

# Module 3: Personal Hygiene & Nutrition



## PERSONAL HYGIENE AND NUTRITION

**Module 3: Personal Hygiene and Nutrition** focuses on the connections between personal hygiene, nutrition for children and potential exposure to lead. Good personal hygiene and healthy nutritional practices can limit absorption of and reduce exposure to lead in children. By the end of Module 3 participants will:

- Learn specific personal hygiene techniques that help reduce potential childhood lead exposure;
- Identify foods that contain calcium, iron, and vitamin C; and
- Understand nutritional practices and foods that may limit the absorption of lead.

### Instructor Preparation

To prepare for **Module 3: Personal Hygiene and Nutrition**, the instructor should take the following steps:

- Preview the lesson plan to identify sections where examples, stories and local information may be inserted.
- Reach out to tribal personnel and other resources to find local information and partners, if possible.
- Contact tribal leaders, elders, staff and other community members to compile a list of your tribal community's local/traditional foods and snacks that are not listed in the Module 3 Worksheet.
  - Using Appendix A: Foods that Contain Calcium, Iron and Vitamin C and Appendix D: Supplemental Resources, determine which of your tribal community's local/traditional foods contain calcium, iron and/or vitamin C.
  - On the blank Local/Traditional Foods slide in the presentation, add your tribal community's local/traditional foods to the appropriate row – Calcium, Iron or Vitamin C (or create a table on flipchart paper if needed).
  - Compile a list of your tribal community's common snacks that contain calcium, iron, and/or vitamin C.
  - Find images of your tribal community's local/traditional foods and snacks (optional).
- Make copies of Module 3 worksheet, key messages and kids activity sheet (1 copy per participant).
- Gather materials for the Handwashing Demonstration.
- Gather foods and utensils needed for the Healthy Snack Activity.
- Gather any materials needed for the optional demonstration and activities included in Module 3:
  - Black Light Activity; and
  - Reading Food Nutrition Fact Labels.
- Edit the Module 3 Presentation Slides to incorporate relevant stories, images and videos. Remove presentation slides you do not plan to use during the session.
- Use the "Notes" boxes provided in the lesson plan for personal notes.

**Instructor Notes** written in italics can be found throughout the lesson plan. These notes are intended to help guide the instructor through the discussion and presentation and are not meant to be read out loud during the session.

Notes:

## Suggested Materials

- Laptop and projector to display presentation slides and videos
- Flipchart and markers
- Pens and pencils
- *Module 3 Worksheet*
- *Module 3 Key Messages*
- *Module 3 Kids Activity Sheet*
- Masking tape
- Faucet with running water or buckets of water
- Soap
- Paper towels
- Utensils and food to make a healthy snack
- *OPTIONAL* black light kit (black light powder, black light oil, ultraviolet lamp)
- *OPTIONAL* nutrition facts labels

*If access to technology is limited, you can use hardcopies of presentation slides.*

## Outcomes

Upon the completion of Module 3, participants will be able to:

- List three personal hygiene habits that can reduce potential lead exposure in children;
- List three healthy snacks for children that may help reduce the impact of potential lead exposure;
- Explain how meals and snacks can become contaminated with lead during preparation; and
- Discuss actions that can be taken in the home to reduce potential exposure to lead.

## Outline

I.	Introduction (10 minutes).....	66
II.	Personal Hygiene (15 minutes).....	67
	a. Handwashing in 6 Steps	
	b. Handwashing Demonstration	
	c. Outdoor Best Practices	
III.	Nutrition (25 minutes) .....	70
	a. Eating a Healthy Diet with Key Nutrients to Reduce Lead Absorption	
	i. Optional Activity: Reading Nutrition Facts Labels	
	b. Meal Ideas	
	c. Healthy Snacks	
	d. Food Preparation	
	e. Outdoor Best Practices	
	f. Fish	
IV.	Conclusion (10 minutes).....	79
V.	References.....	80

Notes:

Notes:

## I. Introduction (10 minutes)

Good personal hygiene and healthy nutritional practices may assist in reducing the absorption of lead in a child's body. It is important that everyone, not just parents and caregivers, understand the beneficial impacts that simple actions, such as consistent hand washing and feeding children healthy foods, can have to help reduce the risk of lead exposure. Today, we will discuss simple actions we can take to reduce potential exposure to lead by focusing on personal hygiene and nutrition.

