

Be Alert in the Dirt

4th – 5th Grade Curriculum Pilot



Developed by the Washington State Department of Ecology,
Tacoma-Pierce County Health Department, and
Public Health—Seattle & King County

Pilot Edition 2009

Pilot edition

This version is being piloted with schools in Pierce and King County. Teachers are encouraged to try this version in their classrooms and provide feedback to Hannah Aoyagi at Department of Ecology at 360-407-6790 or haoy461@ecy.wa.gov. A revised edition will be made available in early 2010.

About this curriculum

Lesson 1 uses a Video On Demand segment created in 2008 by Comcast and the Tacoma-Pierce County Health Department. Lessons 2-4 are modeled after lessons from the Integrated Environmental Health Middle School Project (IEHMSP) lead curriculum.

Be Alert in the Dirt 4th – 5th Grade Curriculum



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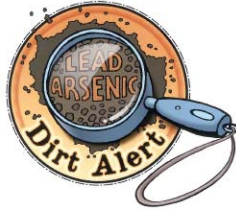
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Teacher's Guide



This curriculum is designed to teach Washington State 4th and 5th graders about arsenic and lead, with a special focus on soil contamination. Lesson 1 was developed primarily for students within the Tacoma Smelter Plume (see below), but the curriculum as a whole is applicable to all regions of the state. Arsenic and lead soil contamination is widespread in Washington and lead poisoning is one of the major child health issues in the nation.

Each lesson focuses on specific information about arsenic and lead, but also shares broader health messages. The lessons fulfill several health, science, and social science Essential Academic Learning Requirements (EALRs). EALRs are listed on each lesson, and together in a section towards the back of this curriculum.

Arsenic and Lead Soil Contamination in Washington

Arsenic and lead are toxic metals that come from a variety of sources. In Washington, two of the major sources of arsenic and lead soil contamination are smelters and historic use of lead-arsenate pesticides. In western Washington, large parts of King, Pierce, and Thurston counties were impacted by the former Asarco smelter in North Tacoma (Ruston). Part of Everett, in Snohomish County, was impacted by the former Everett smelter.

In central and eastern Washington, the problem comes from historic pesticide use. Between 1905 and 1947, lead arsenate pesticides were commonly used on orchards. Many old orchard lands have since been developed. Many of these areas are now residences, schools, childcares, and other areas where children play and are at risk of exposure.

Tacoma Smelter Plume

For almost 100 years, the Asarco Company operated a copper smelter in Tacoma. Air pollution from the smelter settled on the surface soil over more than 1,000 square miles of the Puget Sound basin. Arsenic, lead, and other heavy metals are still in the soil as a result of this pollution. The Washington State Department of Ecology works with local health departments in King, Pierce, and Thurston counties to educate children and their parents, teachers, and caretakers about soil safety.

School Cleanups

Department of Ecology has worked with over 200 schools in western Washington to test and clean up any contaminated soils in areas at highest risk. Over 100 schools built on former orchard lands in eastern and central Washington were also tested and about 35 were cleaned up. Your school district should have a record of whether your school was tested or cleaned up. However, students in these areas may still be exposed to contaminated soils at home or other places they play. These lessons can help students learn to protect themselves.

Lesson 1. Dirt Alert! Educate your school (20 – 60 minutes)



Grade level = 4rd to 5th

Introduction: Students watch a 5 minute video on arsenic and lead contamination from the Tacoma Smelter Plume. You will then read a short passage about other sources of arsenic and lead and ask a set of discussion questions throughout. The video features kids educating their peers.

To extend this lesson, students can design an educational poster about how to stay safe from arsenic and lead in soil.

Topics: Health, science.

EALRs:

- Health 2.3. Acquire skills to live safely and reduce health risks.
- Health 3.1. Understand how environmental factors affect one's health.
- Health 3.2. Gather and analyze health information.
- Health 3.3. Use social skills to promote health and safety in a variety of situations.
- Science 4-5 APPF – Solutions to problems must be communicated, if the problem is to be solved.

Materials: Enclosed DVD, discussion questions, photos, poster paper, art supplies.

Procedure:

1. Begin by introducing and showing the video. An introductory passage is provided on the next page. Afterwards, ask the students the general question of what they learned. Step 2 will have more detailed questions.
2. Read the additional passage to the students and ask the discussion questions dispersed throughout (both are on the next page). Photos are provided to help illustrate the additional passages.
3. **Poster activity:** Divide students into small groups. Ask each group to design a colorful, educational poster with a Dirt Alert theme. They can talk about soil safety actions like hand-washing and taking off shoes or using doormats. They can also talk about other things they learned in the video—where arsenic and lead come from and health effects.
4. **Class discussion:** Ask the groups to present their posters and talk about how they would educate students at their school. What are their messages? Where would they put the posters? How could they educate their families?

Evaluation: Student work can be assessed based on their participation in the class discussion, and their participation in their group poster making activity.



Teacher Reading and Discussion Questions – More about Dirt Alert!

Video introduction: Today we're going to learn about Dirt Alert! This video will teach you about a pollution problem and how it could harm your health. You will then learn about ways to stay safe and healthy. As you watch, think about how you would teach someone else about Dirt Alert.

