

High School

Lessons in Lead Curriculum



Provided by

The Los Angeles County
Department of Public Health
Childhood Lead Poisoning Prevention Program
1-800-LA-4-LEAD
www.lapublichealth.org/lead



The cover artwork comes from winners that participated in the 2008 Art Contest. They are Cindy Alvarenga and Sandra Ayala from Santana High School in Rowland Heights. We would like to thank all the students who participated in the contest and encourage future artists to be public health advocates against childhood lead poisoning.

Lessons in Lead
High School Grades 9-12



Acknowledgements

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Lindsey Velez Lastra, M.P.H. Intern
Deborah Reff, M.A., M.S.P.H., CHES, Health Education Manager

Lessons in Lead
High School Grades 9-12



Table of Contents

Acknowledgements

Table of Contents

Lead Poisoning Overview

Introduction 1
Goals and Objectives 1
What is Lead Poisoning? 1
What are the Effects of Lead Poisoning? 1
Symptoms 2
Who is at Risk of Lead Poisoning? 2
Sources of Lead Exposure for Los Angeles County 3
Lead Poisoning Prevention 4

Educational Program

Lesson Plan Outline 5-6
Lesson Plan Availability 6
Preparation 6
Lesson Plans
 The Baby’s Crib 7-15
 Lead Tainted Candies and Folk Remedies 17-29
 Let’s Get the Word Out 31-40

Resources

Resources Relevant to the Curriculum 41
Resources for Students and Parents 41

Appendix

Letter to Parents 44-45
Art Contest Participation Information 46
Order Form 47

References



Lead Poisoning Overview

Introduction

Childhood lead poisoning is a major, preventable, environmental health problem in the United States for children 1-6 years of age. Between 2002 and 2006, 3,842 children were identified with elevated blood lead levels (BLL \geq 10 $\mu\text{g/dL}$)* in Los Angeles County.

Goals and Objectives

Goals:

The goals of this curriculum will be to reduce the incidence of lead exposure in children through educational lessons taught in class and to inform teachers of the lead hotline.

Objectives:

- The students will be able to identify at least two sources of lead.
- The students will be able to identify at least two ways to prevent lead poisoning.
- Teachers will identify the lead hotline as an important phone number to get lead poison related information.

What is Lead Poisoning?

- Lead poisoning is a result of exposure to lead in the environment.
- Lead enters the body most commonly through ingestion (swallowing).
- Lead poisoning is especially dangerous for young children because their rapidly growing and developing bodies absorb more lead.
- Pregnant women who are exposed to lead can expose their unborn fetus because lead ingested by the mother can cross the placenta.

What are the Effects of Lead Poisoning?

- Lead interferes with the rapidly developing brain and other organs of young children.
- Studies have correlated lead in early childhood with poor academic achievement¹, juvenile delinquency^{2, 4} and elevated school dropout rate³.
- Multiple studies have indicated that even children with blood lead levels less than 10 micrograms per deciliter* show that their IQ drop 4-8 points^{1, 5, 6}.
- Very high levels of lead exposure can cause mental retardation, coma, convulsions and even death.

* The level identified by the CDC as a level of concern.



Lead Poisoning Overview

Symptoms

- Most children with lead poisoning do not look or act sick.
- If there are symptoms, they may include:
 - Irritability
 - Loss of appetite
 - Weight loss
 - Sluggishness
 - Abdominal pain
 - Vomiting
 - Constipation
 - Unusual paleness from anemia
 - Learning difficulties
- Though uncommon, the symptoms of severe lead poisoning include abdominal pains, headaches, vomiting, confusion, muscle weakness, seizures, hair loss and anemia.

A blood lead test is the only way to know if a child has lead poisoning.

Who is at Risk of Lead Poisoning?

- Children's bodies absorb more lead than adults do.
- Very young children tend to put their hands or other objects into their mouths, which may be contaminated with lead dust.
- Children living at or below the poverty line who live in older housing.
- Adults living in or surrounded by an environment containing lead-based products are at risk of exposure.
- Pregnant women must take extra precautions because lead can damage the developing baby.
- Pregnant women who ingest non-food items like dirt, pottery, etc. because of a compulsion or craving (Pica Behavior).



Lead Poisoning Overview

Sources of Lead Exposure for Los Angeles County

- **Most Common Source**

The most common source of lead exposure in Los Angeles County for children is lead-based paint.

- o Children can become poisoned from lead-based paint when the home or school they live in or spend time in:
 - Was built before 1978
 - The paint is deteriorating
 - The home is being remodeled

- **Second Most Common Source**

Is take home exposure. Lead is exposed at the job to the worker, their clothes and shoes, which is then brought home.

- o The work may involve:
 - Painting, radiator repair, battery manufacturer, foundry work, pottery/ceramics manufacturer, scrap metal recycling, firearm shooting, etc.

- **Third Most Common Source**

Is lead dust. It can be from within the home or outside. Lead dust can come from deteriorating lead paint and accumulates in and around the home. It can settle on toys, soil, places where children play, which get on the fingers and then are put in their mouths.

- **Fourth Most Common Source**

Soil contaminated from leaded gasoline, lead dust or lead-based paint.

Folk Remedies. Traditional or folk remedies including Azarcon and Greta, which are used for upset stomach or indigestion; Pay-loo-ah, which is used for rash or fever.

- **Other Sources**

Hobby. Like glass staining

Pottery. Handmade ceramic tableware, especially imported ceramics decorated with lead-based glaze or paint.

Other. Imported candies, spices, mini-blinds, toys, jewelry, or other non-traditional sources of lead.

Water. Lead is found in low-levels in some drinking water because lead-based solder on water pipes may add lead to water.



Lead Poisoning Overview

Lead Poisoning Prevention

Simple Steps Can Be Taken

- Washing children's hands and face often.
- A blood lead test is the only way to know if a child has lead poisoning.
- Wet mopping and wet wiping, floors and windowsills in order to clean up lead dust or lead-based paint chips in homes built before 1978 with deteriorating paint.
- Covering bare dirt with grass, wood chips or cement.
- Wiping feet before entering home.
- Keep non-food items out of children's mouths.
- Do not ingest non-food items like dirt, pottery, etc. (Pica Behavior).

Nutrition Is Very Important

- Children who eat foods that are high in iron, calcium, vitamin C and low in fat are less likely to absorb lead.
- Each day kids need:
 - 3 to 4 servings of foods high in iron
 - 3 to 4 servings of foods high in vitamin C
 - 3 to 4 servings of foods high in calcium
- Some of these foods can be:
 - Turkey Sandwich
 - Chicken
 - Peanut Butter
 - Yogurt
 - Strawberries
 - Broccoli
 - Cheese
 - Leafy Greens

For additional information please contact CLPPP at **1-800-LA-4-LEAD (1-800-524-5323)**.



Educational Program

Lesson Plan Outline

The following summarizes the three lesson plans included in this curriculum:

Lesson 1: The Baby's Crib

Goal: The lessons will increase the student's awareness of childhood lead poisoning prevention.

Objectives: 1) As a result of this activity, the student will be able to identify at least three common ways they can be exposed to lead.
2) The student will be able to identify at least three preventive measures that can be taken for lead safe work practices.

Content:

Teacher instructions
The Baby's Crib story
Prenatal Exposure To Lead information sheet
Lead Poisoning Overview
Student Worksheet

Evaluation: Found under Assessment on page 8.

Lesson 2: Lead Tainted Candies and Folk Remedies

Goal: The lessons will increase the student's awareness of childhood lead poisoning prevention.

Objectives: 1) As a result of this activity, the student will be able to identify at least two sources of lead poisoning that could be found in the home.
2) Based on reviewing a case study the student will complete a patient case history.

Content:

Teacher instructions
Student Handout #1 (Lead Tainted Candies & Folk Remedies)
Student Handout #2 (Patient Case History Sheet)
Student Handout #3 (Blood Lead Levels-What Do They Mean)
Student Handout #4 (Lead Poisoning Overview)
Student Handout #5 (Traditional Remedies)
Case Study cards

Evaluation: Found under Assessment on page 18.



Educational Program

Lesson 3: Let's Get the Word Out

Goal: The lessons will increase the student's awareness of childhood lead poisoning prevention.

Objectives: 1) As a result of this activity, the student will be able to identify at least two sources of lead poisoning that could be found in the home.
2) Students will be able to develop a sample component of a media campaign.

Content:

Teacher instructions
Student Handout #1 (Lead Tainted Candies & Folk Remedies)
Student Handout #2 (Questions)
Student Handout #3 (Let's Get the Word Out Instructions)
Student Handout #4 (Traditional Remedies)
Student Handout #5 (Blood Lead Level Chart)
Student Handout #6 (Sources of Lead Exposure in Los Angeles County)
Sample News Release

Evaluation: Found under Assessment on page 32.

Lesson Plan Availability

We have lesson plans for grades:

- I. Preschool through Kindergarten
- II. Elementary
- III. High School

If you would like a curriculum for a different grade, please contact the Childhood Lead Poisoning Prevention Program at **1-800-LA-4-LEAD (1-800-524-5323)**.

Preparation

It is recommended that the instructor read through the included lead poisoning overview on pages 1-4. If further information is desired please refer to the Resources Section or call **1-800-LA-4-LEAD (1-800-524-5323)**.