I am going to define a few words that will be used throughout our discussion.

1. Hygiene – Actions taken to keep our bodies clean, such as washing our hands or hair and taking a bath.
2. Nutrition – The process of consuming food or beverages necessary for health and growth, which our bodies need to stay alive and healthy.
3. Nutrient – A substance in food or beverages that provides nourishment for growth and the maintenance of life.

To better understand what we already know and think about personal hygiene and nutrition, I have a few questions for the group. If you do not know the answers, that is fine. We will cover all the information shortly. **Instructor Note:** Depending on time, ask one or all four questions. Record participants' responses on flipchart paper and post them in a place that will be visible throughout the session.

1. What are examples of good personal hygiene behaviors for children? **Instructor Note:** Answers may include: washing hands after playing outside and going to the bathroom; covering your mouth when you cough or sneeze; brushing teeth twice a day; bathing regularly.
2. What foods do you think should be part of a healthy diet for children? **Instructor Note:** Answers may include: fruits and vegetables.
3. What are some nutrients that are important for our health? **Instructor Note:** Answers may include: vitamins, minerals, calcium, magnesium, protein, water and fiber.

4. What nutrients may limit the absorption of lead in children's bodies? **Instructor Note:** Answers include: calcium, vitamin C and iron.

Notes:

Some of the personal hygiene and nutritional tips that we will discuss today may be actions you already follow.

## **II. Personal Hygiene (15 minutes)**

Taking care of our bodies and keeping ourselves and surroundings clean and clutter-free are important to maintain good health. To minimize the possibility of illness and reduce children's potential exposure to lead, teaching children good personal hygiene habits is essential. Adults can teach children good personal hygiene by:

- Making sure they wash their hands several times a day.
- Keeping their fingernails and toenails trimmed short.
- Bathing them daily.
- Pinning pacifiers to their clothes.
- Washing bottles and pacifiers daily.
- Washing toys often.
- Washing clothes and shoes soiled by lead dust or soil separately from other items.

One way young children ingest lead is through dust or soil contaminated by lead-based paint or other sources of lead that settles on their hands as they play. When children put their hands in their mouths, they may swallow lead-contaminated dust or soil, which can then get into their bloodstream. Elements of good hygiene, such as consistent handwashing, reduces the likelihood of this happening and is the best way to reduce the number of germs on children's hands in most situations. Children should wash their hands with soap:

- Before eating, drinking and sleeping;
- After using the bathroom; and
- After playing outdoors or with animals.

When children wash their hands, they should wash with soapy water for at least 20 seconds, and then dry their hands thoroughly with a clean towel or paper towel. While warm water is preferred, cold water is better than not washing. Hands should not be wiped off or dried on their clothes, which could be contaminated. Six steps are recommended for effective handwashing.

### **Using Hand Sanitizer**

*There are differences between washing hands with soap and water and cleaning them with hand sanitizer. Alcohol-based hand sanitizers do not kill all types of germs and may not remove harmful chemicals, such as pesticides and heavy metals, such as lead. Handwashing with soap and water reduces the amounts of all types of germs, pesticides and metals on hands.*

*For more information, read Handwashing and Hand Sanitizer Use at Home, at Play, and Out and About at <https://www.cdc.gov/handwashing/pdf/hand-sanitizer-factsheet.pdf>.*

Notes:

**Optional Black Light Activity**

Before beginning the demonstration, ask participants: why is warm, soapy water important? Then:

1. Show participants your seemingly clean hands and ask if they look dirty – you may even want to walk around the room to allow participants to get a closer look.
2. Put black light powder on your hands and then show them to the participants. Explain that the powder represents tiny particles of lead. Now show participants your hands under the black light. The powder will glow in areas where your hands are dirty.
3. Run your hands quickly under running water and then show participants your hands under the black light again. Participants will see that the black light powder is still present, demonstrating that simply running your hands under water is not a good method of hand washing as it relates to lead.
4. Wash hands thoroughly following the Handwashing in 6 Steps procedure outlined. End the demonstration by showing your clean hands under the black light.