Discussion questions:

1. [Show photo 1] In this video, you learned about the Tacoma Smelter Plume. Did you know that there are other sources of lead and arsenic in the dirt? The Tacoma smelter wasn't the only smelter in Washington. There was also a smelter in the city of Everett. It had a shorter smokestack than the Tacoma smelter.

Question: How do you think the shorter smokestack affected where arsenic and lead pollution went? Did it go farther or stay closer to the smelter?

[Responses: *Arsenic and lead did not go as far in Everett as it did in Tacoma. The pollution problem is much smaller there. The shorter stack didn't allow winds to carry the pollution very far. In fact, the highest arsenic and lead levels were right near the old Everett smelter.*]

2. [Show photo 2] Arsenic and lead can also be found in the dirt of old orchards, where apples and pears were grown. Between 1905 and 1947, farmers used certain kinds of pesticides to kill insects and other pests that ate the fruit. These pesticides contained lead and arsenic. When the pesticides fell to the ground, the lead and arsenic stayed in the soil. Today, many old orchards have been built over with houses, schools, and even whole towns.

Question: What would you do to stay safe from arsenic and lead in the dirt of old orchards? Did you learn something in the video that would work?

[Responses: *Wash your hands, take off or wipe shoes, vacuum, keep toys clean.*]

3. Lead can get into the dirt in other ways. Gasoline has a little bit of lead in it and car exhaust can carry that lead everywhere. If that lead lands in the dirt, it can stay there, just like the lead from smelters and pesticides. Lead can also get in the dirt from old paint flaking off houses and buildings. Before 1978, paint used to have lead in it. It is now banned, but old buildings often still have lead paint on them. As it gets old, it can flake and fall off into the dirt.

Question: Have you heard of any other places you can be exposed to lead besides from dirt? (You can learn more about lead in other lessons.)

[Responses: *Lead in toys, candies, plumbing, fishing weights, batteries, industry]*

Harder question: If lead is so poisonous, why do you think it was put in paint before 1978?

[Responses: *People didn't know the hazards. Lead paint kills molds that can grow on buildings.*]

4. The video taught us how to stay safe from arsenic and lead. It is very important to keep small children and babies safe.

Question: What did they do in the video to keep small children and babies safe?

[Responses: *Washed the baby brother's toys, took off shoes, vacuumed.*]

Harder question: Why might babies and small children be harmed more by arsenic and lead in soil or inside a house? **Hint:** What do they like to do with things they find on the floor?

[Responses: *They put things in their mouths. They are smaller. For their size, they breathe and eat a lot more than adults. They are still growing and developing.*]



Photo 1: Everett Smelter



Photo 2: Pesticide spraying on an orchard



Lesson 2. Arsenic and lead all over our state (40-50 minutes)

Grade level = 4th to 5th

Introduction: Students read a passage about two different sources of arsenic and lead in Washington State. One source is smelters and the other source is lead-arsenate pesticides used on orchards until 1947. Both have left widespread arsenic and lead soil contamination in many areas of the state. The students then use instructions on a handout to fill in information on a state map. First, they find where the Tacoma and Everett smelters were located. Next, they fill in the number of acres of former orchards in each county in the state. Finally, they color-code their maps depending on the orchard acreage. There is a list of discussion questions you can ask once they have completed the activity.

Topics: Geography, Washington State issues, science.

EALRs:

- Social Studies 3.1. Understands the location, physical characteristics, cultural characteristics, and spatial patterns of places and regions on the Earth's surface. (Washington state focus)
- Social Studies 3.2. Understands human interaction with the environment.
- Science 4-5 ES2A – Describe Earth materials and list their physical and chemical properties.

Materials: Copies of the Student Handout, copies of the mapping activity (3 pages), and colored pencils or crayons.

Procedure:

1. Distribute the **Student Handout** to begin the lesson.
2. **Read the first page together.** It describes two sources of arsenic and lead contamination in Washington. (Vocabulary words not defined in the reading are underlined.)
3. **Map activity:** Do the activity individually or in groups. Students find the location of the Tacoma and Everett smelters, and then color a county map by acreage of orchard lands.
4. **Class discussion:** Ask each group to hold up their map and answer a question about it.
 - Did our county have a smelter in it or nearby? About how close do you think the nearest smelter is?
 - What other county had a smelter in it? (Snohomish)
 - What areas of Washington have the most former orchard lands?
 - Why is it important to know where orchards are or used to be?
 - Compared to the rest of the state, were there a lot of orchards in our county?

Especially if students have completed another lesson in the curriculum, ask them about the risk of arsenic and lead in soil. What can people do to stay safe from it? Where else might it have come from?

Evaluation: Student work can be assessed for whether they filled out their map activity sheets. Participation in reading or answering questions can also be assessed.

Teacher Information:



EVERETT SMELTER

The Everett Smelter was located in northeast Everett, in Snohomish County, and operated from 1894 to 1912. It was built by the Puget Sound Reduction company and sold to ASARCO Inc. (Asarco) in 1903. Asarco operated the smelter until 1912, and demolished it between 1912 and 1915. The property was later sold in parcels, with the last parcel owned by Asarco sold in 1936. Homes were built on many of the parcels and a highway interchange was built across the old smelter site in the 1950s.

In 1990, a local company found high concentrations of arsenic and lead in the soil and groundwater on their property. The soil at the Everett Smelter Site has dangerous levels of arsenic, lead, cadmium and other metals. The area includes both the former smelter plant property and the surrounding neighborhood, which was affected by air emissions from the smelter stacks. It is now being cleaned up by the Washington State Department of Ecology.

