BE ALERT IN THE DIRT

Soil Safety Lesson Plans for Children Ages 2-8

Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.

City of Seattle King County

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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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Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.

City of Seattle King County

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

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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 or 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

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

Teacher's Guide

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

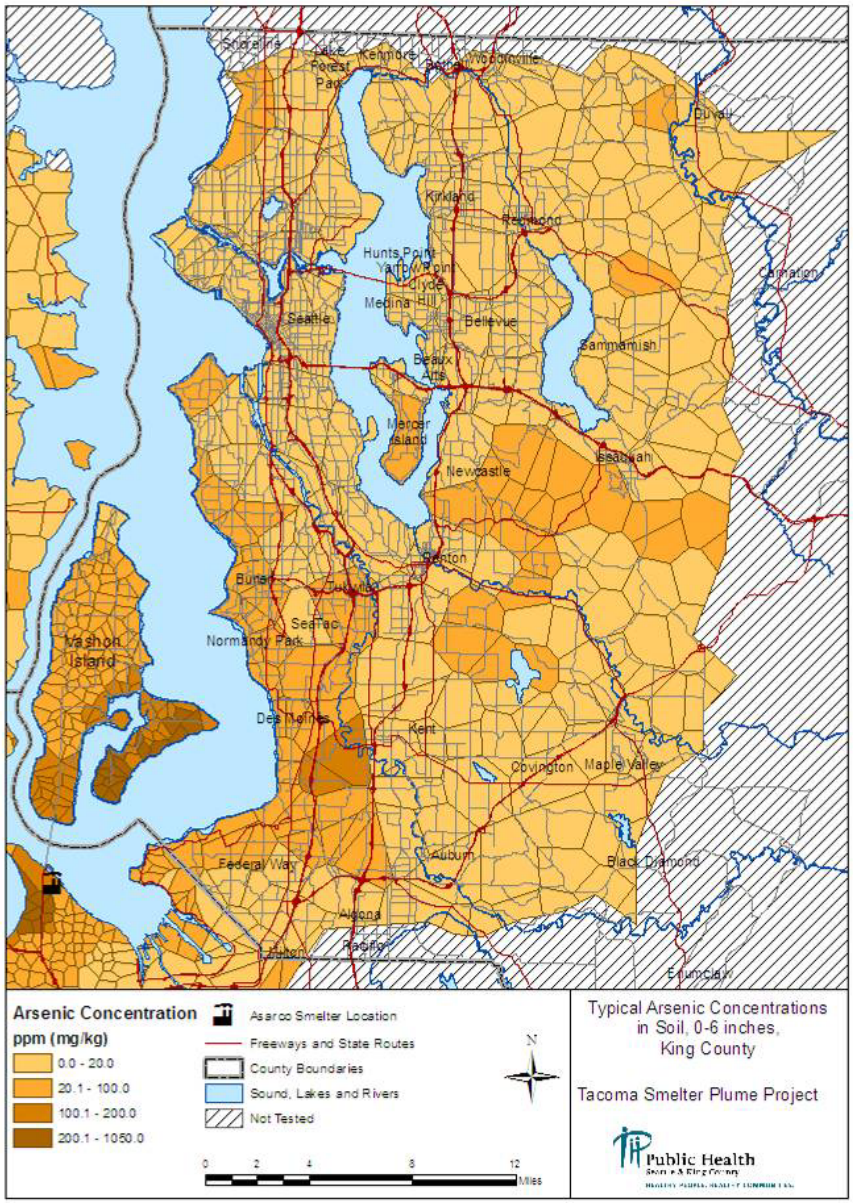
Long-term health effects from arsenic include cancers of the skin, bladder, kidney, liver and lung. Lead exposure in children causes learning difficulties, reduced IQ, delayed physical and neurological development, and decreased mental abilities. See Fact Pages on Lead and Arsenic for more information 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 then 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.