## a. Handwashing in 6 Steps

Step 1: Wet hands with clean, running water.

Step 2: Add soap, then rub hands together making a soapy lather. Do this away from the running water; be careful not to wash the lather away.

Step 3: Scrub the front and back of hands, between fingers and under nails. Wash for at least 20 seconds, the amount of time it takes to sing the ABCs once or the Happy Birthday song twice.

Step 4: Rinse hands from wrists to fingertips under clean, running water. Let the water run back into the sink, not down to your elbows.

Step 5: Dry hands thoroughly with a clean towel or paper towel.

Step 6: Turn off the faucet with the used towel. Remember, dirty hands turned on the faucet.

Following these six steps will ensure that children are getting lead dust off their hands. This information is found in the key messages handout, a take-home resource that summarizes information covered today. **Instructor Note:** Give a copy of the Module 3 Key Messages to each participant.

## b. Handwashing Demonstration

**Instructor Note:** Use the six steps of handwashing outlined above to have participants wash their hands. You will need liquid hand soap, a faucet with running water, and paper towels. If you do not have access to a faucet with running water, you can use buckets for the demonstration: one bucket for the faucet and one bucket for the sink. One participant can pour water from a bucket into the other bucket simulating a faucet while another participant washes their hands. If possible, expand the demonstration to include the optional Black Light Activity. As an alternative you can show a video, such as this one from the Centers for Disease Control and Prevention: <https://www.cdc.gov/cdctv/healthyliving/hygiene/wash-your-hands.html>.

## c. Outdoor Best Practices

This session mainly focuses on indoor activities. However, we may be exposed to lead in our outdoor environments through contaminated soil or breathing in dust containing

lead. Exterior lead-based paint from houses and buildings can flake or peel, and then get into the soil. Past use of leaded gasoline in cars, from industrial sources, or even from contaminated sites, including former lead smelters, can contaminate soil.

Some plants that grow in soils with a high lead concentration can absorb lead from the soil with most of the lead remaining in the roots and, in some rare cases, even making its way to the aboveground parts of the plant. A certified professional can remove (or partially remove) contaminated soil and replace it with “clean” soil.

How can we reduce potential exposure to lead while outdoors in areas suspected or known to be contaminated with lead?  
How can we prevent lead from getting inside our homes?

**Instructor Note:** Allow participants time to think and share with the group.

To reduce potential exposure to lead while outdoors we can:

- Check the exterior of your home, including porches and fences, for deteriorating paint.
- Cover bare soil with grass, plants, gravel, or wood chips, especially near the exterior walls of your home.
- Play in grass and dirt not contaminated with lead, if possible.
- Wash outdoor toys and playground equipment regularly using an outside faucet or hose.
- Use designated picnic, camping, biking and hiking areas.

To avoid tracking soil into your home:

- Put doormats outside and inside all entryways.
- Remove shoes before coming inside.
- Wipe pet's paws prior to bringing them indoors.
- Remove soil from clothes, toys, pets and equipment outside, if possible.

**Instructor Note:** Give a copy of the Module 3 Worksheet and a pencil to each participant. Go through the Personal Hygiene questions together.

We will use the worksheet during this session as a discussion tool and to review what we learned together. Look at the Personal Hygiene section at the top of your worksheet.

1. List two personal hygiene habits that may assist in reducing children's potential exposure to lead.

Notes:

Notes:

### **Use Caution When Eating Imported Foods**

Use caution when consuming international candies, spices and other foods. On occasion, foods and food products imported to the United States have been found to contain high levels of lead. Not all countries have set the same standards to reduce the amount of lead in paint, foods and other products (Ref. 2).

**Instructor Note:** Answers may include washing children's hands several times a day; trimming children's fingernails and toenails short; daily baths; pinning pacifiers to their clothes; washing bottles and pacifiers daily; washing toys often; and washing clothes and shoes soiled by lead dust or soil separately.