TACOMA SMELTER

For almost 100 years, the Asarco Company operated a copper smelter in Tacoma. Air pollution from the smelter settled on the surface soil over a vast region - more than 1,000 square miles of the Puget Sound basin. Arsenic, lead, and other heavy metals are still in the soil as a result of this pollution. The Department of Ecology and the local health departments in King, Pierce, Kitsap, and Thurston counties have been working since 1999 to:

- Determine the area, or "footprint" of soil polluted with arsenic and lead from the smelter.
- Test the amount of arsenic and lead in soils where children play (schools and childcares).
- Provide education and outreach to affected communities on how to reduce the risk from exposure to polluted soil.



FORMER ORCHARD LANDS

Orchards are a common sight throughout central Washington. In fact, many homes and schools are located on former orchard lands. From about 1905 through the 1940's, lead arsenate was commonly used as a pesticide. This means past orchard lands have the potential of being contaminated with lead and arsenic. Over time, exposure to this contaminated soil can lead to health problems.

The Department of Ecology has sampled the soil at a number of schools in central Washington to determine lead and arsenic levels. If contaminated soil is found, Ecology works with schools to reduce children's exposure. This often includes removing contaminated soils or mixing them with clean soil to dilute the pollution.

Lesson 2. Student Handout – Arsenic and lead all over our state

Today you are going to read about lead and arsenic and where they can come from. You are also going to learn more about your state.



Lead and Arsenic

Lead and arsenic are useful metals. They are also “toxins” or poisons. Both can make you very sick if you accidentally eat them or breathe them in.

Lead poisoning can make you feel sick and tired. It can keep your body from making enough blood cells. Being exposed to lead for a long time can slow the growth of your body. It can also slow your learning.

Arsenic poisoning can cause nausea and vomiting. It can also keep your body from making enough blood cells. Being exposed to arsenic for a long time can lead to many health problems. It is linked to heart disease, diabetes, and certain cancers.



Smelters

Arsenic and lead can come from smelters. Smelters are where certain kinds of rocks are heated to get metal out. There used to be two large smelters in western Washington. One was in Tacoma and produced copper and arsenic. The other was in Everett and produced gold, silver, lead, and arsenic.

Air pollution from both smelters had lead, arsenic and other metals in it. It spread across the Everett and Tacoma areas and left arsenic and lead in soils. The Tacoma smelter had a smokestack that was over 500 feet tall! How do you think that affected where the air pollution went?



Old Orchards

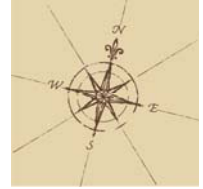
Orchards are where trees are planted to grow fruit or nuts. Washington grows a lot of apples, cherries, and pears. Insects also find these fruits tasty, so many orchards use pesticides. Pesticides are poisons that kill insects and other pests that can harm fruit crops.

From 1900 until 1947, most orchards in Washington used lead-arsenate pesticides. Can you guess two things lead arsenate has in it? Yep, lead and arsenic. These toxins can kill insects, but they can also harm humans.

Lead arsenate was sprayed on orchard trees. The pesticide fell onto the soil and stayed there. Even though lead arsenate was banned in 1947, lead and arsenic are still in the soil. Today, many old orchards have houses, schools, and parks built on them. Why is this a problem?

Now turn over the page for a fun project...