The Baby's Crib

Objectives

- ◆ As a result of this activity, the student will be able to identify at least three common ways they can be exposed to lead.
- ◆ The student will be able to identify at least three preventive measures that can be taken for lead safe work practices.

Activity Description

After a very preliminary introduction to the topic of lead and prenatal exposure, students will be given the story of *The Baby's Crib*, where a mother, Denise, and her sister, Amanda, unknowingly engage in risky activities relative to lead exposure. Students will read the story and the information sheets. Following that, they will complete a reaction analysis sheet and prepare for group discussion on levels of risk and opportunities for preventive measures that could have been taken.

Materials Needed:

- The story of "The Baby's Crib" on pages 9-10 (copy for each student)
- Prenatal Exposure to Lead information sheet on page 11 (copy for each student)
- Lead Poisoning Overview on pages 12-13 (copy for each student)
- Reducing the Risk of Harm worksheet on page 14 (copy for each student)

Action Steps for Activity

1. Prior to conducting activity with students, instructor should review 'Lead Poisoning Overview' in curriculum on pages 1-4 to become familiar with lead poisoning sources.
2. Introduce the topic of lead. You can share the additional information below:
 - Between 2002 and 2006, 3,842 children were identified with elevated blood lead levels (BLL ≥ 10 $\mu\text{g/dL}$)* in Los Angeles County.
 - Lead is commonly found in lead-based paints found in homes built before 1978, lead dust, soil, take home exposure and other sources.
 - There are three methods that lead can enter the body of an adult, child or fetus, they are:
 - o Ingestion
 - o Inhalation
 - o Passing lead through the placenta to the fetus
 - Nutrition is very important. A person who eats foods that are high in iron, calcium, vitamin C and low in fat are less likely to absorb lead.

* The level identified by the CDC as a level of concern.



The Baby's Crib

3. Explain to students that they are about to read a fictional story of two young women who redecorate a crib. Then they will be given a lead fact information sheet, lead poisoning overview sheets and asked to analyze the decisions of the young women in light of the new information they read. Finally, they will identify risks and preventive measures to be taken in the same situation.
4. Distribute “The Baby’s Crib” story (pages 9-10), Lead Information Sheet (page 11), Lead Poisoning Overview (pages 12-13) and Worksheet (page 14). Allow time for students to read and complete the Reducing Risk of Harm worksheet on page 14.
5. Discuss and compare answers as a group.

Please remind students to take the Information sheet home so they may have the 800 number to call if they have questions.

Assessment

Upon completing the activity:

1. Analysis of individual student answers on worksheets. The answers provided by the students can vary from those given on the Answer Sheet on page 15. Teachers should judge according to the information from the overview on pages 1-4 and the Information Sheet on page 11.
2. Individual student responses in class.

For additional information please contact Childhood Lead Poisoning Prevention Program for informational handouts, ie “Simple Steps to Protect Your Child From Lead”. The hotline number is 1-800-LA-4-LEAD (524-5323)

The Baby's Crib

Directions: Read the following story about two young woman who redecorate a crib and are exposed to lead. Then compare the events of that story with the lead information sheet and assess risks that the women took regarding themselves, the newborn and preventive measures. (There are 8 risks and prevention steps)

Denise had her baby a month ago. She had done many things around her house to prepare for the baby but there were still lots to do. On this Saturday morning, one project was to refinish the baby's crib with the help of her sister, Amanda.

The crib had old scratches and bite marks left from when Denise and Amanda were babies. This crib nevertheless had meaning and a history. The soft white paint and the multi-colored flower design on the headboard triggered memories for both of them of their childhood.

After Denise took the baby to her room away from the work, she and her sister started work in the baby's room. They opened the window in the bedroom where the crib was. They unpacked the paper bag from the hardware store containing the supplies they needed for the project—sand paper, primer paint, brushes, the soft green “lead-safe” enamel paint with which to recover the crib. Their father's old belt sander lay in the corner of the room, ready for

their use. This project would take a good part of the day, but they wanted to take the time to get it done right.

They began by taking turns at sanding the crib along the sideboards and spindles of the crib. The old paint was crumbly and didn't take a lot of energy to start falling away. Before long, there were paint chips and dust everywhere. They looked at each other knowing that they would have to thoroughly vacuum the carpet. Denise had actually worked up a sweat sanding the spindles and the sideboards. She decided they had earned a break and went downstairs to get a can of soda for each of them.

She came back with the soda cans and took a quick break with her sister as they drank a few gulps. They set the nearly-full cans on the window sill and went back to work.

As they got started the baby woke up from his nap and Denise left to care for him. Amanda continued since the work would be easier. She carefully wrapped the precut sandpaper around the belt of

The Baby's Crib

the electric sander, as their father had shown them to do years before. She smiled to herself. The belt sander was almost as old as the crib. She started sanding and noticed all the dust and particles from previous sanding projects. Amanda began at the top of the headboard and moved back and forth, stopping occasionally to feel the surface with her bare hand.

Denise had remembered to wash her hands before handling the baby. She didn't think they had done that much work so she didn't bother to change her clothes. It would be easier to keep her work clothes on since she would have to get back to help her sister.

Within the hour most of the sanding that needed to be done was done. Denise was heading back to the room where her sister was finishing with the sanding. The baby had fallen asleep so she was free again.

In spite of the window being open, a welcome cool-air breeze filling the room and her soda, Amanda found her eyes burning and her throat very dry,

almost gagging from the dust. She felt a little nauseous and decided to leave the room to clear her head. She sat down in the hallway at the top of the stairs and took a deep breath. She noticed her hands. The sanding work had taken its toll on them. Fingers and nails were filled with chalky, dry dust. It was in her hair and on her face as well.

Within an hour a phone call had been made to their brother who was available to help. An hour before dinner they were ready to apply the soft green finishing paint on the crib. Then it was cleanup, sweep and vacuum and finally, rest.

They were happy to be done and were proud of the work they did. They thought that they had done everything right. ♦

Prenatal Exposure to Lead

What is Lead?

Lead is a blue-gray metal naturally found in the earth. It has been used for thousands of years in many consumer products. It was used in paint to increase durability, to improve the taste of food, as tableware and many other ways by early man. However they were unaware that it was highly toxic if eaten or inhaled.

Lead stays in the body for a long time once it has been absorbed through ingestion or inhalation. This is especially the case with children and unborn fetuses.

Young children are more likely to be exposed to lead because of their hand-to-mouth activity and their tendency to play in dust and dirt. Fallen paint chips or deteriorated paint can represent interesting colors and textures for children, as well as provide a sweet, interesting taste.

Lead in the Body

The body has no use for lead. Long-term exposure to low doses and short-term exposure to high doses can create serious health effects. Lead is particularly harmful when it is airborne through dust and particles.

What happens when you are exposed to lead?

If someone is lead poisoned there may be no obvious symptoms. However if there are symptoms they may include: anemia, loss of appetite, irritability, headache and stomach ache. Learning and health problems in children are common consequences of lead poisoning. Older children and adults can experience high blood pressure, kidney damage and damaged reproductive organs because of lead.

Lead and Pregnancy

Prenatal exposure presents a special risk regarding lead. Lead passes through the placenta to the fetus. Also, one of the characteristics of lead is that it's deposited in the bone. Calcium

and iron help to block depositing of lead into the bone. By having a healthy diet, women are able to reduce the retention of lead in their bodies. During pregnancy, a woman should always discuss her nutrition needs with her physician.

Working properly with lead based products

Certain products, especially paints and toys, are labeled "lead-safe." Lead-safe denotes that there is still some level of lead in the product but it does not exceed approved levels. "Lead-safe" labeling does not mean "safe" to us. "Lead-free" should always be preferred over "lead-safe" products for use around children especially art products.

One way to minimize the airborne distribution of lead dust is to wet wipe or mop areas that may have lead contaminated dust. If any remodeling is being done to the home that was built before 1978, ensure that the area is sealed off by covering entryways with thick plastic sheeting. Cover floors and furniture as well. Protect your eyes with safety goggles; use disposable suits, shoe covers and gloves. Wear a mask that will filter out lead particles. Do not eat, drink or smoke in the work area. Wash your hands and face every time you stop working. The clothes used during the work should also be changed immediately after finishing and washed separately from the family laundry.

The same steps should be taken if refinishing old furniture. Once finished dispose of the debris properly, use damp soapy disposable mops/wipes and clean the entire work area.

For more information please call the Childhood Lead Poisoning Prevention Program at 1-800-LA-4-LEAD (1-800-524-5323) or visit our website at www.lapublichealth.org/lead.

Lead Poisoning Information

Sources of Lead Exposure for Los Angeles County

- **Most Common Source**

The most common source of lead exposure in Los Angeles County for children is lead-based paint.

- o Children can become poisoned from lead-based paint when the home or school they live in or spend time in:
 - Was built before 1978
 - The paint is deteriorating
 - The home is being remodeled

- **Second Most Common Source**

Is take home exposure. Lead is exposed at the job to the worker, their clothes and shoes, which is then brought home.

- o The work may involve:
 - Painting, radiator repair, battery manufacturer, foundry work, pottery/ceramics manufacturer, scrap metal recycling, firearm shooting, etc.

- **Third Most Common Source**

Is lead dust. It can be from within the home or outside. Lead dust can come from deteriorating lead paint and accumulates in and around the home. It can settle on toys, soil, places where children play, which get on the fingers and then are put in their mouths.