2. You should wash your hands with soapy water for at least \_\_\_\_\_ seconds. **Instructor Note:** The answer is 20.

## **III. Nutrition (25 minutes)**

**Instructor Note:** Familiarize yourself with the lists of foods, meals and snacks provided in the lesson plan and be prepared to share examples to start the conversation. If you need additional ideas, use Appendix A: Foods that Contain Calcium, Iron and Vitamin C which is a list of over 150 general and local/traditional foods that are known to contain calcium, iron and/or vitamin C. Record participants' ideas on foods, meals, and snacks, preferably on flip chart paper.

Specific nutritional choices you and your children make are crucial. Proper nutrition is important for a child's overall growth, development, learning and more. Creating healthy eating habits will maintain our health and reduce the risk of diseases. Everything we eat and drink matters, which is why it is important to include a variety of vegetables, fruits, whole grains, proteins and dairy products in our diets (Ref. 1).

### **a. Eating a Healthy Diet with Key Nutrients to Reduce Lead Absorption**

Eating a variety of foods gives children the vitamins and minerals they need to grow up healthy. When children do not have enough calcium or iron in their bodies, their bodies may absorb lead instead of these nutrients. Calcium, iron and vitamin C are natural blockers that may help reduce the absorption of lead in the bloodstream.

A diet rich in important nutrients such as calcium, iron and vitamin C plays an essential role in reducing the absorption of lead:

- Calcium helps bones stay strong and may keep lead out. Foods that contain calcium include:
  - Milk and milk products, such as yogurt and cheese;
  - Broccoli;

- Canned salmon and sardines; and
  - Foods with added calcium, such as orange juice and soy milk.
- Iron may block lead from being absorbed. Foods that contain iron include:
    - Lean red meats, fish, chicken and eggs;
    - Beans, peas, green leafy vegetables and lentils;
    - Iron-fortified cereal, bread and pasta; and
    - Dried fruit, such as raisins and apricots.
- Vitamin C increases the absorption of iron, which may decrease the absorption of lead. Foods that contain vitamin C include:
    - Citrus fruits, such as oranges and grapefruit;
    - Kiwi, strawberries and melon; and
    - Tomatoes, potatoes and peppers.

Notes:

A couple of other important facts to understand regarding children and preventing the absorption of lead are:

- An overall unhealthy diet high in fat and oil may increase the rate of lead absorption; and
- A child with an empty stomach will absorb more lead.

What other foods, in addition to those already mentioned, do you think we can provide our children to ensure they are getting calcium, iron and/or vitamin C in their diets?

**Instructor Note:** Allow participants time to think and respond before showing them the *Foods that May Help Reduce the Absorption of Lead* table that is in the worksheet and presentation. Foods are listed by the nutrient they contain the most of: calcium, iron or vitamin C.

Look at the *Foods that May Help Reduce the Absorption of Lead* table on your worksheet.

1. Did we mention any of these foods earlier?
2. Are any foods already in your family's diet?

Take a moment to carefully read through the *General Foods* column and circle all the foods you and your family eat.

Notes:

Foods that May Help Reduce the Absorption of Lead	
Nutrients	General Foods
<b>Calcium</b>  (mineral needed to build and maintain strong bones)	almonds, bone broth, broccoli, canned salmon, cheese, chia seeds, collard greens, cottage cheese, crab, edamame, figs, okra, milk, non-dairy milk, nopal cactus pads, prickly pear, sardines, seaweed, sweet potatoes, tofu, white beans, whole wheat bread, yogurt
<b>Iron</b>  (mineral critical to blood function)	apricots, asparagus, beans, beef, bison, black walnuts, chicken, clams, eggs, fish, fish eggs, hazelnuts, lentils, liver, mushrooms, mussels, mustard greens, oats, oysters, peanut butter, peas, pine nuts, pumpkin seeds, prunes, raisins, salmon, scallops, shrimp, spinach, venison, water potato, wild rice
<b>Vitamin C</b>  (vitamin that protects the body from disease and increases the absorption of iron)	apples, bananas, bell peppers, blackberries, blueberries, brussels sprouts, cabbage, cantaloupe, cauliflower, chestnuts, citrus fruits, corn, green beans, honeydew, huckleberries, kale, kiwi, leeks, parsnips, pears, plums, potatoes, raspberries, rhubarb, squash, squid, strawberries, tomatoes, turnips, watercress

Count the number of foods you circled and then record the number in the box below the table. **Instructor Note:** Share with participants the number of foods in the General Foods column eaten in your home. Ask a few of the participants to share the number of foods eaten in their home.