Mapping Project – Arsenic and lead sources in Washington

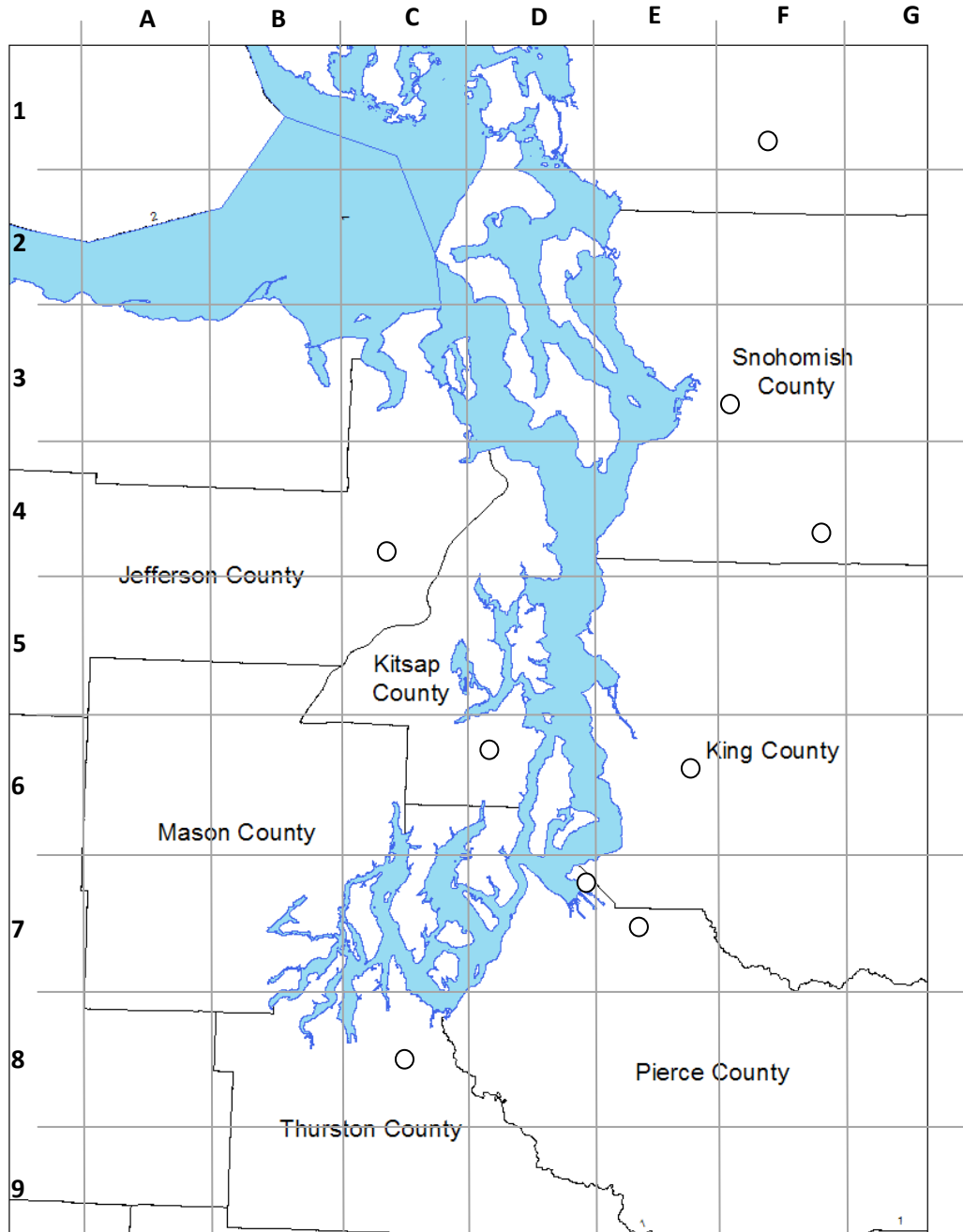


Instructions: Work with your classmates to...

1. First, find where the smelters are. The dots on the map show possible locations of the smelters. Use these coordinates to find the smelters on the map below:

Tacoma Smelter – D,7 What county is it in? _____

Everett Smelter – F,3 What county is it in? _____



2. Many counties in Washington had large areas of apple and pear orchards. These areas are measured in acres. You are going to color your map to show which counties had the most acres of orchards. Pick a color for each box below.

Tip: Pick the same colors as your group members. This will help you work together.

