



# BE ALERT IN THE DIRT

Soil Safety  
Lesson Plans for  
Children Ages 2-8

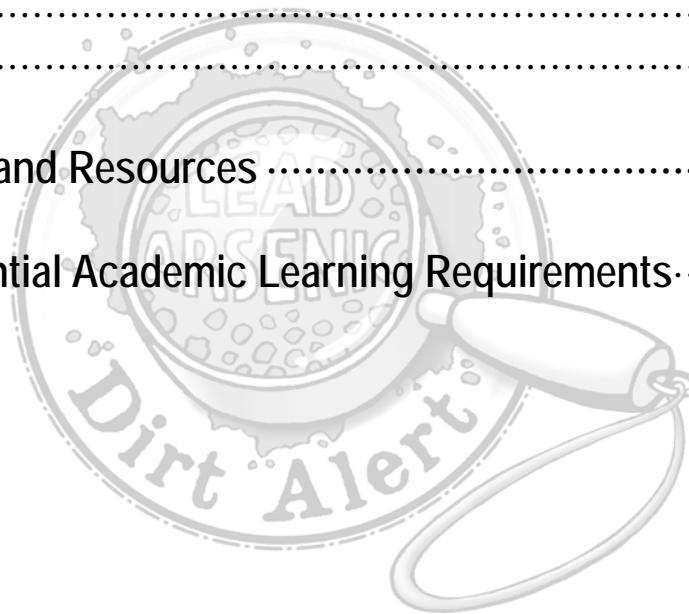




# Table of Contents



Teacher's Guide .....	1
Pre-school Lesson Plans.....	5
Be Alert in the Dirt.....	7
Dirt Exploration.....	11
Healthy Eating.....	15
Scrub-a-scrub Hand-Washing.....	19
K-3 Lesson Plans .....	21
Be Alert in the Dirt .....	23
Dirt Exploration .....	35
Healthy Eating.....	41
Hand-Washing .....	51
More Information and Resources .....	57
Washington Essential Academic Learning Requirements.....	61



These lesson plans were developed by Public Health - Seattle & King County, Environmental Health Services Division, with funding from the Washington State Department of Ecology.

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Available in alternate formats. Call 206-205-4394.

# Table of Contents



## Who are these lesson plans for?

The lesson plans are designed for child care providers, preschool teachers and elementary school teachers. The **preschool lessons** are short (30 minutes or less) and designed for children ages 2-5. The lesson plans include handouts and materials. The lesson plans for **elementary school students** are short, easy to teach, and include handouts, discussion questions, extended learning activities, and vocabulary. These lessons were also designed to correspond to Washington's Essential Academic Learning Requirements (See additional information on page 59).

## What are the "Be Alert in the Dirt" lesson plans?

The booklet includes lesson plans for children ages 2 through 5 and kindergarten through 3rd grade. There are four lessons for each age group. These lessons cover:

- Dirt exploration – what's in our dirt?
- Hand-washing – fun and educational!
- Nutrition – healthy eating helps protect us against soil pollution!
- Soil safety actions – music and movement featuring a Dirt Alert music video starring Tickle Tune Typhoon and Digger the Dog.

## How can I use these lesson plans?

The lesson plans are designed to be flexible. Teachers can adapt the plans to their classroom needs. The lessons may be used as a stand-alone lesson, as a unit, and in any order.

## Why are these lesson plans important?

Some King County soils are polluted with chemicals. An old copper smelter near Tacoma is one of many sources of pollution in our dirt. Children are most at risk from the negative health effects of exposure to soil pollution. The good news is there are simple actions adults and children can do to keep dirt and dust out of their bodies.

## Where can I find more information?

There is a teacher guide and resource page at the back of this booklet and additional materials and information on our website. If you have any questions about the plans, how to use them, or other information on soil pollution, please call or email us!

Website: <http://www.metrokc.gov/health/tsp/arseniclead.htm>

Email: [megan.sety@metrokc.gov](mailto:megan.sety@metrokc.gov)

Telephone: Ask for Megan Sety at 206-205-4394



## What is soil pollution?

Soil pollution occurs when hazardous substances get into the ground and mix with the soil. Hazardous substances in the soil can be physically or chemically attached to soil particles or become trapped in the small spaces between soil particles.

## How does it get there?

Soil pollution happens when hazardous substances are either spilled onto or buried in the soil or seep into the soil from a spill that occurred elsewhere. For example, soil can become polluted when small particles containing hazardous substances are released from a smokestack. The particles in the smoke float to the ground on the surrounding soil. Another source of soil pollution could be old lead-containing paint that flakes off a house and falls onto the soil. In King County, we are particularly concerned about lead and arsenic pollution from an old smelter that operated near Tacoma for almost 100 years. It polluted soil in the Puget Sound region.



## Health Effects

Long-term health effects from arsenic include cancers of the skin, bladder, kidney, liver and lung. Lead exposure in children causes learning difficulties, reduced IQ, delayed physical and neurological development, and decreased mental abilities. See Fact Pages on Lead and Arsenic for more information online at <http://www.metrokc.gov/HEALTH/tsp/arseniclead.htm>.

Children are at the greatest risk from exposure to polluted soils. They play on or near the ground and explore with their hands and mouth. Compared to adults, children eat more dirt and breathe twice as much air. To protect adults and children, it's important to not ingest (swallow) or breath in polluted soil or dust.

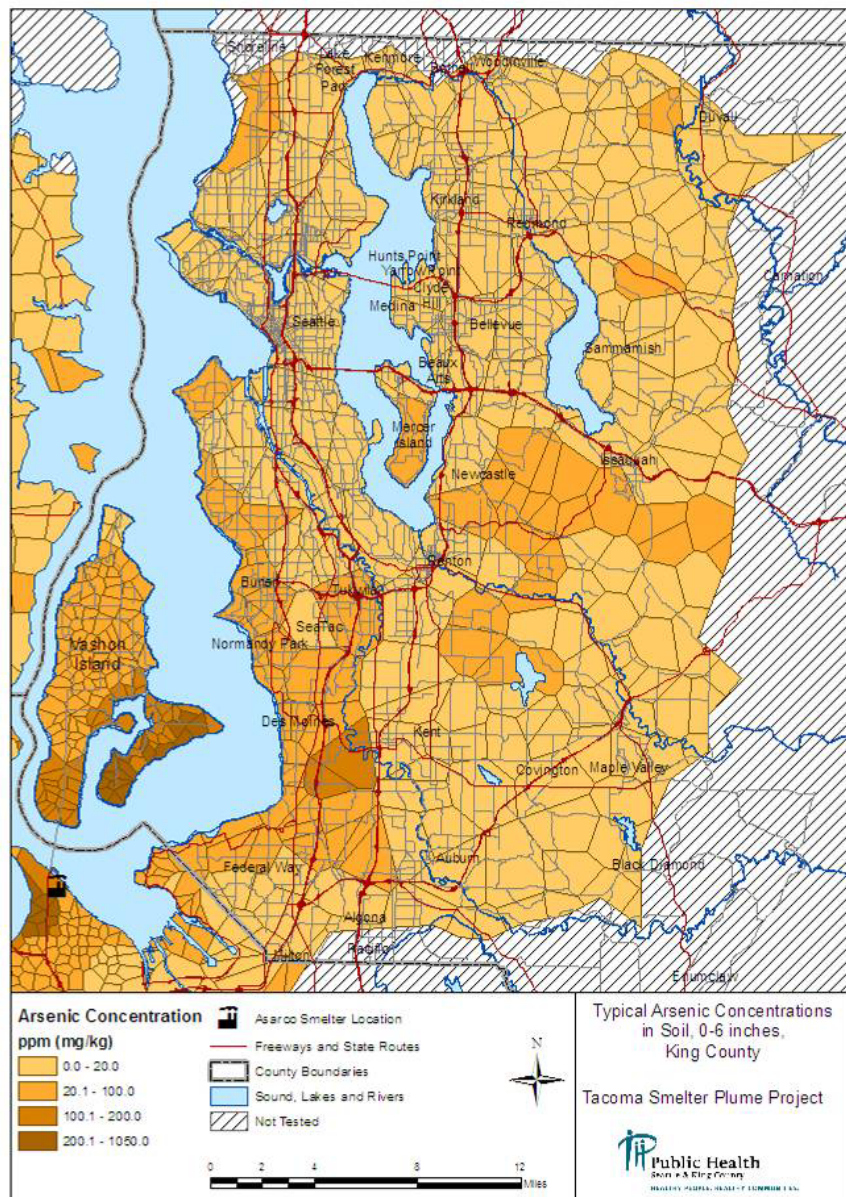
Its also important to remember and teach children that soil is essential for life. Plants need soil to grow, animals and insects find a home in the soil, and children can have fun playing in the dirt. There are safe ways to play outside and touching the soil is not harmful. You can help children learn to play safely outside and in the dirt by using these lesson plans.

## Tacoma Smelter Plume Project – additional details

Public Health – Seattle & King County began studying arsenic and lead soil pollution in King County in 1999, in cooperation with the Washington Department of Ecology. The pollution came from the ASARCO copper smelter located in Ruston, near Tacoma. The smelter operated for almost 100 years (1890 – 1986). The smelter had a very tall, 572 foot smokestack. The air pollution from the smokestack traveled hundreds of miles, landing in soil throughout the central Puget Sound area.

The area around the smelter for a one mile radius is a Superfund (federal) clean-up site. There are also higher than normal levels of arsenic and lead in soil in central Puget Sound and surrounding areas. This polluted zone is called the Tacoma Smelter Plume.

The Tacoma Smelter Plume Project is an effort by Public Health - Seattle & King County, state agencies and local communities to investigate and raise awareness about the soil pollution in King County.



This map shows how much arsenic is estimated to be in the top two inches of the soil in parts of King County. The next page has more information about these studies.



## Studying Soil

Between 1999 and 2005, five different soil studies were conducted by Public Health—Seattle & King County and the Washington State Department of Ecology. The goal was to find out where the ASARCO pollution went and how much is still in our soil. The first studies, on Vashon Island, looked at places where the soils were not recently disturbed or otherwise developed. Subsequent studies looked at child use areas (schools, child cares, and parks). Less pollution was found where soils had been disturbed or moved for development. More pollution was found where the ground had not been disturbed such as parks and forests.