Do you think the table is missing any foods, specifically any local/traditional foods eaten in our community? Take a few minutes to compare your thoughts with others and write these under the Local/Traditional Foods column on your worksheet, listing them by the nutrient you think they contain the most of: calcium, iron or vitamin C. **Instructor Note:** Allow participants a few minutes to discuss; share your findings based on Appendix A and your own research.

Based on my own research, this table lists some of our local/traditional foods that contain these three nutrients. Each food is listed by the nutrient it contains the most of: calcium, iron or vitamin C.

Notes:

Foods That May Help Reduce the Absorption of Lead	
Nutrients	Local/Traditional Foods
<b>Calcium</b>  (mineral needed to build and maintain strong bones)	<b>Instructor Note:</b> Please include your tribe's local/traditional foods that contain calcium here.
<b>Iron</b>  (mineral critical to blood function)	<b>Instructor Note:</b> Please include your tribe's local/traditional foods that contain iron here.
<b>Vitamin C</b>  (vitamin that protects the body from disease and increases the absorption of iron)	<b>Instructor Note:</b> Please include your tribe's local/traditional foods that contain vitamin C here.

### i. Optional Activity: Reading Nutrition Facts Labels

**Instructor Note:** After discussing foods that contain calcium, iron and vitamin C, you may want to conduct the optional Reading Nutrition Facts Labels Activity. The purpose of this activity is for participants to practice reading nutrition facts labels to determine and compare the amount of calcium, iron and vitamin C of foods available for purchase at local stores. Nutrition facts labels are usually found only on packaged foods (e.g., canned, frozen and dried foods) and not fresh produce. You can use the labels provided or find your own examples. For more information on reading and understanding nutrition facts labels, visit: <https://www.fda.gov/food/nutrition-education-resources-materials/how-understand-and-use-nutrition-facts-label>.



Condensed Tomato Soup

Notes:

Purchasing fresh or minimally processed foods may not always be an option depending on where you live. What are some other forms in which we eat fruits, vegetables and protein? **Instructor Note:** Answers may include: frozen meals, canned goods, fruit juice or dried foods. Frozen, canned and dried fruits and vegetables and 100% fruit and vegetable juices are delicious and provide nutrients for a healthy diet. What are some advantages to frozen, canned or dried foods? **Instructor Note:** Answers may include: you can enjoy certain foods no longer in season; and frozen, canned and dried foods do not spoil as soon as fresh foods.



### Frozen Green Beans

To understand the ingredients and nutrition content of packaged foods, we need to read the nutrition facts label. Does anyone read nutrition facts labels? What information is included on nutrition facts labels? **Instructor Note:** Possible answers include serving size, calories, total fat, sodium, dietary fiber, sugars, calcium, etc.

There is a lot of information on these labels and today we are going to review how we can use them to ensure our families are getting calcium, iron and vitamin C in their diets, which may prevent the absorption of lead. Where on the label can we find information about vitamin and mineral content? If we look at the bottom of the nutrition facts label, we will find a list of the vitamins and minerals that this food contains and the percent daily value (%DV) of each. The %DV shows how much a nutrient in one serving of the food contributes to your daily diet. The %DVs are based on the Daily Values for key nutrients, which are the amounts of nutrients recommended per day for Americans. The %DV provided on a nutrition facts label are based on a 2,000 calorie diet, and the number of calories recommended varies from individual to individual. For example, most children 4 to 8 years old need only between 1400 and 1600 calories a day.

Which of the three nutrients, calcium, iron or vitamin C, does the tomato soup contain? **Instructor Note:** Allow participants time to think. The answer is all three nutrients.

Which of the three nutrients do the frozen green beans contain? **Instructor Note:** Allow participants time to think. The answer is all three nutrients.

Which of these two foods contains the most calcium? **Instructor Note:** Allow participants time to think. The answer is a serving of frozen green beans, because it has a higher %DV of calcium in one serving.

## b. Meal Ideas

**Instructor Note:** A few sample meal ideas are included below (Ref. 3).

Here are a few meal ideas that contain calcium, iron and/or vitamin C.