10,000 or more acres =

5,000 – 9,999 acres =

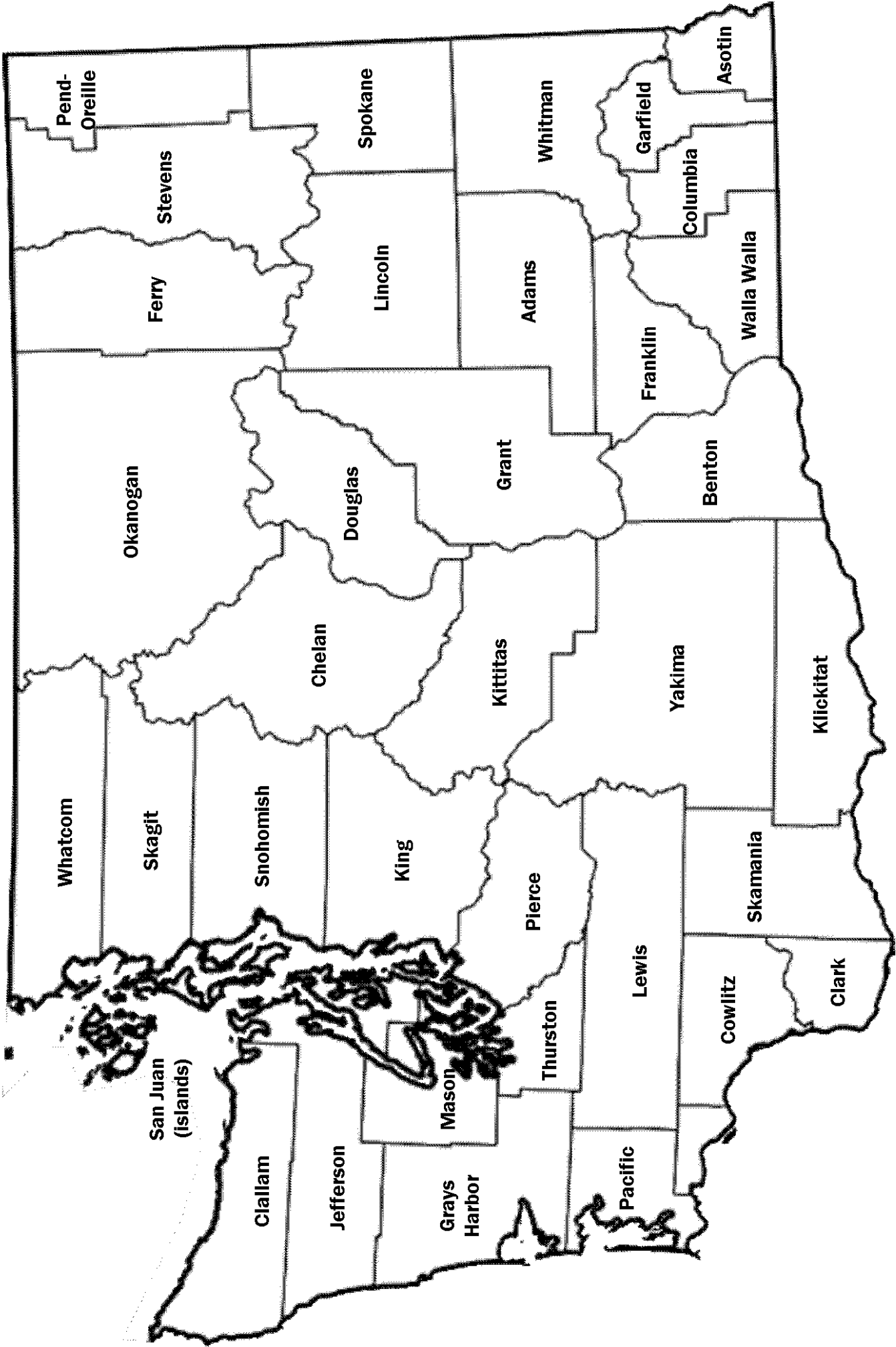
1,000 – 4,999 acres =

3. Use the table below to look up each county. Next, color in every county on your map to match the colors you chose above.

For example, Chelan County (in the middle of the state) had 30,463 acres of orchards. Use the color you picked for 10,000 or more acres to color in Chelan County.

Areas Potentially Affected by Lead Arsenate Pesticides by County

County	Apple & Pear Tree Acres	County	Apple & Pear Tree Acres
Benton	7,738	Okanogan	10,608
Chelan	30,463	Pierce	2,139
Clark	2,676	San Juan	1,407
Columbia	1,161	Skamania	2,376
Cowlitz	1,139	Snohomish	1,670
Douglas	7,467	Spokane	19,455
Grant	4,928	Stevens	3,542
King	2,700	Thurston	1,075
Kittitas	1,642	Walla Walla	3,092
Klickitat	4,632	Whatcom	1,948
Lewis	1,954	Whitman	6,819
Lincoln	1,819	Yakima	58,050
		Statewide	187,588



Lesson 3. How can lead hurt me? (40-50 minutes)



Grade level = 4th to 5th

Introduction: Students read a short passage about the health effects of lead exposure, especially in children. Students work in groups to read case studies about children who were exposed to lead in different ways. They use the blood lead level chart to determine how lead poisoned the children are and what health effects might occur. They then share their case study with the rest of the class.

Topics: Health, case studies, science.

EALRs:

- Health 2.3. Acquire skills to live safely and reduce health risks.
- Health 3.2. Gather and analyze health information.
- Social Studies 5.2. Uses inquiry-based research.
- Science 4-5 INQB – Work collaboratively with other students to carry out an investigation...
- Science 4-5 ES2A – Describe Earth materials and list their physical and chemical properties.

Materials: Copies of the Student Handout (2 pages), Case Studies, and blood lead level chart. A key is also provided, with possible answers to each case study question.

Procedure:

1. Distribute **Student Handout** to begin the lesson.
2. **Read the introduction together.** This sheet describes what lead is, why it is dangerous, and what the health effects are. You may also want to read through the blood lead level chart together before the activity.
3. **Case studies activity:** Divide students into small groups. Each group can do one or two of the four case studies. Students read through the case study out loud and then use information about blood lead levels and symptoms to look up the severity of lead poisoning and recommended treatment.
4. **Class discussion:** Ask the groups about their case study—symptoms, blood lead levels, and the recommended treatment. Write the four blood lead levels (low, mid-range, high, highest) on the blackboard and ask students to come up and mark the level corresponding to their case studies. For further discussion, do case study #5 as a group.

Evaluation: Student work can be assessed for whether they filled out their case study answers. Participation in the case studies presentation can also be assessed.

Teacher Information:

Centers for Disease Control (CDC) fact sheet on lead and human health:

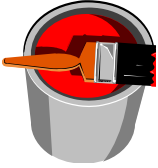
<http://www.atsdr.cdc.gov/tfacts13.html>

Lesson 3. Student Handout – How can lead hurt me?



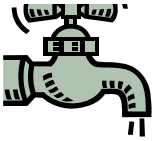
1. What is lead?

Lead is a metal and a chemical element. It can be found in many places. It is also a poison and can make you very sick.



2. Where can lead be found?

- Lead can be found in paint in old houses. After the year 1977, lead was not allowed in paint.
- Lead can be found in pipes that carry your drinking water. There is more lead in old pipes.
- Some toys have lead in them.
- Some glazes have lead in them. Glazes are paints you put on pottery.
- In some parts of Washington, lead is in the dirt! This lead can come from the gas in cars and trucks. Some of this lead came from old smelters. Smelters are places where rocks are melted to get metals like copper out. Some lead in the dirt came from poisons used to kill bugs on fruit trees.



3. How can lead hurt me?

Lead can hurt you if you eat it or breathe it in. It can slow the growth of your body. Lead can also slow your learning. It can make you feel sick and tired. You might feel like you have a stomach ache or headache.