- **Fourth Most Common Source**

Soil contaminated from leaded gasoline, lead dust or lead-based paint.

Folk Remedies. Traditional or folk remedies including Azarcon and Greta, which are used for upset stomach or indigestion; Pay-loo-ah, which is used for rash or fever.

- **Other Sources**

Hobby. Like glass staining

Pottery. Handmade ceramic tableware, especially imported ceramics decorated with lead-based glaze or paint.

Other. Imported candies, spices, mini-blinds, toys, jewelry, or other non-traditional sources of lead.

Water. Lead is found in low-levels in some drinking water because lead-based solder on water pipes may add lead to water.

Lead Poisoning Information

Lead Poisoning Prevention

Simple Steps Can Be Taken

- Washing children's hands and face often.
- A blood lead test is the only way to know if a child has lead poisoning.
- Wet mopping and wet wiping, floors and windowsills in order to clean up lead dust or lead-based paint chips in homes built before 1978 with deteriorating paint.
- Covering bare dirt with grass, wood chips or cement.
- Wiping feet before entering home.
- Keep non-food items out of children's mouths.
- Do not ingest non-food items like dirt, pottery, etc. (Pica Behavior).

Nutrition Is Very Important

- Children who eat foods that are high in iron, calcium, vitamin C and low in fat are less likely to absorb lead.
- Each day kids need:
 - 3 to 4 servings of foods high in iron
 - 3 to 4 servings of foods high in vitamin C
 - 3 to 4 servings of foods high in calcium
- Some of these foods can be:
 - Turkey Sandwich
 - Chicken
 - Peanut Butter
 - Yogurt
 - Strawberries
 - Broccoli
 - Cheese
 - Leafy Greens

For additional information please contact CLPPP at **1-800-LA-4-LEAD (1-800-524-5323)**.

Reducing Risk of Harm

Directions: After reading the story, *The Baby's Crib*, list the exposure risks that the young women face. For each one, recommend risk reduction by identifying in your own words a specific prevention action Denise, Amanda or others in her situation might have taken to reduce the risk from lead exposure.

- 1) _____
Risk _____ Prevention Step _____
- 2) _____
Risk _____ Prevention Step _____
- 3) _____
Risk _____ Prevention Step _____
- 4) _____
Risk _____ Prevention Step _____
- 5) _____
Risk _____ Prevention Step _____
- 6) _____
Risk _____ Prevention Step _____
- 7) _____
Risk _____ Prevention Step _____
- 8) _____
Risk _____ Prevention Step _____

Your Name

ANSWER SHEET

Reducing Risk of Harm

Directions: After reading the story, *The Baby's Crib*, list the exposure risks that the young women face. For each one, recommend risk reduction by identifying in your own words a specific prevention action Denise, Amanda or others in her situation might have taken to reduce the risk from lead exposure.

Teachers have been given additional risk/prevention steps.

- | | |
|--|---|
| 1) <u>Antique furniture, old paint</u>
Risk | <u>refinish in garage or outside, cover the ground with plastic and wear mask.</u>
Preventive Step |
| 2) <u>Bare-handed work</u>
Risk | <u>wash hands often and use gloves</u>
Preventive Step |
| 3) <u>Dry sanding</u>
Risk | <u>use moisture to minimize dust and lead debris</u>
Preventive Step |
| 4) <u>Using an old electric sander</u>
Risk | <u>use of water; may need to sand by hand</u>
Preventive Step |
| 5) <u>Uncovered carpet and floor</u>
Risk | <u>use a plastic tarp or other floor covering</u>
Preventive Step |
| 6) <u>Drink, eat in room</u>
Risk | <u>keep food & beverage away from lead area; wash hands & change clothes</u>
Preventive Step |
| 7) <u>Opened window</u>
Risk | <u>close it— good for ventilating paint, risky if sanding old furniture</u>
Preventive Step |
| 8) <u>Opened Window</u>
Risk | <u>place plastic over it & doors to keep lead from flying</u>
Preventive Step |
| 9) <u>Working in normal clothes</u>
Risk | <u>changes clothes after working with lead; wash them separately from family's</u>
Preventive Step |
| 10) <u>Working in normal clothes</u>
Risk | <u>wear appropriate gear to work with lead</u>
Preventive Step |

Your Name

Left Blank Intentionally



Lead Tainted Candies & Folk Remedies

Objectives

- ◆ As a result of this activity, the student will be able to identify at least two sources of lead poisoning that could be found in the home.
- ◆ Based on reviewing a case study the student will complete a patient case history.

Activity Description

Students will read a short passage about imported candies and folk remedies that have been found to have high levels of lead. Students will work in groups to read case studies about people in the United States who were exposed to lead from various sources. They will then complete the case history for each person including recommended appropriate corrective action based on Student Handout #3 (Blood Lead Levels—What Do They Mean).

Materials Needed:

- Student Handout #1, “Lead Tainted Candies & Folk Remedies” on pages 19-20 (copy for each student)
- Student Handout #2, “Patient Case History Sheet” on page 21 (copy for each group)
- Student Handout #3, “Blood Lead Levels-What Do They Mean” on page 23 (copy for each group)
- Student Handout #4, “Lead Poisoning Overview” on pages 24-25 (copy for group)
- Student Handout #5, “Traditional Remedies” on page 26 (copy for each group)
- Case Study cards on pages 27-29 (copy for each group)

Action Steps for Activity

1. Prior to conducting activity with students, instructor should review ‘Lead Poisoning Overview’ in curriculum on pages 1-4 to become familiar with lead poisoning sources.
2. Introduce the topic of lead. You can share the additional information below:
 - Between 2002 and 2006, 3,842 children were identified with elevated blood lead levels (BLL ≥ 10 $\mu\text{g/dL}$)* in Los Angeles County.
 - Lead is commonly found in lead-based paints found in homes built before 1978, lead dust, soil, take home exposure and other sources.
 - There are three methods that lead can enter the body of an adult, child or fetus, they are:
 - o Ingestion
 - o Inhalation
 - o Passing lead through the placenta to the fetus
 - Nutrition is very important. A person who eats foods that are high in iron, calcium, vitamin C and low in fat are less likely to absorb lead.

* The level identified by the CDC as a level of concern.



Lead Tainted Candies & Folk Remedies

3. Distribute Student Handout #1 (to each student) on pages 19-20, “Lead Tainted Candies & Folk Remedies” as an introduction to this lesson.
4. Divide the students into four small groups and distribute one **Student handout #2** (*Patient Case History Sheet*), one **Student Handout #3** (*Blood Lead Levels-What Do They Mean*), **Student Handout #4**, (*Lead Poisoning Overview*), **Student Handout #5** (*Traditional Remedies*) and one **Case Study Card** per group.
5. Each group should read their assigned case study and Student Handout #3 (Blood Lead Levels) and use that information to fill out their case history sheet, as if they were the physician treating the person. Then each group should present their case study to the class including reporting on what the likely sources of lead were and what appropriate corrective action they recommend. Student Handout #4 (Lead Poisoning Overview) and Student Handout #5 (Traditional Remedies) are included as additional information. *An example case history sheet has been provided for the teacher’s use.*

Additional Resources

For additional resources please visit the following websites. You may also contact the Childhood Lead Poisoning Prevention Program at **1-800-LA-4-LEAD (1-800-524-5323)**.

- Los Angeles County Department of Public Health, Childhood Lead Poisoning Prevention Program
<http://lapublichealth.org/lead/>
- Centers for Disease Control and Prevention, Lead Poisoning Prevention Program
<http://cdc.gov/nceh/lead/>

Assessment

Upon completing the activity:

1. Determine if the student groups correctly evaluated one Case Study Card and completed one Patient Case History Sheet.
2. Evaluate if the students made effective group presentations about their case study.

For additional information please contact Childhood Lead Poisoning Prevention Program for informational handouts, ie “Simple Steps to Protect Your Child From Lead”. The hotline number is 1-800-LA-4-LEAD (524-5323)

Lead Tainted Candies & Folk Remedies

Lead Tainted Candies

Imported candies—which can include sweet and spicy lollipops, powders, jellies, wafers, rolls, suckers and chewing gum—are brought into the United States and sold in supermarkets, candy stores and on ice cream trucks. Many of these brightly wrapped sweets are actually unsafe treats. Children in the United States have suffered from lead poisoning traced to eating certain types of imported candy. Some candies contain enough lead that a child could exceed the daily allowable lead limit of 6 micrograms by eating just one piece of candy. These candies can become contaminated with lead from several different sources, including the ingredients, wrappers and/or containers.

Many popular imported candies contain spicy chili powder or sticky **tamarind** pulp. When chili peppers are processed, they are harvested from the field, dried and ground up into powder. The peppers may not be cleaned before drying, so soil, fertilizers and pesticides (all of which may contain lead) that are stuck to the peppers get ground up into the chili powder. Likewise, these contaminants also stick to tamarind pods and may not be removed during processing.



Tamarind: A bean like fruit from the Tamarind tree, often made into candies in Mexico.

While some of the ingredients can be contaminated, the wrappers can also be tainted with lead. Some candy wrappers and lollipop sticks are printed with ink that contains lead. The ink on the wrapper can be transferred onto the sticky candy and ingested by children when they touch, lick and chew the wrappers and sticks.