Breakfast:

- Oatmeal, sliced banana and 100% orange juice.
- Vegetable omelet, apple sauce and low-fat milk.
- French toast, orange slices, yogurt and 100% fruit juice.
- Iron-fortified cereal with low-fat milk, topped with raisins.
- Wild rice porridge with berries.

Lunch:

- Turkey & tomato sandwich, coleslaw and low-fat milk.
- Tuna salad sandwich on whole-grain bread and pear slices.
- Lean cheeseburger on a whole-grain bun and 100% cranberry juice.
- Shrimp, squash and brussels sprouts.

Dinner:

- Sloppy joe, watermelon and low-fat milk.
- Macaroni and cheese, stewed tomatoes and melon slices.
- Chicken, rice, green beans and berries.
- Salmon, rice and bell peppers.

What other meal ideas do you have that include all three nutrients? **Instructor Note:** As participants share their ideas with the group, record their answers on flipchart paper. If needed, extend the time for this part of the session to accommodate a longer discussion.

Notes:

Notes:

#### **Optional Healthy Snack Preparation**

Gather materials needed to prepare a snack. Instruct participants to wash their hands before preparing.

Provide directions on how to prepare the snack and explain which of the three nutrients are found within the snack.

When participants eat the snack, ask them:

- Do you think your child(ren) would eat this snack?
- Would you prepare this for your family?

If the snack has cultural significance, discuss those benefits too.

### **c. Healthy Snacks**

As mentioned earlier:

- An overall unhealthy diet high in fat and oil may increase the rate of lead absorption; and
- A child with an empty stomach will absorb more lead.

We can provide children tasty, healthy snacks that are part of a nutritious diet. For example, a snack could be:

- Air-popped popcorn;
- Applesauce;
- Fruit, such as: strawberries, melons, bananas, pears, oranges or peaches;
- Peanut butter on whole-grain crackers, apples or celery;
- Various jerky such as: salmon, venison, elk or beef;
- Low-fat or fat-free yogurt topped with fruit and/or iron-fortified cereal;
- Frozen 100% fruit juice pops;
- Cheese and whole-grain crackers;
- Nuts, sunflower seeds and dried fruits, including 100% fruit leather; or
- Hummus and raw vegetables.

What are other healthy snacks? On the worksheet, the *Healthy Snacks* section lists examples of healthy snacks on the left. Put an “X” in the box next to the snacks you already feed your children or family, and a “star” next to those you could easily add to their diet. Think about how you might modify these snacks to better fit your family’s needs and preferences.

Next, work with a partner to write down other snack ideas on the right side of the *Healthy Snacks* section. **Instructor Note:** Have participants share their snack ideas with the group while you write them down on the flipchart paper. As an option, prepare a healthy snack with the group.

### **d. Food Preparation**

We should take extra precautions when preparing food for children, as lead is nearly impossible to see or smell. Lead can potentially make its way into our food.

- Lead can enter tap water used to prepare and wash food when plumbing materials that contain lead corrode. We should use only cold water for cooking and drinking as hot water will dissolve lead more quickly than cold water and is likely to contain

increased lead levels. If hot water is needed, it should be taken from the cold water tap and heated on a stove or in a microwave oven. Boiling water does not remove lead from water. Before drinking or cooking, flush your home's pipes by running the tap, taking a shower, doing laundry or doing a load of dishes. If you use a filter certified to remove lead read the directions to learn how to properly install and use your cartridge and when to replace it. Using the cartridge after it has expired can make it less effective at removing lead.

- Canned goods in the U.S. are welded closed at the seams and do not use lead; however, lead solder can still be found in cans made in other countries (Refs. 5 and 6). Over time, lead solder may seep into the can and mix with the food, contaminating it. Avoid buying imported canned foods.
- Crystal, glazed pottery and porcelain are all popular items used for serving, heating or eating food, and can also be a source of lead exposure. Do not eat food or drink water cooked or stored in these items if they are chipped or cracked. In general, try to avoid using any crystal, pottery or porcelain made with a lead glaze.
- Lead dust that settles on countertops can contaminate food. Keep your kitchen clean, and wash countertops with an all-purpose cleaner before preparing food.