4. How can I stay safe from lead?

- Wash your hands after you play outside and before you eat.
- Take off your shoes when you come inside or wipe them on a doormat. This keeps dirty dirt outside.
- Don't drink hot water from the faucet. Let your water run until it is cold.
- Eat healthy foods with calcium, iron, and vitamin C. Calcium is in milk, yogurt, and greens. Iron is in beans, red meat, greens, and broccoli. Vitamin C is in many fruits and vegetables, and potatoes.
- Help your little brothers and sisters. Make sure they don't eat things off the floor. Help them keep their toys clean.
- Tell your parents what you learned in school! Ask them if your toys are lead free.



Blood Lead Level Chart*

It is hard to tell if lead is hurting your body. It can feel like a normal stomach ache or headache. A good way to find out is to get your blood tested. Your doctor can do the test.

This chart tells you what each blood level means. The number on the left is the amount of lead for a certain amount of blood.

Level of Lead in the Blood	How serious is it? What treatment is needed?
Low Under 2	This is a typical blood lead level. Unfortunately, most of us have at least a tiny bit of lead in our bodies.
Slightly above average 2-4	This level is slightly above average. The doctor can teach parents about lead. This will help keep their children safe.
Above average 5-9	This level is above average and means there is an exposure to lead. Parents should look for lead at home.
High 10-19	Children with this level may not seem to be sick, but this level of lead makes it harder for them to grow and learn. Someone should help parents look for lead at home. Children should be tested again in 2-3 months.
Very high 20-44	This level of lead is dangerous! The child should go to the doctor right away. The source of lead must be found and controlled. Other family members should be tested. Children should be tested every week or month, until lead levels go down.
Immediately dangerous 45 or higher	The child should go to the hospital right away! Lead is harming their body and brain. The whole family should be tested for lead. The source of lead must be found and controlled.

*Adapted from the Integrated Environmental Health Middle School Program's Environmental Health Fact File on lead, originally from the Washington State Department of health "Medical Management of Children with Elevated Blood Lead Levels"

<http://www.doh.wa.gov/Topics/MEDmgmt.doc>

Lead Case Study #1

1. You feel fine, but your mom is worried about you. She just found out that the paint in your house has lead in it. You go to the doctor for a blood lead test. Your level is 4.
 - a. What does a level of 4 mean?

 - b. What should your doctor do?

2. Use your imagination...how could someone safely get lead paint out of your house?



Lead Case Study #2

1. Your baby brother is tired all the time. Your parents take him to the doctor for a blood lead test. It turns out he has a level of 15. Look at your blood lead level chart.
 - a. What does a level of 15 mean?

 - b. What can your family do?

2. Your house is new. Your family is careful about not bringing dirt into the house. Your brother does not play in the dirt outside.

Where do you think the lead came from?



Case Study #5 (Whole class)

1. Between 1994 and 1995 4% of all children in the United States had blood lead levels of 10 or higher. By the year 2000, only 2% of children had blood lead levels of 10 or higher.

a. Is this change good news or bad news? Why?

b. Why do you think blood lead levels in kids are getting lower?

2. Many children are tested for lead when they are very young. Many must get tested when they get health insurance.

a. Why are so many children being tested for lead rather than adults?

b. How does lead testing help? What can parents do if they find out their child has high levels of lead?



Teacher - Case Study Answers

Lead Case Study #1

1. You feel fine, but your mom is worried about you. She just found out that the paint in your house has lead in it. You go to the doctor for a blood lead test. Your level is 4.
 - a. What does a level of 4 mean? **This is a slightly above average blood lead level.**
 - b. What should your doctor do? **The doctor can teach my parents about lead and how to keep me safe.**
2. Use your imagination...how could someone safely get lead paint out of your house?
 - **Scrape the paint off the walls and clean up all the dust and paint chips.**
 - **Wear protective gear like a mask and gloves.**
 - **Don't let anyone else inside the house during the work.**
 - **Keep children away.**
 - **Test for lead after the paint is removed.**

Lead Case Study #2

1. Your baby brother is tired all the time. Your parents take him to the doctor for a blood lead test. It turns out he has a level of 15. Look at your blood lead level chart.
 - a. What does a level of 15 mean? **It is a high blood lead level.**
 - b. What can your family do? **Look for lead at home. Have your brother tested again in 2-3 months. They should also test you!**
2. Your house is new. Your family is careful about not bringing dirt into the house. Your brother does not play in the dirt outside. Where do you think the lead came from?

Toys/chewing on toys, pottery with lead glaze (paint and plumbing shouldn't be a source if the house is new)

Lead Case Study #3

1. Your best friend always eats food on glazed pottery. She and her sisters always have stomach aches. Her parents think that they eat too much. What do you think might be making them feel sick? **Lead in the glaze**
2. Your best friend and her family get their blood tested for lead. The sisters have levels of 21, 25, and 30.
 - a. What do levels of 21, 25, and 30 mean? **These levels are dangerous!**
 - b. What could your friend's family do to lower their lead levels? **Stop eating from lead glazed pottery, get their dishes tested for lead, eat on different dishes, be sure to get tested again**

Lead Case Study #4

1. Several kids at your school get their blood tested. One girl has a blood lead level of 62.
 - a. What does a level of 62 mean? **This is a very high level! They should go to the hospital right away. Lead is harming their body and brain.**
 - b. What should the girl's doctor and parents do? **Get the whole family tested for lead. Find the source of lead and control it/stop it.**
2. You want to find out where the lead came from. What kinds of questions would you ask the girl?
 - **Is your house old?**
 - **Is the paint in your house old? (Is the paint peeling or flaking off the walls?)**
 - **Is the plumbing in your house old? (Do you drink hot water from the tap?)**
 - **What kind of toys do you play with?**
 - **What kind of dishes do you eat from?**
 - **Is there anywhere else you could have been exposed to lead?**