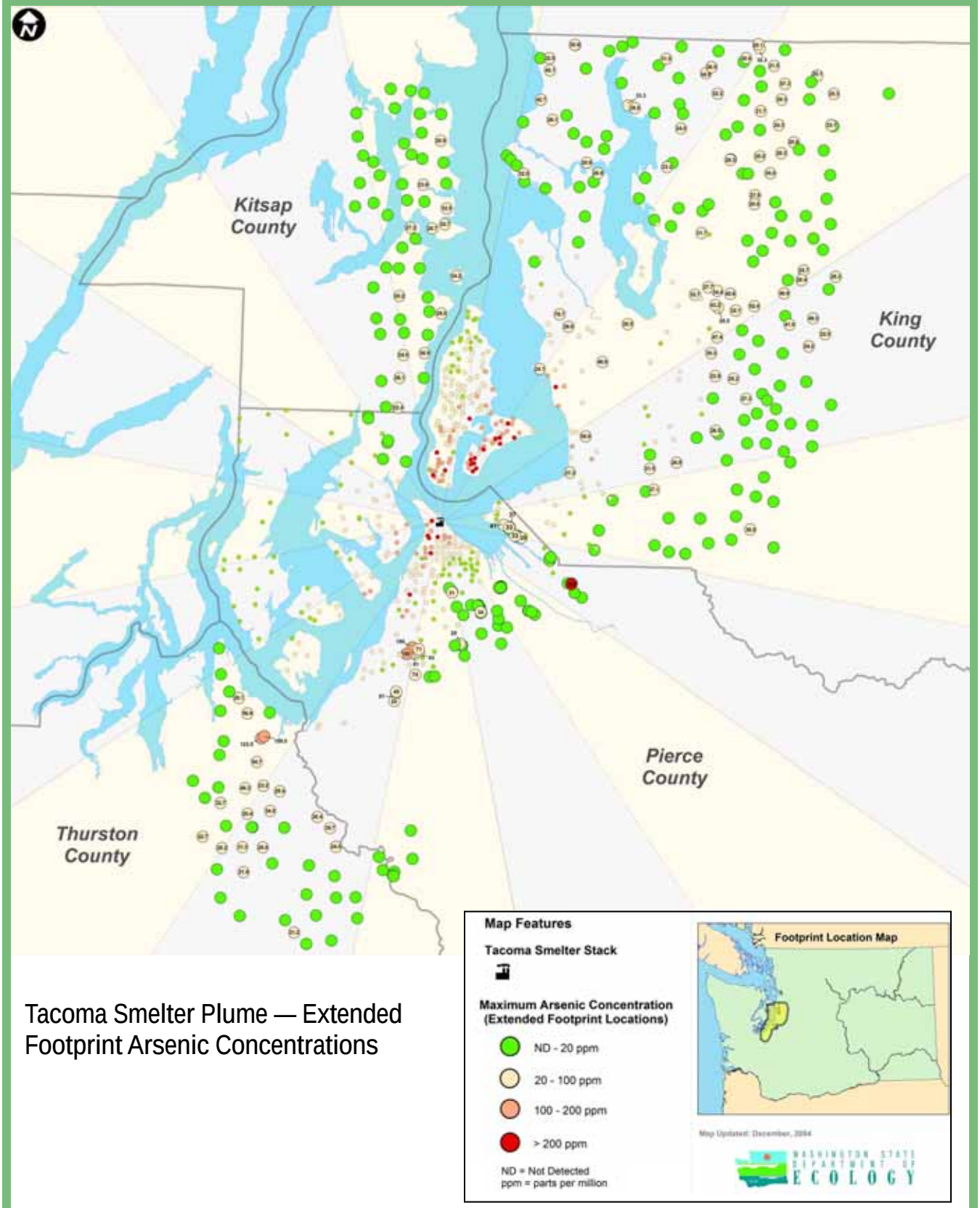
Regulations

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.



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

Ages 2 - 5

What's in our dirt?

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: _____

Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.
Dorothy F. Teeter, MHA, *Interim Director and Health Officer*

Dear Parents,

Today your child learned about being safe when playing in the dirt. Its 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

Environmental Health Services Division
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T 253-205-4394 **F** 206-296-0189 **TTY** Relay: 711
www.metrokc.gov/health

City of Seattle
Gregory J. Nickels, *Mayor*
King County
Ron Sims, *Executive*

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 s**trawberry**
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

Ages 2 - 5

A hand-washing lesson plan

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

Lesson 1: Grades K - 3

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 map 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 Page

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.**

Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.
Dorothy F. Teeter, MHA, *Interim Director and Health Officer*

Dear Parents,

Today your child learned about being safe when playing in the dirt. Its 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

Environmental Health Services Division
999 Third Avenue, Suite 700 · Seattle, WA 98104-4039
T 253-205-4394 **F** 206-296-0189 **TTY** Relay: 711
www.metrokc.gov/health

City of Seattle
Gregory J. Nickels, *Mayor*
King County
Ron Sims, *Executive*

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

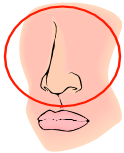
Question 2

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

Key to 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:

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12. SOAP
13. SOIL
14. STOMP
15. TAKE OFF SHOES
16. VEGETABLE
17. WASH

Lesson: 2 Grades K - 3

Dirt Exploration

What's in dirt?