## Regulations

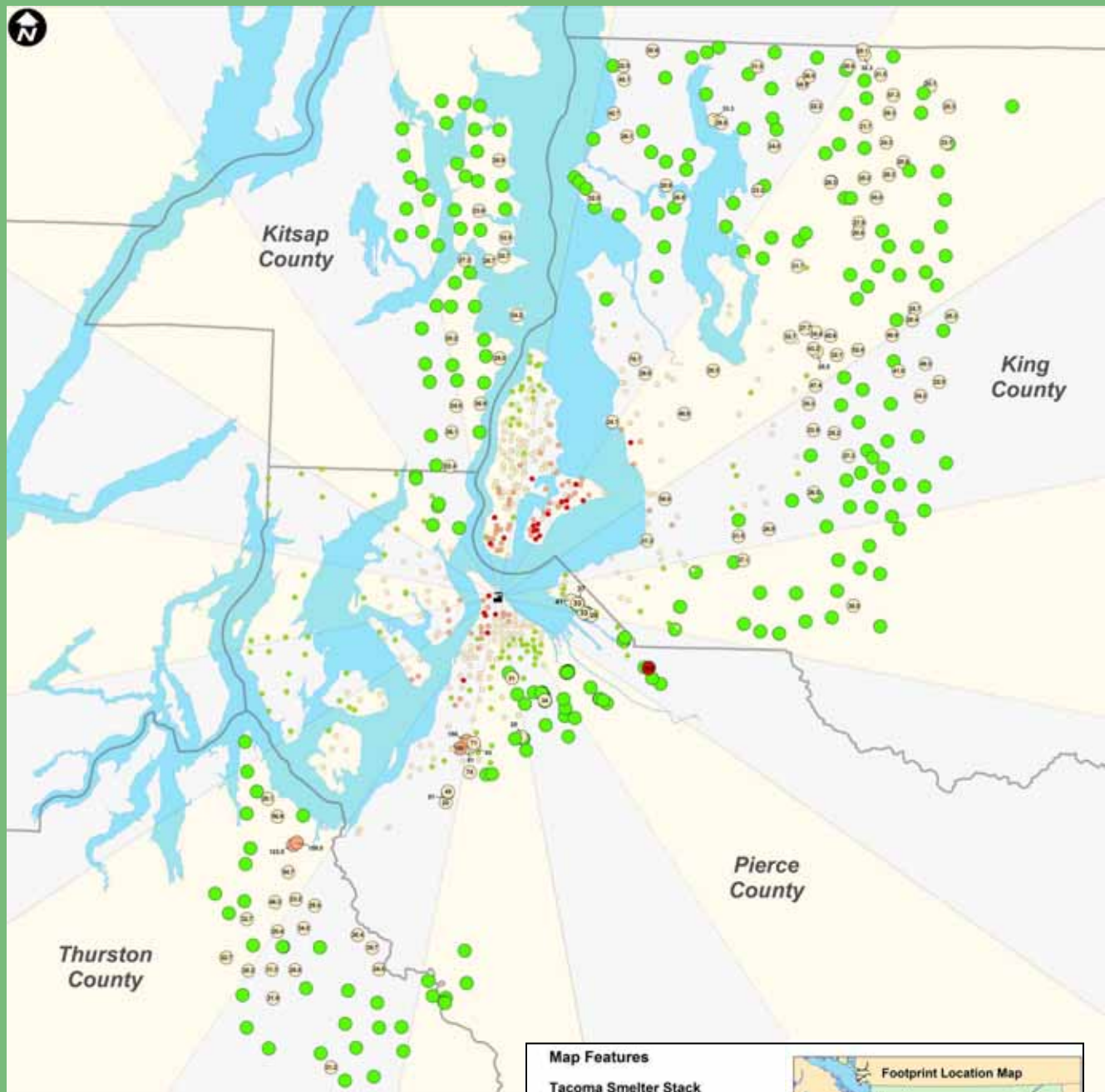
The Washington State law regulating clean-up of polluted soil, water and air is called the Model Toxics Control Act. This law provides the process and standards for studying and cleaning up our environment. The cleanup standard for arsenic in soil is 20 parts per million (ppm), and for lead is 250 ppm. Results from the first study of undisturbed areas showed arsenic levels ranging from 3.1 to 460 ppm and lead ranging from 7.1 to 1300 ppm in King County.

## Soil Safety Program

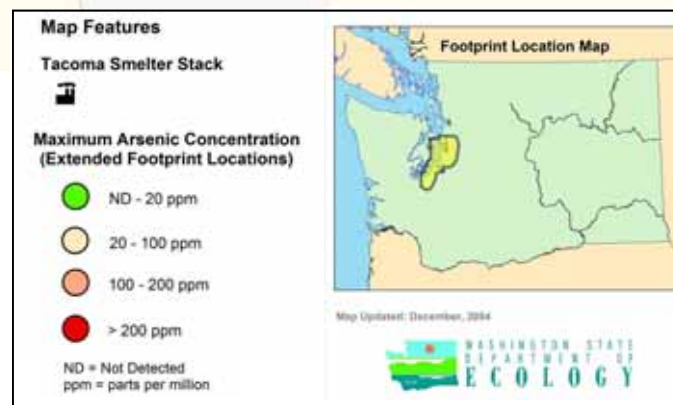
A new Soil Safety Program was launched in spring 2006 to encourage safe soil behaviors and to remediate soil in some cases. The Washington Department of Ecology, Public Health—Seattle & King County, and Tacoma-Pierce County Health Department provide free soil sampling and financial assistance to schools and childcares within a service area where pollution levels are the highest.

If necessary, a custom program of safe behaviors, recommendations, and funding assistance for actions requiring construction or structural changes will be provided to schools and child cares with high levels of arsenic and lead in their soil. The ppm high level for arsenic is either an average over 20 ppm or a maximum over 40 ppm. The high ppm level for lead is either an average over 250 ppm or a maximum over 500 ppm. Schools and childcares within the Tacoma Smelter Plume will be contacted directly about this free program. For more information see page 52 in the Resources section.

# Teacher's Guide



Tacoma Smelter Plume — Extended Footprint Arsenic Concentrations



## **Lesson Plans for Ages 2—5:**

1. Be Alert in the Dirt
2. Dirt Exploration
3. Healthy Eating
4. Hand-Washing



# Lesson 1: Be Alert in the Dirt

Ages 2- 5

Music and movement with *Digger the Dog*

## Grade Level

Ages 2 - 5

## Time

15-20 minutes

## Materials Needed

- *Be Alert in the Dirt*  
Video on DVD or  
VHS



- T.V. with open area  
for dancing nearby

## Handouts

*Be Alert in the Dirt*

Lyrics



## Learning Objective

Through music and movement, children will be able to identify actions that will help them be safe playing near dirt.

## Learning Procedure

- Make sure you have enough room for the children to stand and move around.
- Play the “Be Alert in the Dirt” video and encourage children to try out the motions and follow along. The video will repeat, so children can become experts. You can also fast forward to the Spanish version.
- After the video, sit with children on the floor and discuss.

## Discussion Questions

1. What are some things in the dirt that are yucky?  
*Examples: Garbage, germs, kitty poo*
2. When we play outside, what parts of our bodies can get dirty?  
*Examples: Hands, face, shoes, clothes, etc.*
3. After playing in the dirt, what did Digger and the children do to get the dirt off?  
*Examples: Stomp-a-stomp, brush-a-brush, scrub-a-scrub*
4. What else can we do to make sure dirt stays outside?  
*Examples: Take off our shoes— if allowed*

## To Learn More

Give carpet squares to each child, so they can practice stomping during the video.

If possible, play sound only and use for games such as musical chairs or while you clean up.

## Families

Let families borrow the “Be Alert in the Dirt” video to take home so they can learn too.

**“Be Alert in the Dirt”**  
By Tickle Tune Typhoon

Soil everywhere, we can learn to be aware  
For safety here and there, be alert when you play in the dirt

**CHORUS**

**Put your hands up high, put your hands down low**  
*(Hands up high, hands down low)*

**Shake a li and shake a loo the dirt right off of you**  
*(Shake hands or body to the left, shake to the right, brush dirt off arms)*

Don't wear your shoes inside, don't wear your shoes inside  
Give your shoes a stomp a stomp (echo) and leave the dirt outside  
*(Stomp feet)*  
Give your shoes a stomp a stomp, (echo) and leave the dirt outside  
*(Stomp feet)*

**CHORUS**

Dirt gets on your shirt, your pants, your coat, your skirt  
Give your clothes a brush a brush (echo) and leave the dirt outside  
*(Brush clothes)*  
Give your clothes a brush a brush (echo)  
*(Brush clothes)*  
Give your shoes a stomp a stomp (echo) and leave the dirt outside  
*(Stomp feet)*

There's chemicals and poison too, germs in dog and kitty poo  
Precaution is the word and remember to not eat the dirt  
Wash your toys and bicycle, pacifier, tricycle  
Mop the floor, mop some more to clean up the dirt on the floor  
And remember to not eat the dirt

**CHORUS**

Lyrics continued

**“Be Alert in the Dirt”**

By Tickle Tune Typhoon

After playing in the yard, the playground or the park  
Give your hands a scrub a dub (echo) and leave the dirt outside  
*(Wash hands)*  
Give your hands a scrub a dub (echo)  
*(Wash hands)*  
Give your clothes a brush a brush (echo)  
*(Brush off clothes)*  
Give your shoes a stomp a stomp (echo) and leave the dirt outside  
*(Stomp feet)*

**CHORUS**

Herbicides, pesticides, toxics you don't want inside  
Precaution is the word and remember to not eat the dirt  
Wash your fruit and vegetables so tasty and delectable  
The garden's where you grow 'em, wear gloves when you dig 'em and hoe 'em  
And remember to not eat the dirt

Oh bright colors of life filled with love sing and dance all around us to show that we care.  
Yes the colors of all of the children are circling round the green Earth that we share

Soil everywhere we can learn to be aware  
For safety here and there be alert when you play in the dirt