Lead Case Study #5 (Whole class)

1. Between 1994 and 1995 4% of all children in the United States had blood lead levels of 10 or higher. By the year 2000, only 2% of children had blood lead levels of 10 or higher.
 - a. Is this change good news or bad news? Why? **Good news because the percentage of children with higher blood lead levels is going down.**
 - b. Why do you think blood lead levels in kids are getting lower?
 - **Newer houses don't have lead paint or lead plumbing.**
 - **More people might know about the dangers of lead.**
 - **More people are getting their children tested and protecting them.**
 - **Gas in now "unleaded" (only a little lead is in gas now).**
2. Many children are tested for lead when they are very young. Many must get tested when they get health insurance.
 - a. Why are so many children being tested for lead rather than adults?
 - **Children are more at risk of lead poisoning because of their small body size, developing brain, and exposures (playing in dirt, putting hands in their mouths, chewing on toys, etc.).**
 - b. How does lead testing help? What can parents do if they find out their child has high levels of lead?
 - **This information helps parents stop exposure to lead.**
 - **Parents can remove lead paint, remove lead plumbing, serve food on different dishes, buy different toys, and teach kids how to stay safe by washing their hands, taking off shoes when they come inside, etc.**

Lesson 4. Toxic Candies and Toys (40-50 minutes)



Grade level = 4th to 5th

Introduction: Students read a short passage about toys and candies that commonly contain high levels of lead. Students interview each other about the toys they play with and candies they eat. The class then compiles a list of toys and candies and talks about ways to stay safe from lead. This is a good lesson to do after the “How Can Lead Hurt Me?” lesson.

Topics: Health, interviewing, science.

EALRs:

- Health 2.3. Acquire skills to live safely and reduce health risks.
- Health 3.2. Gather and analyze health information.
- Social Studies 5.2. Uses inquiry-based research.
- Science 4-5 APPF – Solutions to problems must be communicated, if the problem is to be solved.

Materials: Copies of the Student Handout (2 pages).

Procedure:

1. Distribute Student Handout to begin the lesson.
2. Read the introduction together. This sheet describes what lead is, why it is dangerous, and how it can be found in candies and toys.
3. **Interview activity:** Divide students into pairs. Each student interviews the other using the instructions on page two of the Student Handout. The handout gives some basic interview questions and encourages students to develop their own. Students record their answers on the Student Handout in the spaces given.
4. Once the interviews are complete, compile a class list of all of the different candies and toys students brought up.
5. Ask students if any of the candies or toys sounded like what they read about on page one of the Student Handout. Ask them what they think they should do to stay safe and to keep younger siblings safe. (Ideas are listed in the Teacher Supplement.)

Evaluation: Student work can be assessed for whether they filled out their interview forms. Participation in compiling the list of candies and toys can also be assessed.

Teacher Information:

Information from the Centers for Disease Control (CDC) about lead in toys:

<http://www.cdc.gov/nceh/lead/faq/toys.htm>

<http://www.cdc.gov/nceh/lead/Recalls/default.htm>

Washington State’s 2008 Children’s Safe Products Act:

<http://www.watoxics.org/issues/saferproducts/toxicfreetoysbill>

Special series on lead in Mexican candies (Orange County Register):

<http://www.ocregister.com/investigations/2004/lead/index.php>

Information from the Centers for Disease Control (CDC) about lead in candies:

<http://www.cdc.gov/nceh/lead/faq/candy.htm>



Teacher Supplement

Candies that can contain lead:

- **Picarindo** – tamarind candy made in Mexico and sold in leaded clay pots
- **Brinquitos** – chili candy made in Mexico and sold in crystalline granules
- **Rebanaditas** – mango and elotes lollipops made in Mexico
- **Storck Eucalytus Menthol** – candy from the Philippines
- **Margarita brand Pulpa, Licona Tamarindo and Jarrita Chonita** – made in Mexico and sold in clay pots
- **Bolirindo** – tamarind lollipop made in Mexico
- **Chaca Chaca** – chili and apple pulp candy bar

Information from

http://www.ocregister.com/investigations/2004/lead/part1_sidebar3.shtml

There are many different brands of candy that contain lead. If parents are unsure, they should contact their local health department. Pierce and King Counties have staff that can help answer your questions.

Toys that can contain lead:

- Toy jewelry
- Plastic toys – plastic figurines, toy cars, bendable toys
- Metal toys – magnets, wire
- Painted metal toys – painted tin figurines, tops,
- Painted wood toys – blocks, puzzles
- Other – sidewalk chalk, paints on doll clothes

In order to tell if a specific toy has lead, parents need to check with the Centers for Disease Control (CDC) <http://www.cdc.gov/nceh/lead/Recalls/toys.htm>

They can also have toys tested. Again, they should contact their local health department lead specialist for advice.