Some imported candies are packaged in tiny handmade clay pots. In order to make the pots shiny, a pottery glaze is applied to them. Many of these pots are made with a traditional glaze called *greta* that contains lead. The lead in the glaze can then get into the sticky candy jelly. The candy is made from a spicy-sweet mixture of tamarind pulp and chili powder. Imported candy in handmade pots has three possible sources of lead contamination: the glaze, the tamarind pulp, and the chili powder. Due to the many ways lead can get into imported candy, State and Federal governments work to prevent this danger from poisoning consumers.

Candies that are manufactured outside the United States may not meet the same food safety laws that candies manufactured within the country must meet. When imported candies are brought into the United States, a branch of the government inspects these candies. However, due to the limited resources, not everything that crosses the borders is inspected. Candies are often brought over the border in suitcases and car trunks to be shared with family members. This makes the challenge of regulating the flow of imported candies into the U.S. even more difficult.

The California Department of Public Health, Food and Drug Branch tests imported candies to ensure that none contain more than 0.1 ppm (parts per million) of lead. In 2005 new legislation was passed that gave the department legal right to regulate lead in chili, tamarind and other candy. The majority of candies tested by the Food and Drug Branch (FDB) have been from Mexico due to the history of lead contamination with those candies. However, other imported candies will also be tested if suspected of containing lead or upon request. When a candy is

Lead Tainted Candies & Folk Remedies

tested and found to have lead levels higher than the allowable amount, the Food and Drug Branch issues a health advisory. The department then works to remove the item or items from retail sale. Individual markets or retailers who purchase these candies from legal distributors are notified of the recall. However, when the candy is obtained through other means (i.e., illegally brought in from across the border), the retailer may not be aware of the recall. Additionally the local enforcement agencies may not be aware of the locations selling the candy. Besides recalling the candy, the FDB also works with the candy manufacturers by giving them the opportunity to change their manufacturing processes so that they can sell safe candy.

Dangerous Cures

Folk remedies, also known as home remedies, are used to help treat a sickness or injury. You probably know of many folk remedies that your own family uses. For example, have you ever eaten chicken soup for a cold, gargled with salt water for a sore throat, or drank ginger ale or mint tea for a stomach ache? Folk remedies tend to be passed down through generations and many have their origins in other cultures. Some folk remedies have been proven to work, while others are ineffective. Some folk remedies can even be harmful since they include dangerous ingredients, like lead. Some ancient folk remedies seem silly nowadays, such as treatments used by the Ancient Romans for lead poisoning. Ancient Roman physicians had some strange prescriptions for the stomach aches and cramps that went along with lead poisoning. For example, they might have the patient get a puppy to lie across his or her stomach. The thinking was that because dogs are such empathetic creatures, they would take the patient's pain onto themselves. Another remedy involved placing buttered toast onto a sore stomach.

Folk Remedy: Any method of treating injury or illness that is passed down through tradition and is related to a specific region or culture.

Folk remedies can be found all over the world in many communities. In the Hispanic community two dangerous folk remedies come from Mexico and are used for stomach ache treatments. These powdered medicines, known as *Greta* and *Azarcon*, are mixed with water and then swallowed (ingested). Both remedies can contain up to 99% lead. Oftentimes, Hispanic families will bring these Mexican remedies with them to the U.S. In the Asian Indian community some of their folk remedies have also been found to have high lead levels. These include *Bala Goli* a round bean dissolved in "gripe water" and used for stomach aches or *Sindoor food coloring*, used as a food spice.

For other sources of lead poisoning please see Student Handout #4, Lead Poisoning Overview—Sources on page number 24.

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California Department of Public Health Food and Drug Branch. May 19, 2008.

<http://www.dhs.ca.gov/fdb/>

Patient Case History Sheet

Using the case study given to your group along with the Blood Lead Levels-What Do They Mean, Traditional Remedies and Lead Poisoning Overview handouts please complete this worksheet.

Case Study # _____

Date: _____

Sex: _____ **Age:** _____

BLL Lab Results: _____

Diagnosis and Severity:

Possible PATHWAYS and SOURCES OF LEAD EXPOSURE :

- **Inhalation:**

- **Ingestion:**

- **Absorption through Skin:**

- **Other Pathways:**

Recommended Treatment from Handout #3 (*Blood Lead Levels-What Do They Mean*):

Recommended Follow-up with Family:

Patient Case History Sheet

Case Study # 1

Date: *March 1999*

Sex: *Male* **Age:** *4 years old*

BLL Lab Results: *88.0 µg/dL*

Diagnosis and Severity: *Lead poisoning, medical emergency*

Possible PATHWAYS and SOURCES OF LEAD EXPOSURE :

- **Inhalation:**

– Dust on miniblinds in child’s home tested positive for lead, possibly could have inhaled dust.

- **Ingestion:**

Greta powder given as a folk remedy, tested at 770,000 ppm (or 77%). Imported Mexican candies, wrapper tested at 16,000 ppm (or 1.6%). Lead could have absorbed into candy or child could have licked wrapper.

- **Absorption through Skin:**

No apparent risk

- **Other Pathways:**

No apparent risk

Recommended Treatment:

Because of his high BLL, José needs immediate medical therapy. He should be hospitalized and begin treatment immediately. Serious mental or nervous system damage can result from such a high BLL.

Recommended Follow-up with Family:

Family needs to be counseled to abstain from using greta powder as a home remedy. Instead, suggest safer, effective over-the-counter medications for stomachaches. Parents can call the hotline at 1-800-LA-4-LEAD or look for information on the Childhood Lead Poisoning Prevention Program website for recalled imported candy. Dispose of the candy properly so that no other children can eat it. Family can consider replacing miniblinds with PVC-free blinds, but this is of less concern. Other family members who may have eaten candy or ingested greta powder may need to be tested for lead poisoning. The child needs to return to the doctor and get tested until the doctor says it is no longer needed.

Blood Lead Levels—What Do They Mean

What Should I Do If My Child Has An Elevated Blood Lead Level?

If your child's initial (first) blood lead level is between 5-9 µg/dL

- Talk to your doctor and request a health assessment exam for lead exposure and nutrition.
- Look for lead hazards around your home.
- Be sure to request that your doctor test your child at age 1 and age 2.

If your child's initial blood lead level is between 10-14 µg/dL

- Your child will need another blood lead test in 3 months.
- Talk to your doctor about a health assessment exam and nutritional counseling.
- Look for lead hazards around your home.

If your child's initial blood lead level is between 15-24 µg/dL

- Your child will need another blood lead test in 30 days.
- Talk with your doctor about a health assessment exam and nutritional counseling.
- Look for lead hazards around your home.
- A public health nurse may contact you by phone or may make a visit to your home, if your child has two consecutive blood lead levels greater or equal to 15 µg/dL

If your child's initial blood lead level is between 25-44 µg/dL

- Your child will need another blood lead test in one week.
- Immediately, make an appointment with your doctor to confirm your child's blood lead level.
- Your child will need a full medical check-up for lead exposure and nutritional counseling.
- Talk with your doctor about a health assessment exam and nutritional counseling.
- A public health nurse will make a visit to your home.

If your child's initial blood lead level is above 45µg/dL

- A public health nurse (PHN) and environmental health inspector (EHI) will make a visit to your home.
- Another blood lead test is needed according to the schedule below:
 - * 45-59 µg/dL, within 48 hours
 - * 60-69 µg/dL, within 24 hours
 - * Above 70 µg/dL, immediately (medical emergency). Depending on the blood lead level above, your child may need to be hospitalized.
- Follow your doctor's recommendations for re-testing and diet. Keep your doctor appointments.

For more information call the Los Angeles County Childhood Lead Poisoning Prevention Program, Case Management Unit at (323) 869-7195



Lead Poisoning Information

Sources of Lead Exposure for Los Angeles County

- **Most Common Source**

The most common source of lead exposure in Los Angeles County for children is lead-based paint.

- o Children can become poisoned from lead-based paint when the home or school they live in or spend time in:
 - Was built before 1978
 - The paint is deteriorating
 - The home is being remodeled

- **Second Most Common Source**

Is take home exposure. Lead is exposed at the job to the worker, their clothes and shoes, which is then brought home.

- o The work may involve:
 - Painting, radiator repair, battery manufacturer, foundry work, pottery/ceramics manufacturer, scrap metal recycling, firearm shooting, etc.

- **Third Most Common Source**

Is lead dust. It can be from within the home or outside. Lead dust can come from deteriorating lead paint and accumulates in and around the home. It can settle on toys, soil, places where children play, which get on the fingers and then are put in their mouths.

- **Fourth Most Common Source**

Soil contaminated from leaded gasoline, lead dust or lead-based paint.

Folk Remedies. Traditional or folk remedies including Azarcon and Greta, which are used for upset stomach or indigestion; Pay-loo-ah, which is used for rash or fever.

- **Other Sources**

Hobby. Like glass staining

Pottery. Handmade ceramic tableware, especially imported ceramics decorated with lead-based glaze or paint.

Other. Imported candies, spices, mini-blinds, toys, jewelry, or other non-traditional sources of lead.

Water. Lead is found in low-levels in some drinking water because lead-based solder on water pipes may add lead to water.

Lead Poisoning Information

Lead Poisoning Prevention

Simple Steps Can Be Taken

- Washing children's hands and face often.
- A blood lead test is the only way to know if a child has lead poisoning.
- Wet mopping and wet wiping, floors and windowsills in order to clean up lead dust or lead-based paint chips in homes built before 1978 with deteriorating paint.
- Covering bare dirt with grass, wood chips or cement.
- Wiping feet before entering home.
- Keep non-food items out of children's mouths.
- Do not ingest non-food items like dirt, pottery, etc. (Pica Behavior).