**CHORUS**

Give your hands a scrub a dub (echo)  
*(Wash hands)*  
Give your clothes a brush a brush (echo)  
*(Brush off clothes)*  
Give your shoes a stomp a stomp (echo) and leave the dirt outside  
*(Stomp feet)*  
Scrub a dub (echo)  
*(Wash hands)*  
Brush a brush ( echo)  
*(Brush off clothes)*  
Stomp a stomp (echo) and safely play outside  
*(Stomp feet)*

**“Cuidado al Jugar en la Tierra”**

By Tickle Tune Typhoon

Hay mugre en todos lados, Ten mucho cuidado

Alerta aquí – alerta allá,  
Cuidado al jugar en la tierra

Arriba las manos. Abajo las manos  
Sacude y quítate la tierra de ti

Afuera los zapatos, Afuera los zapatos  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera

Hay mugre aquí en tu ropa  
Tu chamarra y tu vestido  
Sacude tu ropa bien (ropa bien)  
Y deja la tierra afuera  
Sacude tu ropa bien (ropa bien)  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera

Hay químicas, veneno y pupu de animales  
Usa la precaución y...  
Recuerda no comas la tierra  
Limpia tus juguetes, la chupeta y lo demás  
Trapeando y mas trapeando  
Así es que se limpia el piso  
Y... recuerda no comas la tierra

Después de haber jugado  
En el patio o en el parque  
Lávate las manos bien (manos bien)  
Y deja la tierra afuera  
Lávate las manos bien (manos bien)  
Sacude tu ropa bien (ropa bien)  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera

Arriba las manos, Abajo las manos  
Sacude y quítate la tierra de ti  
Herbicidas, pesticidas Tóxicos afuera  
Usa la precaución y...Recuerda no comas la tierra

Lava las frutitas y los ricos vegetales  
Ponte bien los guantes, cuando escarbes en el jardín  
Y... recuerda no comas la tierra

Los colores del mundo, Cantando y bailando  
Mostrándonos la precaución  
Los colores en todos lo niños , Que van expresándolo  
En nuestra canción

Hay mugre en todos lados, Ten mucho cuidado  
Alerta aquí – alerta allá,  
Cuidado al jugar en la tierra

Limpia bien (limpia bien) Sacude bien (sacude bien)  
Cepilla bien (cepilla bien), Cuidado con la mugre



# Lesson 2: Dirt Exploration

What's in our dirt?

Ages 2 - 5

## Ages

2 - 5 years

## Time

15-20 minutes

## Materials Needed

- Gallon size bag that you can seal or lock closed
- Dirt or coffee grounds
- Items found naturally in dirt such as grass, leaves, twigs, feathers, flowers, rocks, plastic bugs
- Manufactured items such as wrappers, string, penny, litter

## Student Handouts

- What's in Dirt?
- Discovering Dirt Memory Cards



## Learning Objective

Children will be able to say or show that there are both good and bad things in dirt.

## Learning Procedure

- Put dirt (or coffee grounds) and items in a bag that you can seal. Put this bag in another bag. Seal the bags
- Sit with children on the floor in a circle.
- Pass around the bag and ask the children to point out and say what they see one at a time.

## Questions for the Children to Talk About

1. Where can we find dirt?  
*Examples: Garden, yard, playground, inside house, on hands*
2. What do you see in dirt?  
*Let children share.*
3. What are some things in dirt that are yucky?  
*Examples: Garbage, animal poo*
4. Are there things in dirt that we cannot see?  
*Examples: Germs, chemicals*
5. Can dirt make us cough?  
*If we eat dirt or breathe in dust. Dust is dirt in the air.*

## To Learn More

- Talk about how dirt is good. (*It's a home for insects and animals, helps plants grow, and it is fun to play in dirt.*)
- Go on a dirt scavenger hunt. Ask children to point out the things they see in the dirt. Use magnifying glasses. Remember to wash your hands when you are done.
- Make copies of the "What's in Dirt?" coloring page to use with free-time or an art lesson.
- Play Memory with "Discovering Dirt Memory Cards."
- Send home a copy of the letter to parents.

## Recommended Books

- *Exploring Nature with your Children* by Adrienne Katz
- *Good Earth Art* by Mary F. Kohl and Cindy Gainer
- *Planting a Rainbow* by Lois Ehlert



**What does Digger the Dog see in the Dirt?**



Name: \_\_\_\_\_



Dear Parents,

Today your child learned about being safe when playing in the dirt. It's fun and healthy to play outside, but some dirt in our area contains chemicals (like arsenic and lead) from an old copper factory near Tacoma. Dirt can also have germs and bacteria in it. Dust can make allergies and asthma worse. Children can breathe in dust or accidentally eat dirt inside our homes. Seattle-King County Public Health says it's OK to play outside, but leave the dirt outside. Follow these soil safety actions to keep your home clean and family healthy.

**Inside your home:**

- Brush dirt off your clothes before going inside.
- Stomp your feet on a sturdy mat outside the door to help remove dirt.
- Take off your shoes before going inside.
- Wash your hands with soap and water before eating or drinking. Don't use "waterless" soaps.
- Damp mop floors and wipe surfaces often to control dust.
- Wash toys and pacifiers often.
- Wash vegetables and fruits.
- Eat a balanced diet including foods with iron and calcium.

**Outside your home:**

- Keep children from eating dirt or playing in bare exposed dirt.
- Cover bare patches of dirt with bark, grass or other material. Or fence off the area.
- Dampen dusty soils before gardening and wear gloves.
- Brush dirt off pets before going inside.
- Keep vegetable gardens away from old painted structures and treated wood.
- Do not plant food crops under the roof overhang of your home.

For information and resources on arsenic and lead call 206-205-4394 or visit our website at <http://www.metrokc.gov/health/tsp/arseniclead.htm>. It's ok to play and work in dirt, but remember to use the actions above to stay safe and healthy. Help your children learn to use these actions too.

Sincerely,  
Seattle – King County Public Health

# Lesson 3: Ages 2 - 5

## Healthy Eating for our Bodies

Keeping lead and arsenic out

### Ages

2 - 5 years

### Subjects

Health, nutrition,  
cooking

### Time

15-20 minutes

### Materials Needed

- Super Heroes Foods High in Iron, Calcium and Vitamin-C
- Super Hero Picture Cards
- Super Hero Recipes

### Handouts

- Super Hero Food list
- Super Hero Food flash cards
- Super Hero Snack Recipes



### Learning Objective

Children will:

- Be able to identify foods that are healthy to eat.
- Understand that healthy foods will help them grow and be strong just like a super hero. Good foods help keep bad chemicals out of our bodies.

### Learning Procedure

- Sit with children on the floor in a circle.
- Hold up a picture of a “Super Hero” food.
- Ask the children to tell you what it is.
- Ask the children if they have eaten it before.
- Repeat with each photo.

### Discussion Questions

1. What are healthy foods?  
*Ask children to take turns sharing. See teacher pages for examples.*
2. What does healthy food give our bodies?  
*Examples: Energy to grow strong.*
3. When are good times during the day to eat?  
*Examples: Breakfast, lunch, dinner, and snack time.*
4. What should we do before we have a meal or eat a snack?  
*Wash our hands.*

### To Learn More

- Prepare a snack with the children that is rich in calcium, iron or Vitamin C. See Super Hero Snack Recipes.
- Cut out healthy food pictures from a magazine (see Super Hero Foods High in Calcium, Iron and Vitamin C). Ask children to paste them onto a large piece of paper and hang it on a bulletin board. Make placemats with the pictures.
- Check with your food service provider to see if “Super Hero” foods can be added to meals and snacks.
- See resources at the end of the booklet.

### Families

Share the “Super Hero Snack Recipes” with families for children to enjoy at home.

## Super Hero Foods High in Calcium, Iron and Vitamin C

Eating foods rich in **calcium** will reduce lead absorption and also helps make teeth and bones strong.

### Foods with Calcium

- Almonds
- Cooked beans
- Calcium-fortified fruit juice and soy milk
- Cheese
- Cottage cheese
- Calcium-fortified hot or cold cereal
- Dried figs
- Milk
- Cooked spinach
- Tofu
- Yogurt
- Cooked greens (mustard, turnip, dandelion)



Children with healthy diets tend to absorb less lead. **Iron** in the diet helps to block lead from reaching the muscles and bone.

### Foods with Iron

- Broccoli
- Cooked beans (navy, lentils, soy)
- Dried fruit
- Green leafy vegetables
- Molasses
- Red meat
- Cooked spinach
- Whole and enriched grains (flour, cereal, bread, pasta)
- Cooked greens (mustard, turnip, dandelion)



**Vitamin-C** helps children absorb iron.

### Foods with Vitamin-C

- Cantaloupe
- Berries
- Grapefruit
- Oranges
- Potatoes
- Broccoli
- Mango
- Papaya
- Cabbage
- Bell peppers
- Tomatoes



## Super Hero Snack Recipes

### **Pizza Cake (1 serving)**

1/2 English muffin  
2 Tbsp pizza sauce  
2 tbsp grated **mozzarella cheese**

Spread sauce on english muffin.  
Top with grated cheese.  
Heat in oven/microwave until cheese melts.

### **Mud Dip (1 serving)**

1 1/2 cups cooked **pinto beans**  
(If using canned, drain and rinse well)  
1 Tbsp Taco or fajita seasoning mix  
6 oz. grated **low-fat cheese**

Mash beans with fork.  
Stir in spices and grated cheese.  
Spoon into soft tortilla.  
Heat in oven/microwave until cheese melts.

### **Build a Sundae (1 serving)**

1/2 cup low-fat vanilla **yogurt**  
1/4 cup chopped fruit: **kiwi**, banana,  
or **strawberry**  
Toppings: Nutritious cereal, **molasses**  
Ice-cream cones (optional)

Spoon yogurt into individual cups or  
ice-cream cones.  
Add fruit and toppings.

### **Veggie Sticks (ages 3—5)**

1 carrot, 1 cucumber, 1 zucchini  
1 head each of **broccoli**, cauliflower  
10-12 mushrooms  
1 bunch **spinach**

Dip: 1/2 cup low-fat **cottage cheese**, 1/2  
cup non-fat plain **yogurt**. Pinch each of  
any variety of spices: curry, parsley, dill,  
oregano, basil.