Ideas for how to stay safe from lead:

- Don't put toys in your mouth—this is a good way to reduce accidental ingestion.
- Wash hands after playing with toys, especially if they are dirty.
- Ask your parents if your toys are lead-free.
- Don't eat candies that you don't know are lead-free.
- Ask your parents to check if candy is safe before eating it.
- From the “How Can Lead Hurt Me?” lesson: take off shoes, use a doormat, don't drink hot water from the faucet, help your younger siblings not eat things off the floor.

Teacher Supplement – Candies with lead



Picarindo



Rebanaditas



Bolirindo



Chaca Chaca

Teacher Supplement – Recently recalled toys with lead

From <http://www.cdc.gov/nceh/lead/Recalls/toys.htm>



Force Soldier Playsets, Pirate Expeditions (Liquidation Outlet Inc.)



Makit & Bakit Jewelry Sets (QuinCrafts)



**DesignWare Sports Balls
(American Greetings Corp.)**



Toy Police Cars (TCB Imports)



**Groovy Fashions™ Sassy Jammies™ Doll
Clothing Sets (Manhattan Group)**



"Mini-Televisor" Toys (OKK Trading)

Lesson 4. Student Handout

What is lead?

Lead is a toxic metal. Toxic means that it can hurt you and make you sick. Lead can make you sick if you eat it or breathe it. It is important to learn how to stay safe from lead. To stay safe, you need to know more about where it is found.



Lead was used in paint until 1978. Many houses still have lead paint on the walls. The paint can peel or chip off. Young children can accidentally swallow these paint chips.



Lead is sometimes used in pottery glazes (paints). It can also be in old water pipes. This worksheet tells you about two other places you can find lead.



Toxic Candies

Some candies made in Mexico have lead in them.



- Sweet and spicy lollipops.
- Jellies.
- Chewing gum.

The lead can come from ink on the candy wrapper. It can also be in candies sold in small pots. Lead comes from the glaze on the pot. It is hard to stop these candies from being sold. Washington State is trying to warn people to stop buying these toxic candies.

Toxic Toys

Some toys can have lead in them. Where does this lead come from?

FROM PAINT - Lead can come from paint on a toy. Some countries still use lead paints on their toys. If this paint flakes off the toy, young kids can accidentally eat it.

FROM PLASTIC - Lead can also come from plastic inside toys. Lead helps make hard plastic more flexible. As toys get old, lead dust can escape from the plastic. Young kids can accidentally eat this dust.

In 2008 Washington State passed a law. This law protects kids from lead and other toxics in toys. Toys with lead in them are not supposed to be sold in this state.

Turn this page over to find your interview questions!



Interview Project

It's time to ask some questions! First, find a partner. You will learn about the toys they play with and the candies they eat. Use the questions on this sheet and make up your own questions! Next, write down your partner's answers. You will share them with the class later.

Write your partner's name: _____

1. How many sisters or brothers do you have? How old are they?

Answer:

2. What kind of toys do you play with at your house? Your brothers or sisters?

Answer:

3. What kind of candies do you eat? Your brothers or sisters?

Answer:

4. How would you teach your family to stay safe from lead?

5. Write your own question here:

Answer:

Washington Essential Academic Learning Requirements



Lesson 1. Dirt Alert! Educate your school

- Health 2.3. Acquire skills to live safely and reduce health risks.
- Health 3.1. Understand how environmental factors affect one's health.
- Health 3.2. Gather and analyze health information.
- Health 3.3. Use social skills to promote health and safety in a variety of situations.
- Science 4-5 APPF – Solutions to problems must be communicated, if the problem is to be solved.

Lesson 2. Arsenic and lead all over our state

- Social Studies 3.1. Understands the location, physical characteristics, cultural characteristics, and spatial patterns of places and regions on the Earth's surface. (Washington state focus)
- Social Studies 3.2. Understands human interaction with the environment.
- Science 4-5 ES2A – Describe Earth materials and list their physical and chemical properties.

Lesson 3. How can lead hurt me?

- Health 2.3. Acquire skills to live safely and reduce health risks.
- Health 3.2. Gather and analyze health information.
- Social Studies 5.2. Uses inquiry-based research.
- Science 4-5 INQB – Given a research question, plan an appropriate investigation.
- Science 4-5 ES2A – Describe Earth materials and list their physical and chemical properties.

Lesson 4. Toxic Candies and Toys

- Health 2.3. Acquire skills to live safely and reduce health risks.
- Health 3.2. Gather and analyze health information.
- Social Studies 5.2. Uses inquiry-based research.
- Science 4-5 APPF – Solutions to problems must be communicated, if the problem is to be solved.

Additional curriculums for other grade levels



Children ages 2-8

Public Health—Seattle & King County has developed the “Be Alert in the Dirt” curriculum for elementary school teachers, preschool teachers, and childcare providers. This curriculum contains four lessons and an accompanying video for children ages 2-8.

For an electronic copy of the lessons, please visit: <http://kingcounty.gov/health/tsp> and click on “Tools for Educators”. The video can be downloaded from a link on the right side of this page.

To request a copy of the video or a hard copy of the curriculum:

- In King County call 206-205-4394.
- In Pierce County residents call 253-798-6492.

Middle school students

The Integrated Environmental Health Middle School Project (IEHMSP) has several environmental health curriculums for middle school students. Lessons 2 through 4 are modeled after the IEHMSP lead curriculum. For more information, please contact Katie Frevert at 206-685-5379 or kfrevert@washington.edu.