Nutrition Is Very Important

- Children who eat foods that are high in iron, calcium, vitamin C and low in fat are less likely to absorb lead.
- Each day kids need:
 - 3 to 4 servings of foods high in iron
 - 3 to 4 servings of foods high in vitamin C
 - 3 to 4 servings of foods high in calcium
- Some of these foods can be:
 - Turkey Sandwich
 - Chicken
 - Peanut Butter
 - Yogurt
 - Strawberries
 - Broccoli
 - Cheese
 - Leafy Greens

For additional information please contact CLPPP at **1-800-LA-4-LEAD (1-800-524-5323)**.

**Los Angeles County Childhood Lead Poisoning Prevention Program
1-800-LA-4-LEAD
www.lapublichealth.org/lead**

TRADITIONAL REMEDIES AND OTHER PRODUCTS REPORTED TO CONTAIN LEAD

NAME	REGION OF ORGIN	LEAD LEVEL	CLAIMED MEDICINAL USE
Albayalde or Albayaidle (white powder)	Mexico and Central America	93%	Empacho (vomiting, colic), apathy and lethargy
Alarcon, Azarcon, Coral Luiga, Maria Luisa, Rueda (red orange powder)	Mexico	95%	Empacho (see above)
Alkohl	Middle East	85%	Topical medical preparation: applied to umbilical stump
Al Murrah	Saudi Arabia	Unknown	Colic, stomach aches, diarrhea
Anzroot	Middle East	Unknown	Gastroenteritis
Ba Bow Sen	China	1000 mg/g	Hyperactivity and nightmares in fever for children
Bali goli	Asia/India	Unknown	Stomach ache
Bint al dahab, bint or bent dahab	Oman, Saudi Arabia, India	98%	Diarrhea, colic, constipation, and general neonatal use
Bokhoor (and noqd)	Saudi Arabia	Unknown	Wood and lead sulfide burned on charcoal to produce pleasant fumes and calm infants
Cebagin	Middle East	51%	Teething powder
Chuifong Tokuan	Asia	Unknown	Arthritis for adults
Cordyceps	China	414-20,000 ug/g	Herbal medicine treatment for hypertension, diabetes, bleeding
Deshi Dewa	Asia, India	12%	Fertility pill
Farouk	Saudi Arabia	Unknown	Teething powder
Ghasard (brown powder)	India	2%	Given as a tonic
Greta (yellow powder)	Mexico	95%	Empacho
Gripe Water	India	Unknown	Given to children to treat colic
Hai Ge Fen	Unknown	Unknown	Unknown
Henna	Middle East	Unknown	Hair and skin dye
Herbal Medicines (eg Poying Tan)	China	7.5 mg per dose	General
Kandu (red powder)	Asia/India	Unknown	Stomach ache
Kohl, Surma or Saott	Africa, Asia, India, Pakistan, Middle East	Up to 86%	Cosmetic; astringent for eye injuries and umbilical stump, teething powder
Kushta	India/Pakistan	73%	Diseases of the heart, brain, liver, and stomach. Aphrodisiac, tonic
Pay-loo-ah	Lao (Hmong)	90%	High fever, rash
Santrinj	Saudi Arabia	Unknown	Teething powder
Unknown (Ayurvedic)	India, Pakistan, Sri Lanka, Burma, Bhutan, Mongolia, Tibet	1.35-72,990 ug/g per capsule, 3%	Metal-mineral tonic, slows development
Sumac (purple powder)	Middle East, Armenia, Russia	Unknown	Food seasoning

Lead Poisoning Case Study #1

In March 1999, two Hispanic children residing in Stanislaus County in the Central Valley, a boy aged 4 years and his sister aged 6 years, were identified during routine screening by California's Child Health and Disability Prevention (CHDP) Program. The boy had a Blood Lead Level (BLL) of 88.0 $\mu\text{g}/\text{dL}$ and the girl a BLL of 69.0 $\mu\text{g}/\text{dL}$. Both children underwent chelation therapy. Their parents had not traveled recently outside the United States but had used greta, a Mexican folk remedy (taken commonly for stomachache or intestinal illness) that usually contains high levels of lead. No pottery in the home tested positive for lead, and tests on paint and dust from their home did not indicate high lead levels. Greta powder collected from the family's home was 95% lead. Imported candies containing chili-powder, which were identified later to be contaminated with lead, were found in the home.

Terms Defined

- **Blood Lead Level (BLL):** The amount of lead found in the blood
- **μg :** micro-gram
- **dL:** deci-liter
- **Chelation Therapy:** Treatment given to individuals to remove heavy metals from the body like lead.



Lead Poisoning Case Study #2

In June 2000, a two year old Hispanic girl was brought to see a doctor. The physician recognized the symptoms of lead poisoning and tested her blood lead level. The girl, a resident of Washington State had a blood lead level of 124 $\mu\text{g}/\text{dL}$. This blood lead level was the highest seen in the State in seven years. The girl's family had recently moved from Mexico to the United States. The girl's family told her physician that they had given her *Greta*, a traditional Mexican folk remedy as a treatment for stomachaches. The state public health laboratory tested a sample of the remedy and found that it contained nearly 80% lead. The family had purchased the medicine in Mexico and brought it with them. It is not known if the girl's family used imported pottery. An environmental investigation (which consisted testing samples of paint, dust, soil and water) of their apartment did not find high lead levels. It is not known if the girl ate imported candies.

Terms Defined

- **Blood Lead Level (BLL):** The amount of lead found in the blood
- **μg :** micro-gram
- **dL:** deci-liter

Lead Poisoning Case Study #3

In September 2005 a 14 year old female visited her doctor with complaints of dizziness, back ache and that she couldn't keep her balance. She visited her doctor a few times with the same complaints and was finally told she had psychological problems. Her mother did not believe the girl had psychological problems as she was a calm student who was active in school. The mother told the doctor that she had seen the girl eating dirt and wondered if that had anything to do with her complaints. Later that year the family took a trip to San Diego where the girl got sick and had to be taken to see a doctor. This doctor was told of the patient's history by the mother. The doctor immediately asked for a Blood Lead test to be given to the girl and found a BLL of $33\mu\text{g}/\text{dL}$. She was placed on chelation therapy for 19 days. Her BLL was brought down until August 2007 when they found her level had increased to $32\mu\text{g}/\text{dL}$. Her doctor placed her on chelation therapy once again. Her home was investigated for lead sources but the only sources found were the imported candies she would buy from the street seller. Her BLL is currently $12.9\mu\text{g}/\text{dL}$.

Terms Defined

- **Blood Lead Level (BLL):** The amount of lead found in the blood
- **μg :** micro-gram
- **dL:** deci-liter
- **Chelation Therapy:** Treatment given to individuals to remove heavy metals from the body like lead.

Lead Poisoning Case Study #4

In June 2006 a 27 year old pregnant women started receiving prenatal care in her fifth month of pregnancy after thinking she did not need any medical attention. She visited the doctor on this occasion because she was having stomachaches and vomiting. She was given something for the stomachaches and told to return for her prenatal sessions. She returned 4 more times and at her 8th month of pregnancy she returned to the hospital because she was finding blood in her vomit. They admitted her immediately after her blood pressure shot up and a few hours later her baby was born. The doctors noticed that the baby was restless and turned blue after having shortness of breathe. The woman was asked about her diet and she told the staff that she had been eating three Casuelitas de Tamarindo a day (Tamarind candy sold in mini clay pots) and chewing on the pottery. They immediately tested the baby and found he had a BLL of 121 $\mu\text{g}/\text{dL}$. He was placed on chelation therapy. Her BLL was at 96.7 $\mu\text{g}/\text{dL}$ and she was chelated as well. Told that the cause of the baby's sickness, her stomachache and vomit during pregnancy were all due to the candy, the mother did not agree. She could not understand how candy could cause such damage. The baby has been chelated at least two times since he was born and his current BLL is 13 $\mu\text{g}/\text{dL}$. The mother has not returned for her Blood Lead tests therefore her information is not current.

Terms Defined

- **Blood Lead Level (BLL):** The amount of lead found in the blood
- **μg :** micro-gram
- **dL:** deci-liter
- **Chelation Therapy:** Treatment given to individuals to remove heavy metals from the body like lead.

Case studies adapted from:

“Childhood Lead Poisoning Associated with Tamarind Candy and Folk Remedies: California 1999-2000”, *MMWR Weekly*, August 9, 2002, 51(3); 684-686.

“State Department of Health Warns About Dangerous Mexican Folk Remedies”, Washington State Department of Health News Release, (June 15, 2000).

Los Angeles County, Childhood Lead Poisoning Prevention Program, Case Management cases September 2005 and June 2006.

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Let's Get The Word Out

Objectives

- ◆ As a result of this activity, the student will be able to identify at least two sources of lead poisoning that could be found in the home.
- ◆ Students will be able to develop a sample component of a media campaign.

Activity Description

Students will read a short passage about imported candies and folk remedies that have been found to have high levels of lead. Students will work in groups to create a component of a media campaign aimed at educating their community about the potential danger of these items.