Wash all vegetables well.  
Cut into child-size portions.  
Spoon dip into individual cups.





# Lesson 4:

## Scrub a Scrub

A hand-washing lesson plan

Ages 2 - 5

### Ages

2 - 5 years

### Time

Part I: 15 min

Part II: 30 min

### Suggested Materials

- Hand-washing area
- Liquid soap
- Disposable paper towels
- Air dryer (if available)
- Child-height sinks or slip-proof step stools
- Lined trash can

### Handouts

- Hand Washing Songs
- Dirty Hands Card



### Learning Objective

Children will understand that washing hands will help keep dirt out of their bodies.

### Learning Procedure

#### Part I:

- Sit with children on the floor in a circle.
- Ask children to look at the picture of the child with dirty hands. Follow discussion questions on back.
- Let children contribute and take turns sharing.

#### Part II:

1. Encourage children to agree that the boy needs to wash his hands. Then tell children that they will learn how to do a good job washing their hands. In a circle, show hand-washing steps:
  - Wet hands with water.
  - Put soap on hands and make bubbles.
  - Rub hands together for 20 seconds. Try singing a song like the ABCs or counting to 20.
  - Wash off soap with water.
  - Dry hands with a towel or use an air dryer.
2. Teach children the parts of their hands they need to wash: palms, backs, between fingers, under nails, and wrists.
3. Ask children to line up at the sink and practice.

### To Learn More

- Teach children a hand washing song using a familiar tune like “Happy Birthday.” See “Hand-washing Songs” handout for ideas.
- Finger paint and then ask children to practice their hand washing skills.
- Add empty liquid soap bottles and hand towels for children to include hand-washing in their play.

### Recommended Books

*Wash your Hands!* by Tony Ross

*Dirt and Grime Like You’ve Never Seen!* by Vicki Cobb

*Those Downright, Nasty, Disgusting Germs!* by Judith Rice

## Hand-washing Songs

### **Dirt Goes Down the Drain\***

*Tune to Row, Row, Row Your Boat*

Wash, wash, wash your hands  
Play our handy game.  
Rub and scrub, and scrub and rub,  
Germs go down the drain. Hey!

Wash, wash, wash your hands  
Play our handy game.  
Rub and scrub, and scrub and rub,  
Dirt goes down the drain. Hey!

### **This Is The Way We Wash Our Hands\***

This is the way we wash our hands  
Wash our hands  
Wash our hands  
This is the way we wash our hands  
To keep our bodies healthy  
This is the way we eat good food  
Eat good food  
Eat good food  
This is the way we eat good food  
To keep our bodies healthy

### **Look How Clean My Two Hands Are!\*\***

Twinkle, twinkle little star,  
Look how clean my two hands are,  
Soap and water, wash and scrub,  
Get those germs off rub-a-dub,  
Twinkle, twinkle little star,  
Look how clean my two hands are.

### **Hand-Washing Song**

*Tune to Wheels on the Bus*

The soap on your hands goes sud,  
sud, sud  
Sud, sud, sud  
Sud, sud, sud  
The soap on your hands goes sud,  
sud, sud,  
And the germs go down the drain

## **Lesson Plans for Grades K - 3:**

1. Be Alert in the Dirt
2. Dirt Exploration
3. Healthy Eating
4. Hand-Washing



## Be Alert in the Dirt

Music and Movement with *Digger the Dog*

## Grade Level

K-3

## Subjects

P.E., art, dance, science

## Time

40-60 minutes

## Materials Needed

- *Be Alert in the Dirt* video.



- T.V. with open area for dancing nearby.
- Crayons or markers.

*Optional*

- Tape.
- Large piece of white paper.

## Handouts

- *Be Alert in the Dirt* lyrics
- Digger the Dog coloring pages



## Learning Objective

Students will:

- Understand what may be in dirt that is unhealthy.
- Through music and movement, identify actions that will help reduce their exposure to dirt.
- Understand that hand washing, stomping their feet on a mat, and brushing off clothes are healthy activities and good ways to keep dirt outside.

## Learning Procedure

*Before class review lyrics and suggested dance/hand movements to follow along with the “Be Alert in the Dirt” video.*

**Part I: Class Discussion about Dirt**

1. What is good about dirt?

*Examples: plants grow in dirt, insects live in dirt, etc*

2. What are some things in dirt that are yucky? If appropriate, define some of the words in the song such as pesticides.

*Spit, germs, kitty poop*

*Pesticides, herbicides*

*Old gasoline and paint chips (containing lead).*

2. When we play outside, what parts of our bodies can get dirty? How can dirt come inside on our shoes, clothes and hands?

*Examples: Hands, face, shoes, clothes, etc.*

4. Brainstorm ways we can keep dirt outside:

Stomp feet on a doormat outside

Brush off clothes

Take off shoes at the door (if allowed)

**Part II: Dancing and Singing Activity**

- Ask students to stand with enough room to move around.
- Play *Be Alert in the Dirt* following along with movements.
- Discuss the song and the hand/dance movements with students. (For example say, “I’m going to pretend to stomp on a mat every time they sing Stomp.” And “I’m going to brush my clothes whenever they sing Brush.”)
- Play the video again and encourage the students to sing and dance with you. The video also includes a Spanish version.
- If possible, play the music only and dance and sing together.

## Vocabulary

**Apply** – The skill of selecting and using information in other situations or problems.

**Challenges** – Problems that can be solved using science concepts and principles, inquiry, and technology.

**Claim** – A valid conclusion of a scientific argument.

**Observation** – The skill of recognizing and noting some fact or occurrence in the natural world, including the act of measuring.

**Properties** – The basic or essential attributes shared by all members of a group.

**Science** – The systematized knowledge of the natural world derived from observation, study, and investigation; also the activity of specialist to add to the body of this knowledge.

**Solutions** – Artifact of the scientific design process in response to human problems that can include devices or processes such as environmental impact statements.

**Transfer** – The movement of energy from one location in a system to another system or subsystem.

Sources: 2004 WA OSPI EALR Science Glossary of Scientific Terms

## Part III: Art Activity

If appropriate, distribute the “Digger the Dog” coloring sheet or ask students to draw and color a picture to show themselves doing an activity captioned with one of the following:

“I can wash my hands.”

“I can stomp my feet.”

“I can brush dirt off my clothes.”

“I can take off my shoes.”

Students can post their artwork at home or in the classroom.

## Extended Learning

- Play the video again and ask students to create their own movements to go with the music when brushing dirt off their clothes, stomping the dirt off their shoes or washing the dirt off their hands. Practice these movements often. Students can demonstrate their dance step or movements when coming into the classroom.
- Using tape, create a square on the floor for each student to represent a doormat. Students can stomp on their “mat” during the video with no shoes on.
- If there is a doormat outside the school or classroom, have students lift up the mat to see if there is dirt under the mat. Or gently shake the mat onto a large sheet of white paper.
  - Students can observe the dirt on the paper and discuss how the dirt got on or under the mat from their shoes.
  - Sweep the dirt under the mat away from the door or pour the dirt from the paper outside.
- For regular practice, play “Be Alert in the Dirt” after returning from recess, before going on a field trip, and during hand-washing time.
- Pass out copies of the *Student Questions* handout. Students may complete the questions themselves or may follow along and mark the answers to the questions as you read aloud.
- Pass out copies of the *Soil Safety Word Search*.

## Families

- Let families borrow the “Be Alert in the Dirt” video to take home so they can learn too.
- Ask students to post their artwork at home to remind them to be alert in the dirt.
- Send home a copy of the letter to parents.

**“Be Alert in the Dirt”**

By Tickle Tune Typhoon

Soil everywhere, we can learn to be aware  
For safety here and there, be alert when you play in the dirt

**CHORUS**

**Put your hands up high, put your hands down low**

*(Hands up high, hands down low)*

**Shake a li and shake a loo the dirt right off of you**

*(Shake hands or body to the left, shake to the right, brush dirt off arms)*

Don't wear your shoes inside, don't wear your shoes inside  
Give your shoes a stomp a stomp (echo) and leave the dirt outside  
*(Stomp feet)*

Give your shoes a stomp a stomp, (echo) and leave the dirt outside  
*(Stomp feet)*

**CHORUS**

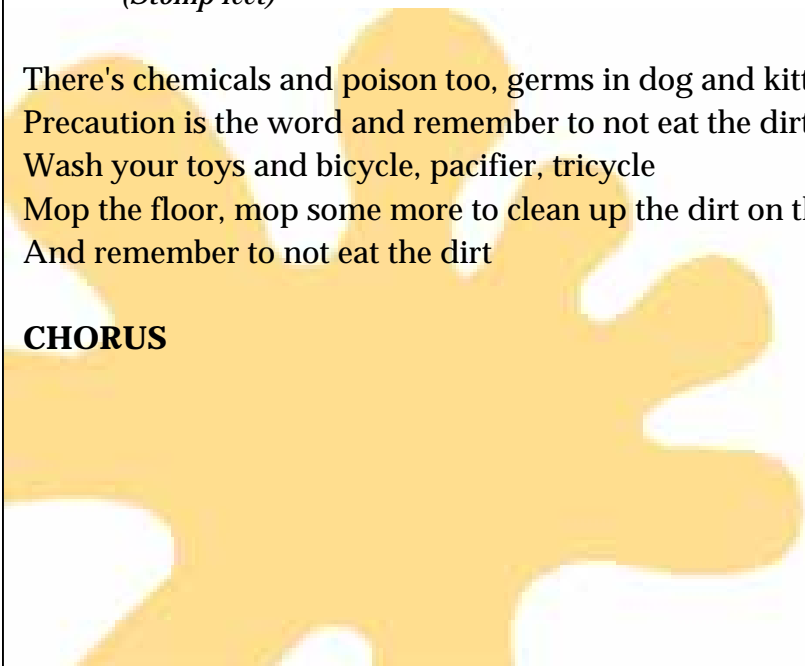
Dirt gets on your shirt, your pants, your coat, your skirt  
Give your clothes a brush a brush (echo) and leave the dirt outside  
*(Brush clothes)*