Notes:

#### **Lead Solder**

- *Solder is a metal that is melted and used to connect other pieces of metal together (Ref. 4).*
- *In 1995, the United States banned the use of lead solder on all food cans, including imported products. However, lead solder is still used in other countries and could be found in cans imported to the United States (Refs. 5 and 6).*

### **e. Outdoor Best Practices**

When preparing or eating food outdoors, there are some actions we need to keep in mind to reduce potential exposure to lead. Based on everything you have learned so far, what could we do while outdoors to reduce potential exposure to lead in areas that you suspect or know are contaminated?

**Instructor Note:** Allow participants time to think. After a minute, have them share with the group. Below are possible responses:

- Use water from clean sources for drinking, cooking or washing.
- Eat on a clean surface such as a picnic table or blanket.
- Avoid eating food that falls on the ground.
- Switch to non-lead ammunition and fishing tackle when harvesting wild game and fish for food, when possible.
- Clean utensils and surfaces where fish and game meats will be dressed to prevent cross-contamination.

Notes:

### **Lead and Hunting**

*Most ammunition contains lead, which means both wildlife and humans who consume them can be exposed to lead (Ref. 7). In a recent study completed in North Dakota, participants who ate any wild game had higher blood lead levels than participants who did not consume wild game (Ref. 8). While it has been suggested that you can limit lead exposure by cutting around the site of the lead bullet in animals and removing the surrounding tissue, this is not sufficient. Typically, hundreds of metal fragments are dispersed when a lead bullet is fired into animal carcasses, making it nearly impossible to remove all the fragments.*

Many households in Indian country consist of hunting families that rely on the use of firearms to acquire food year-round. Elevated lead exposure has been correlated with subsistence hunting communities when game meat is harvested with lead ammunition. High-velocity lead-core bullets explode upon impact, sending out a plume of lead dust along with hundreds of tiny fragments into the targeted animal, ending up in game meat processed for consumption. High-performance, non-lead ammunition has become increasingly available in a wide range of brands and calibers. Using lead-free ammunition is the best way to avoid potential exposure to lead.

### **f. Fish**

**Instructor Note:** FDA and EPA have issued advice regarding eating fish, which is geared toward women who are or may become pregnant, as well as breastfeeding mothers and parents of young children, helping them make informed choices when it comes to fish that is healthy and safe to eat (Ref. 9). Keep in mind that while Reference 9 is focused on mercury, the general information also applies to lead and other contaminants. It is recommended that you also investigate your area's fish consumption advisories that could come from the federal, state, tribal and/or local government.

Fish is a high-quality source of protein. Unfortunately, lead and other contaminants may accumulate in fish, meaning fish could be a potential source of lead exposure. However, this potential exposure to lead can be reduced by the way fish is prepared, such as: removing their organs, fat and skin (where lead and other contaminants may accumulate).

If you eat game fish, eat the smaller, younger fish (within legal limits); they are less likely to contain contaminants than larger, older fish. Eat panfish such as bluegill, perch, stream trout and smelt. They feed on insects and other aquatic life and are less likely to contain contaminants (Ref. 10).

Check federal, state, tribal, and/or local fish advisories for recommendations on fish consumption for pregnant women, children under 15 years of age and the general public. This includes recommendations on numbers to be consumed per month for specific fish and whether it is recommended to eat only the fillet or the whole fish.

**Instructor Note:** You may choose to include a live demonstration (done by you or someone else) on the proper ways to clean fish and remove their skin, fat, and internal organs.

## **IV. Conclusion (10 minutes)**

Good personal hygiene and proper nutrition for children may help in reducing their potential exposure to lead.

When children put their hands in their mouths, they may swallow lead-contaminated dust or soil, which can get into their bloodstream. Elements of good personal hygiene, such as consistent handwashing and bathing, reduce potential exposure to lead.

One of the easiest and most effective things that parents and caregivers can do to reduce potential exposure to lead is to teach children to wash their hands properly many times throughout the day. Children should wash their hands or have their hands washed:

- Before eating, drinking and sleeping;
- After using the bathroom; and
- After playing, especially outdoors or with animals.