Materials Needed:

- Student Handout #1 (Lead Tainted Candies & Folk Remedies) on pages 33-34 (copy for each student)
- Student Handout #2 (Questions) on page 35 (copy for each group)
- Student Handout #3 (Let's Get the Word Out Instructions) on page 36 (copy for each group)
- Student Handout #4 (Traditional Remedies) on page 37 (copy for each group)
- Student Handout #5 (Blood Lead Level Chart) on page 38 (copy for each group)
- Student Handout #6 (Sources of Lead Exposure) on page 39 (copy for each group)
- Sample News Release on page 40 (*Optional*: copy for each group)
- Poster paper (one for each group)
- Markers, crayons or color pencils (for each group)

Action Steps for Activity

1. Prior to conducting activity with students, instructor should review 'Lead Poisoning Overview' in curriculum on pages 1-4 to become familiar with lead poisoning sources.
2. Contact the Childhood Lead Poisoning Prevention Program at **1-800-LA-4-LEAD (1-800-524-5323)** or visit the website at www.lapublichealth.org/lead and scroll down to 'News Releases' for the most current candy recalls.
3. Distribute Student Handout #1 on pages 33-34 to each student, "Lead Tainted Candies & Folk Remedies" as an introduction to this lesson.
4. Once the handout has been read by the students, the students should answer the questions on page 35, Student Handout #2. Students may be assessed by one of two ways: **a)** teachers handout and collect each individual students' answers and grade each or **b)** have students answer questions as a group.



Let's Get The Word Out

5. Divide the students into small groups and distribute one copy of each of the following: Student Handout #3, Student Handout #4, Student Handout #5 and Student Handout #6.
Optional: Students may be given the Sample News Release on page 40.
6. After having read the article, each group will work on their component by answering the questions on Student Handout #2. Each group should receive a poster paper which will be used to create a sample of their campaign to show the class in a presentation format.
7. Explain to the students that Student Handouts #4, #5 and #6 are to be used as informational resources. Student Handout #4 is given in order to become familiar with traditional/folk remedies that have been found to have high lead levels. Student Handout #5 is to be used so students understand what the different blood lead levels indicate when a child is tested. Student Handout #6 is information about the common sources of lead exposure in Los Angeles County. *If the News Release is distributed to students it can be used as a guide.*
8. Student's presentation should take no more than five minutes.

Additional Resources

For help with developing a media campaign component you may visit the following website:

Government Website—CDC (go the Educators/Parents link on the left)
<http://www.cdc.gov/ToolsResources/>

Assessment

Upon completing the activity:

1. Have the students answer the questions on page 35 and the number of correct responses will assess the student's level of understanding.
2. Evaluate the student groups' presentations by determining if they answered each question appropriately.
3. Evaluate if the students made effective group presentations.

For additional information please contact Childhood Lead Poisoning Prevention Program for informational handouts, ie "Simple Steps to Protect Your Child From Lead". The hotline number is 1-800-LA-4-LEAD (524-5323)

Lead Tainted Candies & Folk Remedies

Lead Tainted Candies

Imported candies—which can include sweet and spicy lollipops, powders, jellies, wafers, rolls, suckers and chewing gum—are brought into the United States and sold in supermarkets, candy stores and on ice cream trucks. Many of these brightly wrapped sweets are actually unsafe treats. Children in the United States have suffered from lead poisoning traced to eating certain types of imported candy. Some candies contain enough lead that a child could exceed the daily allowable lead limit of 6 micrograms by eating just one piece of candy. These candies can become contaminated with lead from several different sources, including the ingredients, wrappers and/or containers.

Many popular imported candies contain spicy chili powder or sticky **tamarind** pulp. When chili peppers are processed, they are harvested from the field, dried and ground up into powder. The peppers may not be cleaned before drying, so soil, fertilizers and pesticides (all of which may contain lead) that are stuck to the peppers get ground up into the chili powder. Likewise, these contaminants also stick to tamarind pods and may not be removed during processing.



Tamarind: A bean like fruit from the Tamarind tree, often made into candies in Mexico.

While some of the ingredients can be contaminated, the wrappers can also be tainted with lead. Some candy wrappers and lollipop sticks are printed with ink that contains lead. The ink on the wrapper can be transferred onto the sticky candy and ingested by children when they touch, lick and chew the wrappers and sticks.



Some imported candies are packaged in tiny handmade clay pots. In order to make the pots shiny, a pottery glaze is applied to them. Many of these pots are made with a traditional glaze called *greta* that contains lead. The lead in the glaze can then get into the sticky candy jelly. The candy is made from a spicy-sweet mixture of tamarind pulp and chili powder. Imported candy in handmade pots has three possible sources of lead contamination: the glaze, the tamarind pulp, and the chili powder. Due to the many ways lead can get into imported candy, State and Federal governments work to prevent this danger from poisoning consumers.

Candies that are manufactured outside the United States may not meet the same food safety laws that candies manufactured within the country must meet. When imported candies are brought into the United States, a branch of the government inspects these candies. However, due to the limited resources, not everything that crosses the borders is inspected. Candies are often brought over the border in suitcases and car trunks to be shared with family members. This makes the challenge of regulating the flow of imported candies into the U.S. even more difficult.

The California Department of Public Health, Food and Drug Branch tests imported candies to ensure that none contain more than 0.1 ppm (parts per million) of lead. In 2005 new legislation was passed that gave the department legal right to regulate lead in chili, tamarind and other candy. The majority of candies tested by the Food and Drug Branch (FDB) have been from Mexico due to the history of lead contamination with those candies. However, other imported candies will also be tested if suspected of containing lead or upon request. When a candy is

Lead Tainted Candies & Folk Remedies

tested and found to have lead levels higher than the allowable amount, the Food and Drug Branch issues a health advisory. The department then works to remove the item or items from retail sale. Individual markets or retailers who purchase these candies from legal distributors are notified of the recall. However, when the candy is obtained through other means (i.e., illegally brought in from across the border), the retailer may not be aware of the recall. Additionally the local enforcement agencies may not be aware of the locations selling the candy. Besides recalling the candy, the FDB also works with the candy manufacturers by giving them the opportunity to change their manufacturing processes so that they can sell safe candy.

Dangerous Cures

Folk remedies, also known as home remedies, are used to help treat a sickness or injury. You probably know of many folk remedies that your own family uses. For example, have you ever eaten chicken soup for a cold, gargled with salt water for a sore throat, or drank ginger ale or mint tea for a stomach ache? Folk remedies tend to be passed down through generations and many have their origins in other cultures. Some folk remedies have been proven to work, while others are ineffective. Some folk remedies can even be harmful since they include dangerous ingredients, like lead. Some ancient folk remedies seem silly nowadays, such as treatments used by the Ancient Romans for lead poisoning. Ancient Roman physicians had some strange prescriptions for the stomach aches and cramps that went along with lead poisoning. For example, they might have the patient get a puppy to lie across his or her stomach. The thinking was that because dogs are such empathetic creatures, they would take the patient's pain onto themselves. Another remedy involved placing buttered toast onto a sore stomach.

Folk Remedy: Any method of treating injury or illness that is passed down through tradition and is related to a specific region or culture.

Folk remedies can be found all over the world in many communities. In the Hispanic community two dangerous folk remedies come from Mexico and are used for stomach ache treatments. These powdered medicines, known as *Greta* and *Azarcon*, are mixed with water and then swallowed (ingested). Both remedies can contain up to 99% lead. Oftentimes, Hispanic families will bring these Mexican remedies with them to the U.S. In the Asian Indian community some of their folk remedies have also been found to have high lead levels. These include *Bala Goli* a round bean dissolved in "gripe water" and used for stomach aches or *Sindoor food coloring*, used as a food spice.

For other sources of lead poisoning please see Student Handout #6, Lead Poisoning Overview—Sources on page number 39.

Adapted From:

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California Department of Public Health Food and Drug Branch. May 19, 2008.

<http://www.dhs.ca.gov/fdb/>

Lead Tainted Candies & Folk Remedies

Check Your Understanding

After reading Student Handout #1 and using Student Handouts #4 and #6, please answer the following questions:

1. Name two sources of lead contamination found in some types of imported candies.
2. How could the manufacturing process be changed to reduce how much lead gets into some types of Mexican candies?
3. Name one folk remedy that you or your family has used to treat an illness or injury.
4. Find one Mexican and one Middle Eastern folk remedy with high lead levels on Student Handout #4 and write them below. What are the lead levels for each folk remedy?
5. List the top two common sources of lead poisoning in Los Angeles County.

Let's Get The Word Out

(Instructions)

After reading the article, “Toxic Candies and Folk Remedies”, get together in a group and develop a component of a media campaign such as a poster, billboard, web page, etc. The campaign should be aimed at educating your community about the dangers of products contaminated with lead as discussed in the article and others you may have seen listed on other information handouts you have received from your teacher.

Imagine you are an employee with the Los Angeles County, Department of Public Health and your group is responsible for issuing a health warning on the imported candy, folk remedies and/or other sources you have read about.

To do this your group should answer the following questions on a separate piece of paper:

1. Who is your targeted audience?
2. What language or cultural barriers might you need to consider?
3. Where are the best places to reach the intended audience? (i.e. cultural community centers, community newspaper, ethnic grocery stores, church, etc.)
4. What message do you want to give your intended audience?
5. Are there groups or organizations that might have a special interest in your media campaign? If so, how would you invite them into your campaign? (Community Based Organizations, City Hall, Community Centers, etc.)
6. Describe what the differences are between newspapers, radio, television, internet and posters in trying to send a message to your community. Discuss what are the pros and cons for each.
7. Be sure to include in your media component the most common sources of lead exposure for Los Angeles County discussed on page 39 (Student Handout #6).