Give your clothes a brush a brush (echo)  
*(Brush clothes)*

Give your shoes a stomp a stomp (echo) and leave the dirt outside  
*(Stomp feet)*

There's chemicals and poison too, germs in dog and kitty poo  
Precaution is the word and remember to not eat the dirt  
Wash your toys and bicycle, pacifier, tricycle  
Mop the floor, mop some more to clean up the dirt on the floor  
And remember to not eat the dirt

**CHORUS**



Lyrics continued

**“Be Alert in the Dirt”**  
By Tickle Tune Typhoon

After playing in the yard, the playground or the park  
Give your hands a scrub a dub (echo) and leave the dirt outside

*(Wash hands)*

Give your hands a scrub a dub (echo)

*(Wash hands)*

Give your clothes a brush a brush (echo)

*(Brush off clothes)*

Give your shoes a stomp a stomp (echo) and leave the dirt outside

*(Stomp feet)*

**CHORUS**

Herbicides, pesticides, toxics you don't want inside  
Precaution is the word and remember to not eat the dirt  
Wash your fruit and vegetables so tasty and delectable  
The garden's where you grow 'em, wear gloves when you dig 'em and hoe 'em  
And remember to not eat the dirt

Oh bright colors of life filled with love sing and dance all around us to show that we care.  
Yes the colors of all of the children are circling round the green Earth that we share

Soil everywhere we can learn to be aware  
For safety here and there be alert when you play in the dirt

**CHORUS**

Give your hands a scrub a dub (echo)

*(Wash hands)*

Give your clothes a brush a brush (echo)

*(Brush off clothes)*

Give your shoes a stomp a stomp (echo) and leave the dirt outside

*(Stomp feet)*

Scrub a dub (echo)

*(Wash hands)*

Brush a brush ( echo)

*(Brush off clothes)*

Stomp a stomp (echo) and safely play outside

*(Stomp feet)*



**“Cuidado al Jugar en la Tierra”**

By Tickle Tune Typhoon

Hay mugre en todos lados, Ten mucho cuidado

Alerta aquí – alerta allá,  
Cuidado al jugar en la tierra

Arriba las manos. Abajo las manos  
Sacude y quítate la tierra de ti

Afuera los zapatos, Afuera los zapatos  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera

Hay mugre aquí en tu ropa  
Tu chamarra y tu vestido  
Sacude tu ropa bien (ropa bien)  
Y deja la tierra afuera  
Sacude tu ropa bien (ropa bien)  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera

Hay químicas, veneno y pupu de animales  
Usa la precaución y...  
Recuerda no comas la tierra  
Limpia tus juguetes, la chupeta y lo demás  
Trapeando y mas trapeando  
Así es que se limpia el piso  
Y... recuerda no comas la tierra

Después de haber jugado  
En el patio o en el parque  
Lávate las manos bien (manos bien)  
Y deja la tierra afuera  
Lávate las manos bien (manos bien)  
Sacude tu ropa bien (ropa bien)  
Limpia tus zapatos bien (zapatos bien)  
Y deja la tierra afuera

Arriba las manos, Abajo las manos  
Sacude y quítate la tierra de ti  
Herbicidas, pesticidas Tóxicos afuera  
Usa la precaución y...Recuerda no comas la tierra

Lava las frutitas y los ricos vegetales  
Ponte bien los guantes, cuando escarbes en el jardín  
Y... recuerda no comas la tierra

Los colores del mundo, Cantando y bailando  
Mostrándonos la precaución  
Los colores en todos lo niños , Que van expresándolo  
En nuestra canción

Hay mugre en todos lados, Ten mucho cuidado  
Alerta aquí – alerta allá,  
Cuidado al jugar en la tierra

Limpia bien (limpia bien) Sacude bien (sacude bien)  
Cepilla bien (cepilla bien), Cuidado con la mugre

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_



Digger the Dog can wash his hands!

**Student Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

What can Digger the Dog do to keep dirt outside?

**Pick one action and draw a picture of you or Digger the Dog doing the action.**

- **Stomp feet on a doormat.**
- **Brush dirt off clothes.**
- **Take off shoes.**

A large empty rectangular box with a thin black border, intended for the student to draw a picture of themselves or Digger the Dog performing one of the listed actions.



Dear Parents,

Today your child learned about being safe when playing in the dirt. It's fun and healthy to play outside, but some dirt in our area contains chemicals (like arsenic and lead) from an old copper factory near Tacoma. Dirt can also have germs and bacteria in it. Dust can make allergies and asthma worse. Children can breathe in dust or accidentally eat dirt inside our homes. Seattle-King County Public Health says it's OK to play outside, but leave the dirt outside. Follow these soil safety actions to keep your home clean and family healthy.

**Inside your home:**

- Brush dirt off your clothes before going inside.
- Stomp your feet on a sturdy mat outside the door to help remove dirt.
- Take off your shoes before going inside.
- Wash your hands with soap and water before eating or drinking. Don't use "waterless" soaps.
- Damp mop floors and wipe surfaces often to control dust.
- Wash toys and pacifiers often.
- Wash vegetables and fruits.
- Eat a balanced diet including foods with iron and calcium.

**Outside your home:**

- Keep children from eating dirt or playing in bare exposed dirt.
- Cover bare patches of dirt with bark, grass or other material. Or fence off the area.
- Dampen dusty soils before gardening and wear gloves.
- Brush dirt off pets before going inside.
- Keep vegetable gardens away from old painted structures and treated wood.
- Do not plant food crops under the roof overhang of your home.

For information and resources on arsenic and lead call 206-205-4394 or visit our website at <http://www.metrokc.gov/health/tsp/arseniclead.htm>. It's ok to play and work in dirt, but remember to use the actions above to stay safe and healthy. Help your children learn to use these actions too.

Sincerely,  
Seattle – King County Public Health




Questions for Students

Student Name: \_\_\_\_\_ Date: \_\_\_\_\_

More than one answer is okay.

Question 1

What should I do when I see a doormat outside?

Jump or dance	Stomp my feet	Do a cartwheel
		

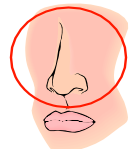


Question 2

How do yucky things and dirt get into my body?

From dirt on my hands into my mouth	Through my hair	Through my skin
		

Question 3

What should I do before I eat to keep dirt from getting in my mouth or nose?

Hold my nose closed	Wash hands with soap and water	Eat fast
		

Question 4

After playing outside where might I find dirt?

In my notebook	On my shirt	On my shoes
		

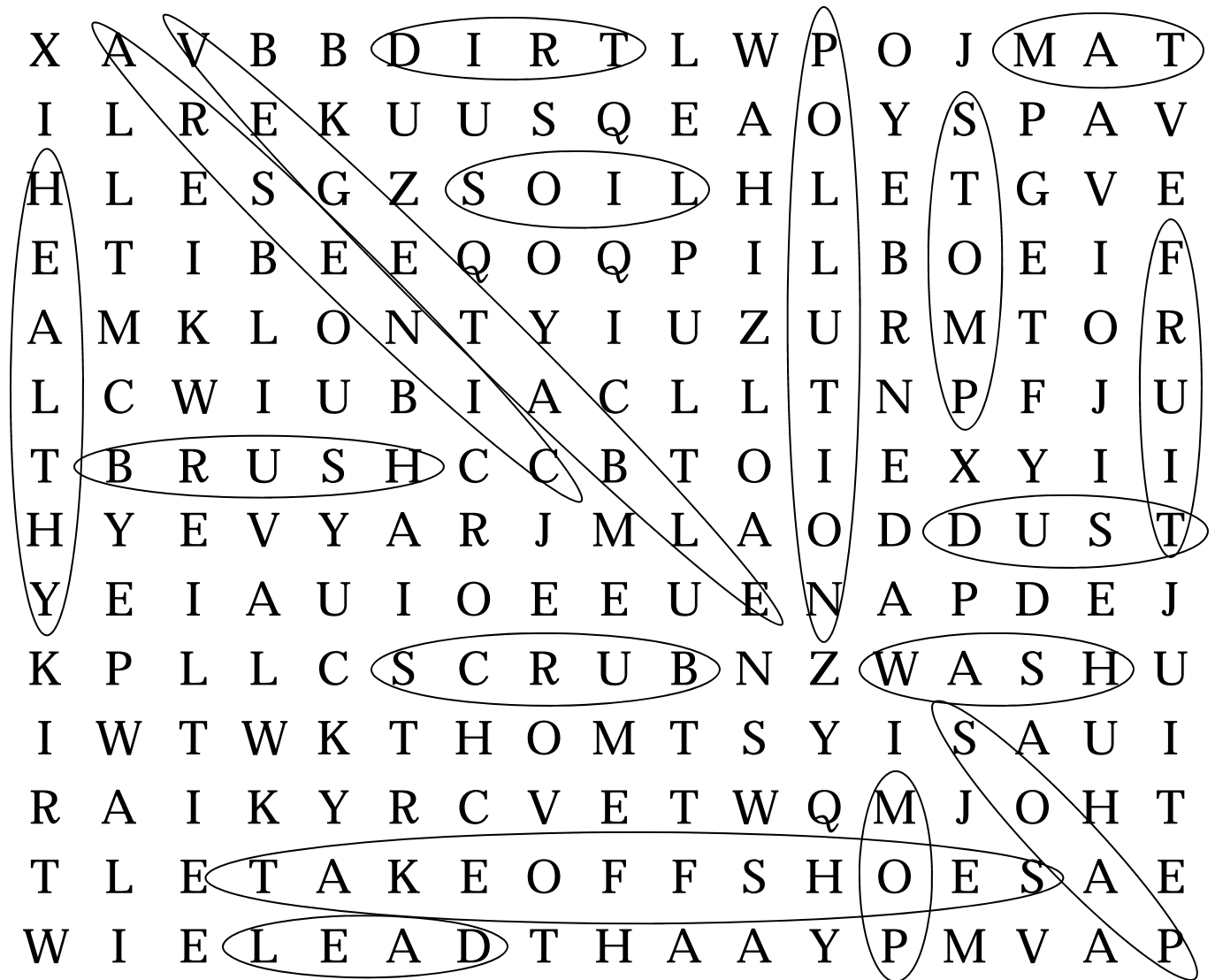
### Soil Safety Word Search

X A V B B D I R T L W P O J M A T  
 I L R E K U U S Q E A O Y S P A V  
 H L E S G Z S O I L H L E T G V E  
 E T I B E E Q O Q P I L B O E I F  
 A M K L O N T Y I U Z U R M T O R  
 L C W I U B I A C L L T N P F J U  
 T B R U S H C C B T O I E X Y I I  
 H Y E V Y A R J M L A O D D U S T  
 Y E I A U I O E E U E N A P D E J  
 K P L L C S C R U B N Z W A S H U  
 I W T W K T H O M T S Y I S A U I  
 R A I K Y R C V E T W Q M J O H T  
 T L E T A K E O F F S H O E S A E  
 W I E L E A D T H A A Y P M V A P

