if a child under the age of 6 lives with you. Use safe work practices to fix lead paint hazards and do renovation work. Repair lead paint hazards before you move in.

In July of 1991, the U.S. Environmental Protection Agency (EPA) established an action level for lead in public drinking water at 15 micrograms per liter, which is the same as 15 parts per billion (ppb). Water suppliers must routinely test household tap water to check lead levels. If lead levels in the water are above the EPA action level and cannot be quickly corrected, the water supplier is required to notify homeowners and take steps to reduce lead levels in the drinking water. The U.S. Food and Drug Administration (FDA) has established a maximum contaminant level of five micrograms per liter for lead in bottled drinking water. Bottled water suppliers must routinely test their water supply for lead.