Once you have answered the questions prepare to present your media campaign to your class. Create a sample of what your media campaign may look like to show the class. (Be creative, imagine that you are submitting an ad for the L.A. Times, placing a poster on a bill board, creating a commercial for the radio or television, or creating a web-page for the Department of Public Health on their website.)

**Los Angeles County Childhood Lead Poisoning Prevention Program
1-800-LA-4-LEAD
www.lapublichealth.org/lead**

TRADITIONAL REMEDIES AND OTHER PRODUCTS REPORTED TO CONTAIN LEAD

NAME	REGION OF ORGIN	LEAD LEVEL	CLAIMED MEDICINAL USE
Albayalde or Albayaidle (white powder)	Mexico and Central America	93%	Empacho (vomiting, colic), apathy and lethargy
Alarcon, Azarcon, Coral Luiga, Maria Luisa, Rueda (red orange powder)	Mexico	95%	Empacho (see above)
Alkohl	Middle East	85%	Topical medical preparation: applied to umbilical stump
Al Murrah	Saudi Arabia	Unknown	Colic, stomach aches, diarrhea
Anzroot	Middle East	Unknown	Gastroenteritis
Ba Bow Sen	China	1000 mg/g	Hyperactivity and nightmares in fever for children
Bali goli	Asia/India	Unknown	Stomach ache
Bint al dahab, bint or bent dahab	Oman, Saudi Arabia, India	98%	Diarrhea, colic, constipation, and general neonatal use
Bokhoor (and noqd)	Saudi Arabia	Unknown	Wood and lead sulfide burned on charcoal to produce pleasant fumes and calm infants
Cebagin	Middle East	51%	Teething powder
Chuifong Tokuan	Asia	Unknown	Arthritis for adults
Cordyceps	China	414-20,000 ug/g	Herbal medicine treatment for hypertension, diabetes, bleeding
Deshi Dewa	Asia, India	12%	Fertility pill
Farouk	Saudi Arabia	Unknown	Teething powder
Ghasard (brown powder)	India	2%	Given as a tonic
Greta (yellow powder)	Mexico	95%	Empacho
Gripe Water	India	Unknown	Given to children to treat colic
Hai Ge Fen	Unknown	Unknown	Unknown
Henna	Middle East	Unknown	Hair and skin dye
Herbal Medicines (eg Poying Tan)	China	7.5 mg per dose	General
Kandu (red powder)	Asia/India	Unknown	Stomach ache
Kohl, Surma or Saott	Africa, Asia, India, Pakistan, Middle East	Up to 86%	Cosmetic; astringent for eye injuries and umbilical stump, teething powder
Kushta	India/Pakistan	73%	Diseases of the heart, brain, liver, and stomach. Aphrodisiac, tonic
Pay-loo-ah	Lao (Hmong)	90%	High fever, rash
Santrinj	Saudi Arabia	Unknown	Teething powder
Unknown (Ayurvedic)	India, Pakistan, Sri Lanka, Burma, Bhutan, Mongolia, Tibet	1.35-72,990 ug/g per capsule, 3%	Metal-mineral tonic, slows development
Sumac (purple powder)	Middle East, Armenia, Russia	Unknown	Food seasoning

Blood Lead Levels—What Do They Mean

What Should I Do If My Child Has An Elevated Blood Lead Level?

If your child's initial (first) blood lead level is between 5-9 µg/dL

- Talk to your doctor and request a health assessment exam for lead exposure and nutrition.
- Look for lead hazards around your home.
- Be sure to request that your doctor test your child at age 1 and age 2.

If your child's initial blood lead level is between 10-14 µg/dL

- Your child will need another blood lead test in 3 months.
- Talk to your doctor about a health assessment exam and nutritional counseling.
- Look for lead hazards around your home.

If your child's initial blood lead level is between 15-24 µg/dL

- Your child will need another blood lead test in 30 days.
- Talk with your doctor about a health assessment exam and nutritional counseling.
- Look for lead hazards around your home.
- A public health nurse may contact you by phone or may make a visit to your home, if your child has two consecutive blood lead levels greater or equal to 15 µg/dL

If your child's initial blood lead level is between 25-44 µg/dL

- Your child will need another blood lead test in one week.
- Immediately, make an appointment with your doctor to confirm your child's blood lead level.
- Your child will need a full medical check-up for lead exposure and nutritional counseling.
- Talk with your doctor about a health assessment exam and nutritional counseling.
- A public health nurse will make a visit to your home.

If your child's initial blood lead level is above 45µg/dL

- A public health nurse (PHN) and environmental health inspector (EHI) will make a visit to your home.
- Another blood lead test is needed according to the schedule below:
 - * 45-59 µg/dL, within 48 hours
 - * 60-69 µg/dL, within 24 hours
 - * Above 70 µg/dL, immediately (medical emergency). Depending on the blood lead level above, your child may need to be hospitalized.
- Follow your doctor's recommendations for re-testing and diet. Keep your doctor appointments.

For more information call the Los Angeles County Childhood Lead Poisoning Prevention Program, Case Management Unit at (323) 869-7195



Sources of Lead Exposure for Los Angeles County

Most Common Source

The most common source of lead exposure in Los Angeles County for children is lead-based paint.

- o Children can become poisoned from lead-based paint when the home or school they live in or spend time in:
 - Was built before 1978
 - The paint is deteriorating
 - The home is being remodeled

Second Most Common Source

Is take home exposure. Lead is exposed at the job to the worker, their clothes and shoes, which is then brought home.

- o The work may involve:
 - Painting, radiator repair, battery manufacturer, foundry work, pottery/ceramics manufacturer, scrap metal recycling, firearm shooting, etc.

Third Most Common Source

Is lead dust. It can be from within the home or outside. Lead dust can come from deteriorating lead paint and accumulates in and around the home. It can settle on toys, soil, places where children play, which get on the fingers and then are put in their mouths.

Fourth Most Common Source

Soil contaminated from leaded gasoline, lead dust or lead-based paint.

Folk Remedies. Traditional or folk remedies including Azarcon and Greta, which are used for upset stomach or indigestion; Pay-loo-ah, which is used for rash or fever.

Other Sources

Hobby. Like glass staining

Pottery. Handmade ceramic tableware, especially imported ceramics decorated with lead-based glaze or paint.

Other. Imported candies, spices, mini-blinds, toys, jewelry, or other non-traditional sources of lead.

Water. Lead is found in low-levels in some drinking water because lead-based solder on water pipes may add lead to water.



News Release

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

NUMBER:
FOR RELEASE:
<http://www.cdph.ca.gov>

PH08-17
IMMEDIATE

DATE: April 17, 2008
CONTACT: Suanne Buggy
or Ken August
(916) 440-7259

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH WARNS CONSUMERS NOT TO EAT CHACA CHACA CHACATROZO CANDY IMPORTED FROM MEXICO

SACRAMENTO – Dr. Mark Horton, director of the California Department of Public Health (CDPH), today warned consumers not to eat Chaca Chaca Chacatrozo candy imported from Mexico after tests by CDPH found levels of lead that could cause health problems.

“Lead exposure can be harmful, especially for infants, young children and pregnant women,” Horton said. “Today’s warning is part of our ongoing efforts to ensure the safety of foods sold in California.”

CDPH is working to identify distributors of Chaca Chaca Chacatrozo to ensure it is promptly removed from retail sale.

Consumers in possession of Chaca Chaca Chacatrozo should discard the candy. Pregnant women and parents of children who may have consumed this candy should consult their health care provider to determine if medical testing is needed.

Chaca Chaca Chacatrozo is a fruit pulp candy coated with a brownish-red colored salt and chili powder and is packaged in a clear plastic bag containing ten 50 grams individual candies. The net weight of the bag is 500 grams. The word “Chacatorzo” is printed at the top and bottom of the bag in white print outlined in blue. The front of the bag contains a white circle with a picture of a red locomotive. The words “Chaca Chaca” are printed in yellow across the locomotive.

Recent analysis by CDPH determined that Chaca Chaca Chacatrozo candy contained as much as 0.30 parts per million (ppm) of lead. California considers such products with lead levels in excess of 0.10 ppm to be contaminated.

For more information about lead poisoning, consumers are advised to contact their local childhood lead poisoning prevention program or public health department. Additional information and a list of local childhood lead prevention programs is available at <http://www.cdph.ca.gov/healthinfo/discond/Pages/CLPPBChildrenAtRisk.aspx>

Consumers who find Chaca Chaca Chacatrozo candy for sale are encouraged to call the CDPH Complaint Hotline at 1-800-495-3232. Photos of Chaca Chaca Chacatrozo are available at www.cdph.ca.gov.



Resources

Resources Relevant to the Curriculum

- <http://lapublichealth.org/lead/>
Los Angeles County Website
- <http://www.cdc.gov/nceh/lead/>
Government Website

Resources for Students and Teachers

- If you would like to order materials, please complete the order form found in the Appendix.

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Appendix

- Letter to Parents (English and Spanish)
- Art Contest Participation Information
- Order Form



JONATHAN E. FIELDING, M.D., M.P.H.
Director and Health Officer

JONATHAN FREEDMAN, Ph.D.
Acting Chief Deputy

Childhood Lead Poisoning Prevention Program

ANGIE TOYOTA, Director
5555 Ferguson Drive, Room 210-02
Commerce, CA 90022
TEL (323) 869-7171 FAX (323) 887-5178

www.lapublichealth.org/lead



BOARD OF SUPERVISORS

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Dear Parent/Guardian:

The Los Angeles County, Department of Public Health, Childhood Lead Poisoning Prevention Program aims to prevent lead poisoning in children. Childhood lead poisoning is a major, preventable, environmental health problem in the United States for children 1-6 years of age.

The most common sources of lead exposure for Los Angeles County are:

- Chipping or peeling lead-based paint used in homes built before 1978.
- Take home exposure where people bring lead from their jobs into their home.
- Lead dust from deteriorating lead-based paint found inside or outside the home.

If you have questions on:

- How to repair chipping, peeling or deteriorating paint?
- What steps to take to prevent bringing lead home from your job?

Or

- Questions regarding lead in toys, traditional remedies, imported pottery, imported candy or for more information,

Please contact the Los Angeles County, Childhood Lead Poisoning Prevention Program at **1-800-LA-4-LEAD (1-800-524-5323)**.

Sincerely,

Childhood Lead Poisoning Prevention Program
Health Education Unit
5555 Ferguson Drive, Suite 210-02
Commerce, CA 90022



JONATHAN E. FIELDING, M.D., M.P.H.
Director and Health Officer

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Estimados Padres / Tutor Legal:

El Departamento de Salud Pública del Condado de Los Angeles con el Programa de Prevención del Envenenamiento por Plomo en la Niñez tienen como propósito prevenir el envenenamiento por plomo. El envenenamiento por plomo en la niñez es un gran problema para la salud y es evitable. En los Estados Unidos es muy serio sobre todo en los niños entre 1 y 6 años.

Las fuentes más comunes que exponen a los niños al envenenamiento por plomo en el Condado de Los Angeles son:

- La pintura a base de plomo en casas construidas antes de 1978 que se estén descascarando / deteriorando, al igual que la pintura haciéndose polvo dentro y fuera de estas casas.
- Al llevar el plomo a casa de su trabajo.

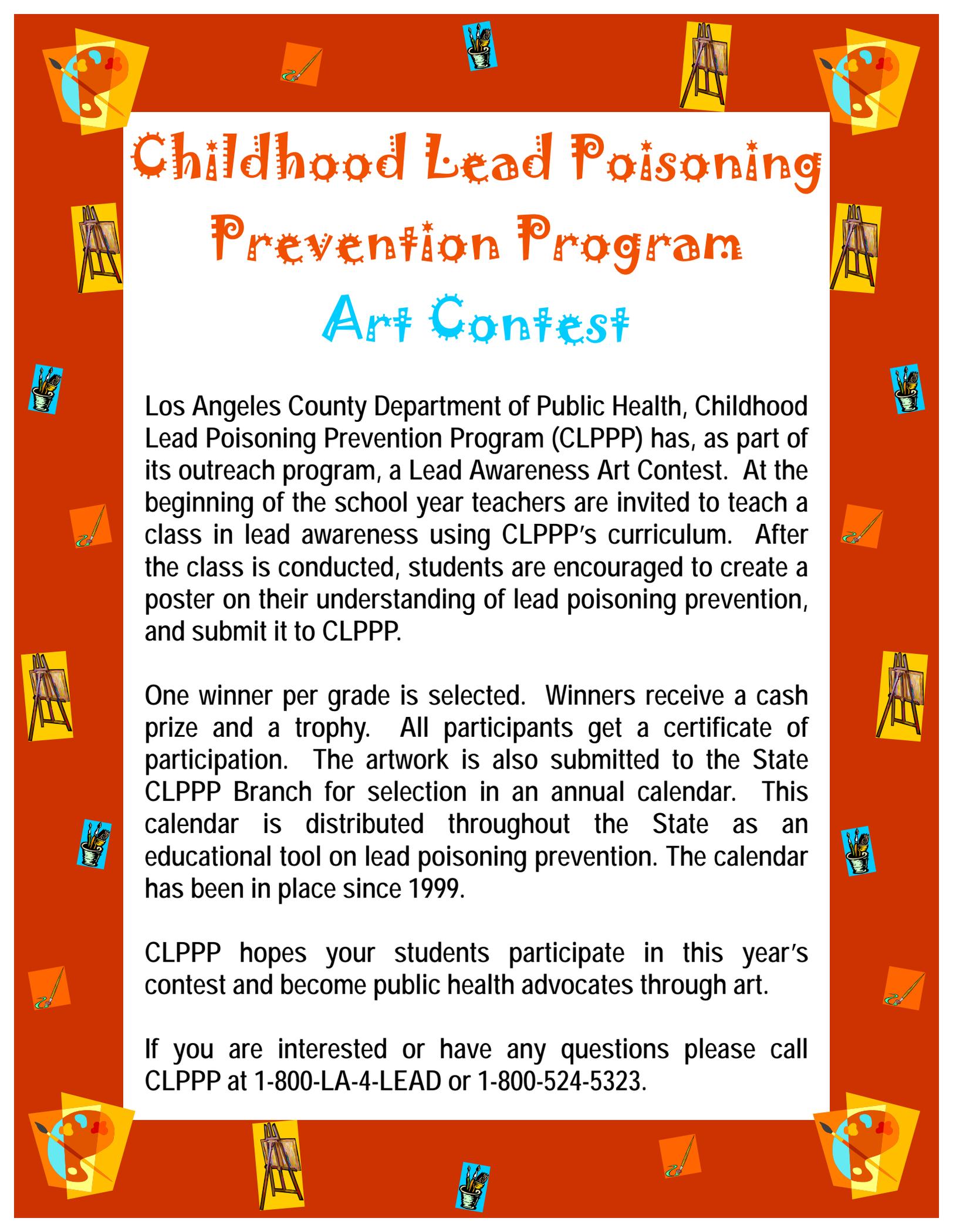
Si tiene preguntas sobre:

- ¿Cómo arreglar la pintura que se este deteriorando?
- ¿Cuáles son los pasos para evitar llevar el plomo a casa del trabajo? O
- Sobre el plomo en juguetes, remedios caseros, cerámica importada, dulces importados o para mas información,

Por favor llame al Programa de Prevención del Envenenamiento por Plomo en la Niñez del Condado de Los Angeles al **1-800-LA-4-LEAD (1-800-524-5323)**.

Atentamente,

Programa de Prevención del Envenenamiento por Plomo en la Niñez
Health Education Unit
5555 Ferguson Drive, Suite 210-02
City of Commerce, CA 90022



Childhood Lead Poisoning Prevention Program Art Contest

Los Angeles County Department of Public Health, Childhood Lead Poisoning Prevention Program (CLPPP) has, as part of its outreach program, a Lead Awareness Art Contest. At the beginning of the school year teachers are invited to teach a class in lead awareness using CLPPP's curriculum. After the class is conducted, students are encouraged to create a poster on their understanding of lead poisoning prevention, and submit it to CLPPP.

One winner per grade is selected. Winners receive a cash prize and a trophy. All participants get a certificate of participation. The artwork is also submitted to the State CLPPP Branch for selection in an annual calendar. This calendar is distributed throughout the State as an educational tool on lead poisoning prevention. The calendar has been in place since 1999.

CLPPP hopes your students participate in this year's contest and become public health advocates through art.

If you are interested or have any questions please call CLPPP at 1-800-LA-4-LEAD or 1-800-524-5323.



Los Angeles County Department of Public Health Childhood Lead Poisoning Prevention Program

Art Contest & Order Form (High School)

✓ Please call me to talk more about the Lead Awareness Art Contest. Yes No

	Date: _____
School Name: _____	District: _____
Contact Person: _____	Position: _____
Mailing Address: _____	
City, Zip Code: _____	
Phone: _____	Fax: _____
E-mail: _____	

Materials (while supplies last)	Language	Quantity
Brochure: <i>"Learn about Lead Poisoning"</i>	Bilingual-Eng/Span	
Brochure: <i>"Make Your Home Lead-Safe and Healthy For Children"</i>	English	
	Spanish	
	Russian	
	Vietnamese	
	Korean	
	Chinese	
	Armenian	
Brochure: <i>"Don't Take Lead Home from your Job"</i>	English	
	Spanish	
Nutrition: <i>"Well fed = Less lead"</i>	English	
	Spanish	
Curriculums (one per teacher): <i>"Lessons in Lead"</i>	Preschool-Kindergarten	
Art contest rules (one per teacher)	English	
Card: <i>"Danger! Azarcon, Greta"</i> (Traditional Remedies)	English	
	Spanish	
Poster: <i>"Prevent Childhood Lead Poisoning"</i>	Bilingual-Eng/Span	
Coloring Book: <i>"Let's Make Lead Poisoning A Thing Of The Past"</i>	Bilingual-Eng/Span	
Bookmarkers	Bilingual-Eng/Span	
Calendars (one per teacher and student)	Bilingual-Eng/Span	

Mail or Fax to: Childhood Lead Poisoning Prevention Program
Health Education Unit
5555 Ferguson Dr., Suite 210-02
City of Commerce, CA 90022

Phone: 800-524-5323
Fax: 323-890-8736

Lessons in Lead
High School Grades 9-12



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