Find these words hidden above:

- |            |               |                    |
|------------|---------------|--------------------|
| 1. ARSENIC | 7. LEAD       | 13. SOIL           |
| 2. BRUSH   | 8. MAT        | 14. STOMP          |
| 3. DIRT    | 9. MOP        | 15. TAKE OFF SHOES |
| 4. DUST    | 10. POLLUTION | 16. VEGETABLE      |
| 5. FRUIT   | 11. SCRUB     | 17. WASH           |
| 6. HEALTHY | 12. SOAP      |                    |

Key to Soil Safety Word Search



Find these words hidden above:

- |            |               |                    |
|------------|---------------|--------------------|
| 1. ARSENIC | 7. LEAD       | 13. SOIL           |
| 2. BRUSH   | 8. MAT        | 14. STOMP          |
| 3. DIRT    | 9. MOP        | 15. TAKE OFF SHOES |
| 4. DUST    | 10. POLLUTION | 16. VEGETABLE      |
| 5. FRUIT   | 11. SCRUB     | 17. WASH           |
| 6. HEALTHY | 12. SOAP      |                    |





# Lesson: 2

## Dirt Exploration

What's in dirt?

Grades K - 3

### Grade Level

K-3

### Subjects

Math, science, health, safety, geography

### Time

30 - 50 minutes

### Materials Needed

- Pencils
- *Dirt Exploration Checklist.*

For inside activity:

- 2 gallon size bags that seal
- Dirt or coffee grounds
- Items found naturally in dirt
- Manufactured items.

For outside activity:

- *Dirt Exploration Graph*
- Clipboards.

### Handouts

- *Dirt Exploration Checklist*
- *Dirt Exploration Graph*



### Learning Objective

Students will:

- Understand that there are natural and manufactured materials outside and in the dirt.
- Use scientific observations to investigate dirt.
- Graph, display, and explain their findings.

### Learning Procedure

#### Part I: Class discussion

- Discuss that playing in the dirt is healthy and fun, but we need to be careful. What else is good about dirt?  
*Examples: plants need dirt to grow, insects live in dirt, etc*
- Discuss what types of things we might find in the dirt that are yucky and unhealthy?

Spit, germs, kitty poo

Pesticides, herbicides

Old gasoline

Old paint chips (containing lead).

- Explain that today the class will be scientists exploring the dirt and recording their findings. Students may also graph their findings.

#### Part II: Review the safety rules

##### Indoors:

- Handle dirt container or bag gently.
- Take turns.

##### Outdoors:

- Keep track of your partners.
- Some items may be unsafe.
- Look but do not touch the items they find.
- Walk – do not run.
- Be alert for others who may be looking at items on the ground.
- Stay within the area designated by the teacher.

## Vocabulary

**Apply** – The skill of selecting and using information in other situations or problems.

**Challenges** – Problems that can be solved using science concepts and principles, inquiry, and technology.

**Relationship** – The connections between systems, subsystems, or part of systems described by the concepts and principles of science that may range from correlational to causal (cause-effect).

**Science** – The systematized knowledge of the natural world derived from observation, study, and investigation; also the activity of specialist to add to the body of this knowledge.

**Solutions** – Artifact of the scientific design process in response to human problems that can include devices or processes such as environmental impact statements.

**Transfer** – The movement of energy from one location in a system to another system or subsystem.

Sources: 2004 WA OSPI EALR Science Glossary of Scientific Terms

**Note:** You may do the indoor or outdoor activity only, or both.

### Part III: Dirt Exploration Indoors

- For the inside activity put, the following in a gallon size bag that can be sealed:
  - Dirt or coffee grounds.
  - Items found naturally in dirt, grass, leaves, twigs, feathers, flowers, rocks, (plastic) bugs.
  - Manufactured items such as paper, candy wrappers, string, coins, and litter.
- Mix items, place in bag, and seal. Put this bag in another bag and seal it closed.
- Pass around the dirt mix allowing all students time to observe. Students may use the *Dirt Exploration Checklist* to record and discuss their findings.
- You may want to make several bags and divide the students into small groups. Groups may then work together to find and identify items in the bag to complete their *Dirt Exploration Checklist*. If you are not doing the outside activity, skip to Part V, Graphing.

### Part IV: Dirt Exploration Outdoors

- Pair off students or ask them to choose a partner.
- Distribute *Dirt Exploration Checklist* to each student.
- Line students up. Then walk to the designated area.
- Remind students to record what they find on their checklist.
- Allow students 20 minutes to explore.
- Before returning to the classroom, have students stomp their feet at the door and brush off their clothes.
- Ask students to practice proper hand-washing before returning to their desks.

### Part V: Graphing

- Use the *Dirt Exploration Graph* as a guide to create a large one for the class on the board or on poster paper. Do not fill in the graph right away.
- Hand copies of the *Dirt Exploration Graph* to each student.
- For each item ask students to raise their hand if they marked it on their checklist. Count and record the frequency on the graph.
- Ask students to:
  1. Label their graphs.
  2. Select interval numbers for the y-axis.
  3. Record numbers, then fill-in bars of graph.

### **Part VI: Discussion**

- After graphing, ask students to discuss how they would divide the items into categories.  
*For example: manufactured materials, natural materials, insects, or plants.*
- Discuss what they found and why:
  - Was it the season?
  - Had it rained lately?
  - Are people littering?
  - What about the invisible things in dirt such as pesticides?

### **Extended Learning**

- Use the *Dirt Exploration Checklist* on field trips to parks or other areas. Ask students to compare and discuss the differences.
- Distribute magnifying glasses so that students may get a closer look at the smaller materials found in dirt.
- Set-up a microscope station and allow students to observe dirt samples under magnification.

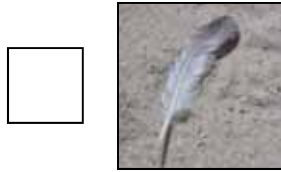
### Dirt Exploration Checklist

Student Name: \_\_\_\_\_

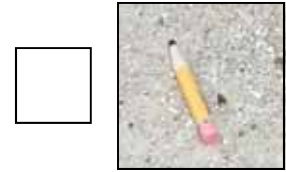
Date: \_\_\_\_\_



Hair Clip



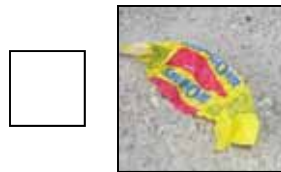
Feather



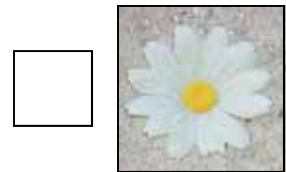
Pencil



Rock



Wrapper



Flower



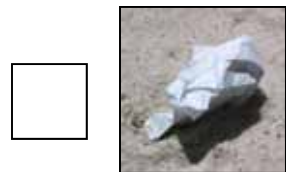
Ant



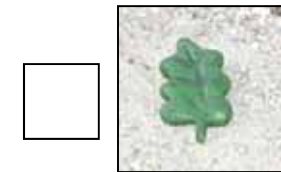
Spider



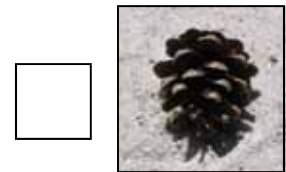
Plastic Cap



Paper



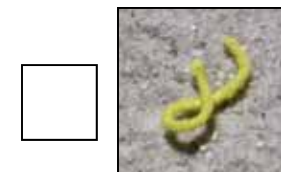
Leaf



Tree cone



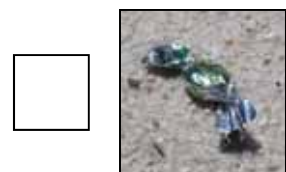
Apple



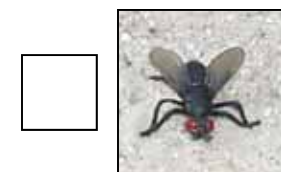
String



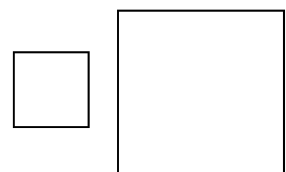
Stick



Candy



Fly



Student Page

Dirt Exploration Graph

Name: \_\_\_\_\_

Bar Graph Title: \_\_\_\_\_




### Questions for Students

Name \_\_\_\_\_ Date \_\_\_\_\_

1. List five things you found in the dirt that are natural materials.

_____	_____
_____	_____
_____	

2. List five things you found in the dirt that are manufactured or man-made materials.

_____	_____
_____	_____
_____	

3. How does the soil become polluted?

4. What are the safety rules for going outside to explore the dirt?

# Lesson 3: Healthy Eating

Keeping out arsenic and lead

Grades K-3

## Grade Level

K-3

## Subjects

Health, nutrition,  
cooking

## Time

30-45 minutes

## Materials Needed

- Magazines
- Scissors
- Glue
- Coloring pencils or crayons.

## Student Handouts

- Super Hero Food List
- Menu Ideas
- Lunch Menu Template



## Learning Objective

Students will:

- Understand that eating healthy food is important to staying healthy.
- Be able to identify foods that are high in iron and calcium.
- Understand that foods rich in iron and calcium help prevent their bodies from absorbing environmental toxins like lead and arsenic.
- Understand that vitamin C helps the body absorb more iron.

