



Lead in Brass Keys—A New Concern

Protecting children from lead poisoning is a familiar goal for health care providers. It takes effort from everyone involved in children's lives to keep them safe from lead poisoning. **As a health care provider, you are in an ideal position to educate families about lead poisoning and to provide lead poisoning screening and blood lead tests.**

Sources of Lead Exposure

The biggest source of lead exposure for children is from lead paint. Lead can also come from a variety of other sources including soil, ceramic dishes, home remedies and cosmetics, hobbies and take-home exposures from family members' employment. **Another source of potential lead exposure has been identified: lead in brass keys.** Children's natural tendency to put objects and hands in their mouths means that lead contained in brass keys can add to the cumulative lead exposures children experience from other sources of lead in the environment.

What is the extent of the lead problem in California?

Lead exposure is a widespread problem. There are 22 million housing units built before 1978, the year when the federal Consumer Product Safety Commission reduced lead in residential paint to 0.06 percent. Housing built before 1978 is considered to create a potential lead exposure problem if it is peeling or if the housing is renovated.¹ In addition, over 1.5 billion pounds of lead were deposited in our soil from the use of leaded gasoline.²

Lead poisoning is the most widely recognized preventable environmental disease in children. In 1999 there were 852 cases of lead poisoning reported to the California Lead Poisoning Prevention Program.³ However, because not all children who should have blood lead

testing are being appropriately tested, it is estimated that the actual number of cases in California is at least three to four times that number.

In California, there is no requirement for universal screening of children, and mandated laboratory reporting to the state health department is triggered only when results are as high as 25 ug/dl. Some laboratories voluntarily report results at 10-15 ug/dl, but this is variable. Many researchers and practitioners believe that there is no safe level for lead exposure and the current level of concern is anything above 10 ug/dl.

Health care providers are required to provide information and guidance regarding potential lead exposures to all parents and caregivers of children ages 6 months to 6 years. Children in publicly supported programs such as Medi-Cal, CHDP and Healthy Families are required to have blood lead tests at ages 12 and 24 months. Other children should be tested if they live or spend time in housing built before 1978 that has peeling paint or that has been recently renovated.

—California Code of Regulations,
Title 17, Division 1, Chapter 9

Who is at risk?

It is currently estimated that about 40 percent of the children in California receive support from publicly funded programs such as CHDP, Medi-Cal or Healthy Families.⁴ All these children are considered at-risk for lead poisoning and are required to have blood lead testing at 12 and 24 months. Other children who live or spend time in housing built before 1978 that has peeling paint or has been recently renovated also should be tested. However, it is estimated that only about 20 percent of all these children who should be tested for lead poisoning are being tested appropriately.⁵ Of these 852 cases⁶ in California in 1999, 80 percent were considered to be in the at-risk category. If only 20 percent of those needing to be tested are being tested,

it can be estimated that three to four times the number of children reported with lead poisoning are unidentified.

Lead in Brass Keys

A new potential source of lead exposure has been identified as the result of a Proposition 65 lawsuit filed by the California Office of the Attorney General and the Mateel Environmental Justice Foundation against key manufacturers. The Safe Drinking Water and Toxic Enforcement

Act of 1986, also known as Proposition 65, sets certain levels of exposure to protect public health. It states that when challenged in a lawsuit such as this, those causing the exposure bear the burden of either proving they are not creating an exposure to a chemical that causes cancer or reproductive harm in excess of the scientific standards of Proposition 65 or they must warn the public about the exposure. This exposure level is called the “safe harbor.” While there is a safe harbor threshold established for lead, recent research suggests that there is no safe threshold for the adverse effects of lead.⁷

As part of this lawsuit, a study was conducted to evaluate the claim that there is enough lead in brass keys to present a lead exposure concern for children.⁸ A number of keys from different manufacturers were evaluated. It was determined that lead can come off the keys to the hands and can end up in the body through key-to-mouth and hand-to-mouth activity. The final study results concluded that for a high percentage of the keys tested, there was enough potential for lead exposure to be of concern. If one considers the normal repetitive hand-to-mouth activity of children, the potential for lead exposure increases considerably.⁹ In addition, as stated above, recent research suggests that there is no safe threshold for lead and there is growing concern for blood lead levels as low as 10 ug/dl.

What should health care providers tell parents about lead in keys?

Never allow a child to play with house or car keys. Advise parents to always have a set of plastic keys or another toy for children to play with.

Pregnant women should also minimize their exposure by washing their hands after handling keys.

Not all keys have lead in them—for example, aluminum keys are made without lead. These keys are very lightweight and are usually car keys. However, most house and car keys that are made out of brass have lead in them, because brass is a soft metal and lead strengthens the key so that it will not bend or break.

It is very difficult to tell whether a key contains lead just by looking at it. The color of the key does not provide much useful information. Brass has a yellow color, but when it is used in a key it is often covered over by nickel-plating, making it difficult to be certain whether

a key is brass, and therefore likely to contain lead. For these reasons, parents should not allow their children to play with any keys, regardless of the color.

As a result of this study, key manufacturers agreed to reduce the amount of lead in brass keys to a level that would not be a problem for adults who are handling the keys in a normal way just for driving their car or opening doors. However, since lead is a known developmental toxicant, it is important for pregnant women to minimize all exposures to lead. Even though the exposure would be quite low, pregnant women should wash their hands after handling keys to prevent possible exposures that would come from putting contaminated hands or fingers in or near their mouth after handling keys.

For free information on lead in keys which you can distribute to parents, visit www.childcarehealth.org.

Resources

Lead Poisoning Prevention Program of your local health department.

California Childhood Lead Poisoning Prevention Program at (510) 622-5000. www.dhs.ca.gov/childlead.

California Childcare Health Program at (800) 333-3212 (in California) or www.childcarehealth.org.

Citations

1. Child Care Lead Poisoning Prevention Training Curriculum; California Child Care Health Program, 1996.
2. Child Care Lead Poisoning Prevention Training Curriculum; California Child Care Health Program, 1996.
3. California Childhood Lead Poisoning Prevention Program Annual Blood Lead Reporting.
4. California Childhood Lead Poisoning Prevention Program Annual Blood Lead Reporting.
5. National Health and Nutrition Survey, Centers for Disease Control and Prevention.
6. Case definition for the California Childhood Lead Poisoning Prevention Program is as follows: 1 blood lead level above 20 ug/dl. or 2 blood lead levels above 15 ug/dl. one month apart.
7. US EPA Guidance Manual for Integrated Exposure Uptake Biokinetic Model for Lead in Children. EPA/540/R-93/081 (1994).
8. *People v. Ilco Unican Corp.*, Case No. 305765 (Super. Ct. S.F.), Decl. of Jeffery M. Paull, Dr.P.H., September 8, 2000. A copy of the study is available by calling the California Childcare Health Program at (800) 333-3212 or chp@childcarehealth.org.
9. Reed K.J., Jimenez M., Freeman N.C.G. and Liroy P.J.; Quantification of children’s hand and mouthing activities through a videotaping methodology. *J. Exp. Anal. Environ. Epid.* 9:513-520 (1999)

**California Childcare Health Program • 1322 Webster Street, Suite 402 • Oakland, CA 94612-3218
Telephone (510) 839-1195 • Fax (510) 839-0339 • Healthline 1-800-333-3212**