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

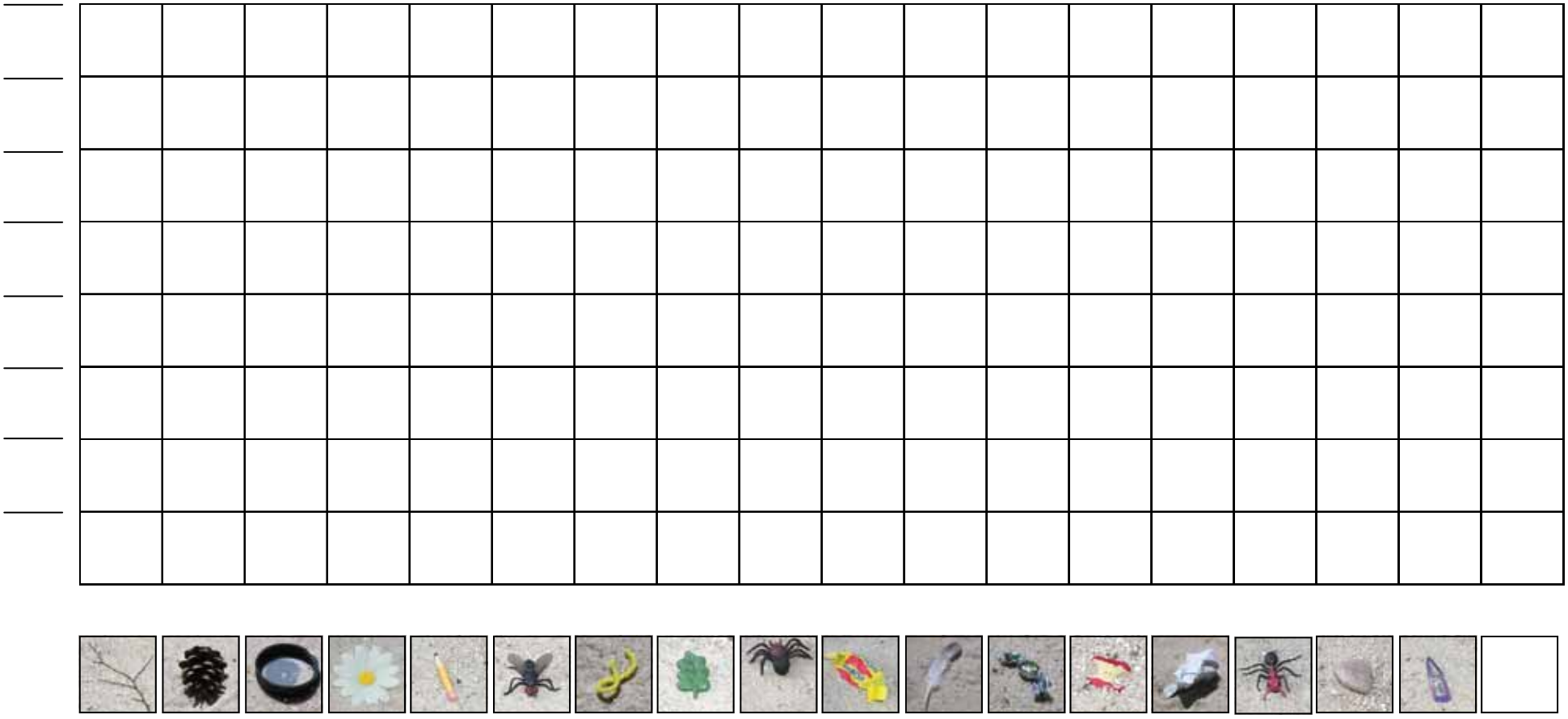
☐ Fly

☐ _____

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

Grades K-3

Keeping out arsenic and lead

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

Public Health
Seattle & King County
HEALTHY PEOPLE. HEALTHY COMMUNITIES.
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City of Seattle
Gregory J. Nickels, *Mayor*
King County
Ron Sims, *Executive*

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

K-3

A hand-washing lesson plan

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

For funding assistance, visit the Soil Safety Program website:
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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Germ Juice ► 1-270-524-5746, http://www.germjuice.com/
GlitterBug (Brevis) ► 1-800-383-3370, http://www.brevis.com/

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
Lesson 2: Dirt Exploration		
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
Lesson 3: Healthy Eating		
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
Lesson 4: Hand-Washing		
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

MILK
GRADE A