## Learning Procedure

### Part I: Class Discussion

- Explain that we can accidentally eat things that are not food, such as dirt. Discuss the types of things in dirt that we might accidentally eat.  
*(Dirt, old paint, grass, seeds, hair, fur, etc.)*
- Explain some dirt is polluted from the Tacoma ASARCO Smelter (see Teacher's Guide). The smelter spread arsenic and lead into the air that landed in our dirt.
- How do we accidentally eat things?  
*(Hands in mouth, food dropped, picnic on ground, etc.)*
- Discuss what might happen if we breathe in or eat dirt.  
*(It might taste bad or make us sick).*
- Describe that healthy eating is one way we can protect our bodies from absorbing some toxins like arsenic and lead.
- In particular, when we eat foods that have **calcium** and **iron**, these minerals help keep arsenic and lead out of our bodies. Arsenic and lead disguise themselves to try to fool our bodies to eat them. "Super hero foods" help bodies to not absorb arsenic and lead.

## Vocabulary

**Apply** – The skill of selecting and using information in other situations or problems.

**Challenges** – Problems that can be solved using science concepts and principles, inquiry, and technology.

**Model** – a representation of a system, subsystem or part of a system that can be used to predict or demonstrate the operation or qualities of the system.

**Phenomena** – Events or objects occurring in the natural world.

**Relationship** – The connections between systems, subsystems, or part of systems described by the concepts and principles of science that may range from correlational to causal (cause-effect).

**Transfer** – The movement of energy from one location in a system to another system or subsystem.

Sources: 2004 WA OSPI EALR Science Glossary of Scientific Terms

## Part II: Activity

Iron and calcium are “Super Heroes” because they help our bodies not absorb arsenic and lead.

1. Define **iron**: You can’t see or taste iron, but it is an important mineral found in many foods. Iron helps our blood give us energy to grow and play. **Vitamin C** is also important because it helps our bodies use iron. You can’t see or taste Vitamin C.
2. Define **calcium**: Calcium is in many different foods but can’t be seen or tasted. Calcium makes our teeth and bones strong and helps us grow.
3. Using the *Super Hero Foods High in Calcium, Iron and Vitamin C* list, brainstorm with students the kinds of foods they think are high in iron and calcium. Write this list on the board.

## Part III: Menu Planning

- Hand out a copy of the “Lunch Menu Template.”
- Ask students to pretend that they own their own restaurant and instruct them to draw and/or write a menu.
- Hand out the *Super Hero Menu Ideas* or write or draw some items on the board.

### *Optional:*

- Ask students to cut and paste pictures of foods high in iron and calcium from magazines, or draw them to decorate the back side or cover of their menus.
- Completed menus may be bound into a book or posted on a bulletin board in the classroom.

## Extended Learning

- Pass out copies of the *Student Questions* handouts. Students may complete the questions themselves or may follow along and mark the answers to the questions as you read aloud.
- Using the *Super Hero Snack Recipes* students can prepare and eat a snack that is high in iron and calcium.
- After lunch ask students about the healthy choices they made.
- Ask students to create a rainbow using only cut-out or drawn fruits and vegetables.
- Incorporate a discussion about the Food Pyramid into your lesson plan. Students can indicate which food groups contain iron and calcium, or both! You can find information about the Food Pyramid at <http://www.mypyramid.gov>.



## Families

- Suggest that students share their food lists with their family and select foods high in calcium, iron, and vitamin C often. Encourage families to offer foods at home from the list for students to try and enjoy.
- Students can ask someone in their family to write their favorite recipes for foods high in iron and calcium. Share the recipes with the class or put together into a class recipe book.
- Send home the *Super Hero Snack Recipes*.
- Send home a copy of the letter to parents.

## Super Hero Foods High in Calcium, Iron and Vitamin C

Eating foods rich in **calcium** will reduce lead absorption and also helps make teeth and bones strong.

### Foods with Calcium

- Almonds
- Cooked beans
- Calcium-fortified fruit juice and soy milk
- Cheese
- Cottage cheese
- Calcium-fortified hot or cold cereal
- Dried figs
- Milk
- Cooked spinach
- Tofu
- Yogurt
- Cooked greens (mustard, turnip, dandelion)



Children with healthy diets tend to absorb less lead. **Iron** in the diet helps to block lead from reaching the muscles and bone.

### Foods with Iron

- Broccoli
- Cooked beans (navy, lentils, soy)
- Dried fruit
- Green leafy vegetables
- Molasses
- Red meat
- Cooked spinach
- Whole and enriched grains (flour, cereal, bread, pasta)
- Cooked greens (mustard, turnip, dandelion)



**Vitamin-C** helps children absorb iron.

### Foods with Vitamin-C

- Cantaloupe
- Berries
- Grapefruit
- Oranges
- Potatoes
- Broccoli
- Mango
- Papaya
- Cabbage
- Bell peppers
- Tomatoes



\_\_\_\_\_ 's Restaurant



# Lunch Menu

A large, empty rectangular box with a white background and a thick orange border, intended for writing the lunch menu items.



Dear Parents,

Today your child learned about being safe when playing in the dirt. It's fun and healthy to play outside, but some dirt in our area contains chemicals (like arsenic and lead) from an old copper factory near Tacoma. Dirt can also have germs and bacteria in it. Dust can make allergies and asthma worse. Children can breathe in dust or accidentally eat dirt inside their homes. Seattle-King County Public Health says it's OK to play outside, but leave the dirt outside. Follow these soil safety actions to keep your home clean and family healthy.

**Inside your home:**

- Brush dirt off your clothes before going inside.
- Stomp your feet on a sturdy mat outside the door to help remove dirt.
- Take off your shoes before going inside.
- Wash your hands with soap and water before eating or drinking. Don't use "waterless" soaps.
- Damp mop floors and wipe surfaces often to control dust.
- Wash toys and pacifiers often.
- Wash vegetables and fruits.
- Eat a balanced diet including foods with iron and calcium.

**Outside your home:**

- Keep children from eating dirt or playing in bare exposed dirt.
- Cover bare patches of dirt with bark, grass or other material. Or fence off the area.
- Dampen dusty soils before gardening and wear gloves.
- Brush dirt off pets before going inside.
- Keep vegetable gardens away from old painted structures and treated wood.
- Do not plant food crops under the roof overhang of your home.

For information and resources on arsenic and lead call 206-205-4394 or visit our website at <http://www.metrokc.gov/health/tsp/arseniclead.htm>. It's ok to play and work in dirt, but remember to use the actions above to stay safe and healthy. Help your children learn to use these actions too.

Sincerely,  
Seattle – King County Public Health

## Super Hero Menu Ideas



### **Drinks**

Milk  
Soy milk  
Orange juice  
Grapefruit juice  
Tomato juice  
Prune juice



### **Sandwiches**

Cheese  
Sardine  
Turkey  
Roast beef  
Egg salad  
Shrimp  
Tomatoes  
Green leafy vegetables



### **Soup**

Vegetable  
Bean  
Minestrone  
Beef Stew  
Tomato



### **Snacks**

Yogurt  
Almonds  
Spinach salad  
Mixed vegetable salad  
Red or green bell pepper sticks  
Dried fruit  
Bean salad  
Potato salad  
Baked potato  
Fortified hot or cold cereal



### **Dessert**

Dried fruit  
Sliced oranges  
Grapefruit  
Gingerbread cookies  
Molasses or oatmeal cookies  
Milk shakes  
Soy milk shakes  
Fruit smoothies  
Pudding

### Questions for Students

Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

*More than one answer is okay.*






#### Question 1

Which foods contain iron?

Noodles	Steak	Soda	Ice cream	Broccoli
				






#### Question 2

Which foods have lots of calcium?

Canned fish	Coffee	Cheese	Milk	Hotdogs
				

#### Question 3

Which foods have lots of vitamin C?

Popcorn	Oranges	Berries	Bell peppers	Burgers
				

#### Question 4

What can I do to stay healthy?

Eat healthy foods rich in iron and calcium and vitamin C	Stay indoors	Eat more candy
		

## Questions for Students

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Name two foods rich in **iron**

\_\_\_\_\_

\_\_\_\_\_

2. Name two foods rich in **calcium**

\_\_\_\_\_

\_\_\_\_\_

3. Name two foods rich in **Vitamin C**

\_\_\_\_\_

\_\_\_\_\_

4. Why should we eat these foods?

5. How does eating these foods help the body deal with arsenic and lead?

6. Give an example of some healthy foods you ate today:





# Lesson 4: Hand Washing

A hand-washing lesson plan

K-3

## Grade Level

K-3

## Subjects

Hygiene, health and safety, biology, science

## Time

45 – 60 minutes

## Materials Needed

- 1/2 cup vegetable oil
- 1 teaspoon cinnamon
- Squeeze bottle or cup
- Hand-washing area
- Liquid soap
- Disposable paper towels
- Lined trash can
- Stop watch

## Student Handouts

- Dirty Hands card



## Learning Objective

Students will:

- Understand why and how to take responsibility for their health by their own actions.
- Plan and conduct an observational investigation to determine the proper hand washing technique.

## Learning Procedure

### Prepare:

Mix 1/2 cup cooking oil and 1 teaspoon cinnamon in a squeeze bottle or cup. Set aside. This lesson may become messy, so clear away items you do not wish to become oily.

### Part I: Discussion

Ask children to look at the picture of the child with dirty hands. Follow discussion questions on the back.

1. What has the boy in this picture been doing?  
*(playing in the dirt, playing outside)*
2. Do you think he was having fun?  
*(remind children it is healthy and fun to play in the dirt)*
3. What kinds of things do you like to do in the dirt?
4. What is good about dirt?  
*(Dirt is necessary for plants to grow, provides food for farm and wild animals, is a home for animals and insects. Playing in dirt is fun.)*
5. We can see many things in the dirt, but there are things we cannot see too. Ask what invisible things might be in the dirt? Define new vocabulary.  
*Spit, germs, poop*  
*Pesticides, herbicides*  
*Old gasoline*  
*Old paint chips (containing lead)*
6. What would happen if this boy got dirt or dust in his mouth?  
*(cough, taste yucky, make him feel sick)*
7. Review ideas on how to keep dirt out of their mouths including washing hands, washing fruits and vegetables before eating them, not eating dirt and not putting their hands near their face after playing in the dirt.

## Vocabulary

**Apply** – The skill of selecting and using information in other situations or problems.

**Challenges** – Problems that can be solved using science concepts and principles, inquiry, and technology.

**Claim** – A valid conclusion of a scientific argument.

**Observation** – The skill of recognizing and noting some fact or occurrence in the natural world, including the act of measuring.

**Prediction** – The skill of extrapolating to a future event or process based on theory, investigation, or experience.

**Properties** – The basic or essential attributes shared by all members of a group.

**Science** – The systematized knowledge of the natural world derived from observation, study, and investigation; also the activity of specialist to add to the body of this knowledge.

**Solutions** – Artifact of the scientific design process in response to human problems that can include devices or processes such as environmental impact statements.

Sources: 2004 WA OSPI EALR Science Glossary of Scientific Terms

## Part II: Review Safety Rules

- Only put oil mixture on hands. Do not spread oil mixture on other people or other items in the classroom.
- Remain seated until it is time to go wash your hands.
- Take turns washing hands at the sink.
- Take turns telling the recorder your answers. Do not call out your answers.

## Part III: Conduct an experiment to find the best hand-washing technique

1. Divide students into three groups. Assign a recorder in each group.
2. Students, except the recorder, rub a small amount of the oil and cinnamon mix on their hands to represent the “invisible” things in dirt.
3. Ask students to describe how their hands look, feel and smell. The recorder will write down this information.
4. Have each group take turns at the hand-washing area or sink. Do their hands feel clean? The first time, students will wash their hands with only water.
5. Ask students to describe how their hands look, feel and smell. Do their hands feel clean? The recorder will write down this information.
6. Have each group return to the sink and wash their hands with warm water and soap for 20 seconds each. Other students may use a stop watch, count, sign a song, or recite the alphabet to time the 20 seconds.
7. Ask students to describe how their hands look, feel and smell. Do their hands feel clean? The recorder will write down this information.

## Part IV: Explore Ideas

1. Ask the recorders to report when students hands felt, looked or smelled dirty. Discuss the results:
  - Did each group have the same results?
  - How can you tell if your hands are clean?
  - If you do not see dirt, can it be there?
  - What did you have to do to make sure your hands were clean?
2. What else can you do to make sure that dirt stays outside and out of your mouth?

*Examples: Take off shoes indoors, don't put dirty hands in mouth, don't eat things that fell on the ground*

## Extended Learning

- Pass out copies of the *Student Questions* handout. Students may complete the questions themselves or may follow along and mark the answers to the questions as you read aloud.
- Stamp students hands at the beginning of each day with stamp art using washable ink. At lunch or snack time look at students' hands. If you can see the ink, ask students to wash before eating.
- Draw colorful signs to post at the sink or at home to remind everyone to wash their hands with soap and water.
- Try the experiment with a black light glow box and glow lotion. These products come in a variety of forms (oil, lotion, gel, and powder) and are used to demonstrate the spread of "germs", and hand-washing effectiveness. Products are applied to hands or surface, children are asked to wash their hands, and a black light is used to "see" the product on their hands that hasn't been washed off.

Glo Germ ► 1-800-842-6622, <http://www.glogerm.com>

Germ Juice ► 1-270-524-5746, <http://www.germjuice.com>

GlitterBug (Brevis) ► 1-800-383-3370, <http://www.brevis.com>

*Hand-washing experiment adapted from Healthy B.A.S.I.C.S. from the National Children's Health Project Network of The Children's Health Fund.*

## Questions for Students

Student Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. When you wash your hands, what do you do first? Label the six steps.

\_\_\_\_ Rinse with warm water

\_\_\_\_ Throw away paper towel

1 Wet hands with warm water

\_\_\_\_ Put soap on hands

\_\_\_\_ Dry with paper towels

\_\_\_\_ Scrub hands for 20 seconds

2. Finish these sentences using the words below:

**See**

**Yucky**

**Nice**

**Smell**

**Safe**

When my hands are clean it is \_\_\_\_\_ to eat.

My hands feel \_\_\_\_\_ when they are dirty.

If my hands are very dirty I can \_\_\_\_\_ and \_\_\_\_\_ the dirt.

My hands smell \_\_\_\_\_ after I wash them.

Questions for Students




Student Name: \_\_\_\_\_

Date: \_\_\_\_\_

*More than one answer is okay.*


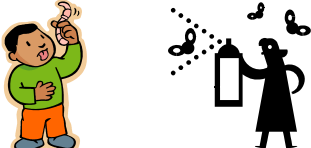
**Question 1**

How can dirt get into my body?

From dirt on my hands into my mouth	Through my hair	Through my skin
		

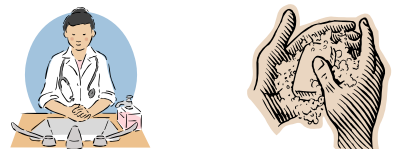

**Question 2**

What will happen to me if I eat dirt?

Get stronger	Eat yucky things like worms and bug spray
	

**Question 3**

What should I do before lunch to keep dirt from getting in my mouth or nose?

Wash hands with soap and water	Wipe hands on shirt
	



# More Information and Resources

## Information about the Tacoma Smelter Plume

### **For information in King County:**

Public Health — Seattle & King County  
Environmental Health Services Division  
206-205-4394

Tacoma Smelter Plume Project: <http://www.metrokc.gov/health/tsp/arseniclead.htm>

Brochures, posters and guidelines: <http://www.metrokc.gov/health/tsp/posters.htm>

### **For information in Washington State:**

Washington State Department of Ecology

[http://www.ecy.wa.gov/programs/tcp/sites/tacoma\\_smelter/ts\\_hp.htm](http://www.ecy.wa.gov/programs/tcp/sites/tacoma_smelter/ts_hp.htm)

### **For funding assistance, visit the Soil Safety Program website:**

[http://www.ecy.wa.gov/programs/tcp/sites/tacoma\\_smelter/soilsafety.htm](http://www.ecy.wa.gov/programs/tcp/sites/tacoma_smelter/soilsafety.htm)

## Health Information and Resources

### **Health, Safety and Nutrition Information for Child Care Providers:**

<http://www.metrokc.gov/health/childcare>

206-296-2770

### **Telephone consultation on pediatric environmental health risks to health care providers, public health professionals, communities and families.**

Northwest Pediatric Environmental Health Specialty Unit (PEHSU)

<http://depts.washington.edu/pehsu/services.html>

1-877-KID-CHEM or 1-877-543-2436

# More Information and Resources

## Materials on Toxics

### **Materials on and alternatives to toxic materials, pesticides, and treated wood/ playground equipment:**

Washington Toxics Coalition

206-632-1545

<http://www.watoxics.org/>

### **Materials on lead, including lead in paint, dust, and soil:**

Environmental Protection Agency

206-553-1985

1-800-424-LEAD

<http://www.epa.gov/lead>

## Related Curriculum and Educational Resources

### **Educational materials on recycling:**

Solid Waste Division

King County Department of Natural Resources and Parks

206-296-4446

<http://www.metrokc.gov/dnrp/swd/education>

### **Resources and materials for teachers and students about hazardous waste:**

Local Hazardous Waste Management Program in King County

<http://www.govlink.org/hazwaste/schoolyouth>

### **Hand-washing demonstration products:**

These products come in a variety of forms (oil, lotion, gel, and powder) and are used to demonstrate the spread of “germs”, and hand-washing effectiveness. Products are applied to hands or surface, children are asked to wash their hands, and a black light is used to “see” the product on their hands that hasn’t been washed off.

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# More Information and Resources

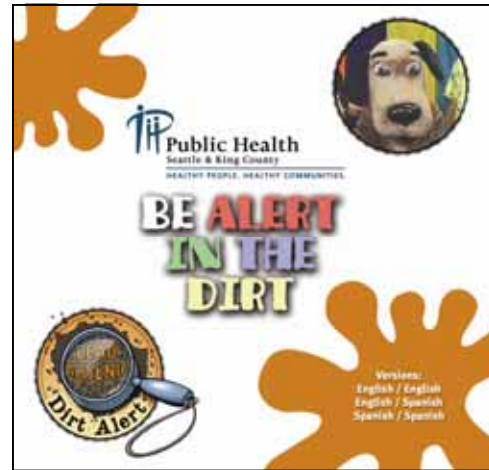
**The “Be Alert in the Dirt” video is available for check-out at the following libraries:**

King County Library System

<http://www.kcls.org/>

Seattle Public Libraries:

<http://www.spl.org/>



## **Reading Recommendations:**

- *The Lorax* by Dr. Seuss
- *Wash Your Hands* by Tony Ross
- *Dirt is Delightful* by Janelle Cherrington and Joe Ewers
- *Those Mean Nasty Dirty Downright Disgusting But-- Invisible Germs* by Judith Rice and Reed Merrill



# Washington Essential Academic Learning Requirements

Lesson 1: Be Alert in the Dirt	Grade Level	EALR / GLE
Arts	K—3	1.2
Communication	K—3	1.1.1
	K—3	1.1.2
	K—3	1.2.1
Health and Fitness	1—3	3.1
<b>Lesson 2: Dirt Exploration</b>		
Health and Fitness	K—3	2.2
	K—3	3.1
Math	1—3	1.4.5
	1—3	3.1.1
	2—3	3.2.1
	K—3	4.2.2
Science	K and 2	1.1.1
	2—3	2.1.3
	2—3	2.1.4
	K—3	2.1.5
	K—3	2.2.1
	3	2.2.4
K-3	3.2.4	
<b>Lesson 3: Healthy Eating</b>		
Health and Fitness	K—3	1.4
	K—3	2.2
	K—3	3.1
Science	K and 2	1.1.1
	K—3	2.1.5
	K—3	3.2.4
<b>Lesson 4: Hand-Washing</b>		
Health and Fitness	K—3	2.2
	K—3	3.1
Science	K and 2	1.1.1
	K—3	2.1.2
	2—3	2.1.3
	K—3	2.1.5
	2—3	3.1.2
2—3	3.1.3	