Eating a well-balanced diet is important for children's long-term health and development. To help reduce the absorption of lead, children should eat foods high in:

- Calcium;
- Iron; and
- Vitamin C.

In summary, proper nutrition is important and eating a variety of foods will give children the vitamins and minerals they need to grow up healthy. When children do not have enough calcium or iron in their bodies, their bodies may absorb lead instead of these nutrients. An overall unhealthy diet high in fat and oil may increase the rate of lead absorption.

**Instructor Note:** Below are questions that you may select to gauge participants' understanding. Use their responses to facilitate a discussion.

1. What are some examples of foods high in calcium, iron and/or vitamin C?
2. Which of these foods, meals or snacks we covered today are you going to add to your children's diet this week? Write your answers on the worksheet.
3. Are there other meals and/or snacks high in calcium, iron and vitamin C that you would prepare at home? Write your answers on the worksheet.

Notes:

Notes:

4. *What are some other actions we covered today that we can do at home to reduce exposure to lead? Answers may include some of the following:*
  - *Wash children's hands, bottles, pacifiers, and toys often.*
  - *Use only cold water for drinking, cooking and making baby formula.*

Thank you for participating in this session. Does anyone have any questions about the information covered? Here is the *Module 3 Kids Activity Sheet* for you to take home. The kids activity sheet has several activities that teach children about what we learned today. **Instructor Note:** Give each participant a copy of the *Module 3 Kids Activity Sheet*.

## V. **References**

1. U.S. Department of Health and Human Services and US Department of Agriculture. 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. 2015. Available at <https://health.gov/dietaryguidelines/2015/guidelines/>. [Accessed February 11, 2020].
2. Centers for Disease Control and Prevention. Guidelines for the Identification and Management of Lead Exposure in Pregnant and Lactating Women. 2010. Available at <http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf>. [Accessed February 11, 2020].
3. U.S. Environmental Protection Agency. Fight Lead Poisoning with a Healthy Diet: Lead Poisoning Prevention Tips for Families. 2019. Available at <https://www.epa.gov/lead/fight-lead-poisoning-healthy-diet> [Accessed February 11, 2020].
4. Centers for Disease Control and Prevention. Lead Poisoning: Words to Know from A to Z. (No date). Available at [https://www.cdc.gov/nceh/lead/tools/leadglossary\\_508.pdf](https://www.cdc.gov/nceh/lead/tools/leadglossary_508.pdf). [Accessed February 11, 2020].
5. U.S. Department of Agriculture. Shelf-Stable Food Safety: Do cans contain lead? 2015. Available at [https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/shelf-stable-food-safety/CT\\_Index](https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/safe-food-handling/shelf-stable-food-safety/CT_Index) . [Accessed February 11, 2020].
6. Agency for Toxic Substances and Disease Registry. Case Studies in Environmental Medicine: Lead Toxicity: Where is Lead Found? 2017. Available at <https://www.atsdr.cdc.gov/csem/csem.asp?csem=34&po=5>. [Accessed February 11, 2020].

7. Pain, D.J.; Cromie, R.L.; Newth, J.; Brown, M.J.; Crutcher, E.; Hardman, P.; et al. Potential Hazard to Human Health from Exposure to Fragments of Lead Bullets and Shot in the Tissues of Game Animals. *Plos One*. 2010. Available at <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0010315>. [Accessed February 11, 2020].

8. Iqbal, S.; Blumenthal, W.; Kennedy, C.; et. al. Hunting with lead: Association between blood lead levels and wild game consumption. *Environmental Research*. 2009. Vol. 109, pp. 952-959. Available at <https://www.ncbi.nlm.nih.gov/pubmed/19747676>. [Accessed February 11, 2020].

9. U.S. Food and Drug Administration and US Environmental Protection Agency. Eating Fish: What Pregnant Women and Parents Should Know. 2019. Available at <https://www.fda.gov/food/consumers/advice-about-eating-fish>. [Accessed February 11, 2020].

10. U.S. Environmental Protection Agency. Should I Eat the Fish I Catch? Available at <https://www.epa.gov/choose-fish-and-shellfish-wisely/should-i-eat-fish-i-catch-brochure-2014>. [Accessed February 11, 2020].

Notes: