Exposure to Environmental Contamination, Cancer and Health

Objectives:
By the end of the session the learner will be able to:
1. Identify aspects of the environment that can be controlled to reduce the risk of developing breast and other types of cancer
2. Identify ways you can reduce your exposure to environmental contaminants

“Space around us” includes the air, land, water, and foods (game) that we are exposed to and live within

Environmental factors that affect our health are a combination of lifestyle choices and the physical space around us.

But we also sometimes blame problems on pollution that are more likely to be caused by our daily behaviors / lifestyles

NOTE to Prevention Seminar Participants: this handout includes many slides that are omitted from the presentation; the slides are for your information

This education workshop was developed through funding from

And modified from funding from Native Navigators and the Cancer Continuum (NNACC) [NCMHD R24MD002811]
Environmental Pollution

- Affects us as a community and as individuals in many different ways
- Touching us:
  - Physically (body)
  - Emotionally
  - Mentally (mind)
  - Spiritually

Environmental Issues

- Emotional trauma

Quote for Native elder: It is our responsibility as Native peoples to protect Mother Earth. This includes the land, water, game, and air. It doesn't matter what others do, this is what we must do as Indian people. Other people don’t care. They cut down our forests, massacre our buffalo, make roads through sacred ceremonial lands. It makes me so angry that they don’t think about how we are all related.

Environmental Issues

- Mental trauma

Quote for Native elder: When I see how dirty the land and water and air is in our home (the reservation) I cannot focus. I just have to go out and pick up trash. I can’t stand how disrespectful people are to our community. I can’t even do my beadwork or I make mistakes. I think the dirty environment to Mother Earth makes it so we cannot think straight ....

Environmental Issues

- Physiologic / body trauma

Quote for Native elder: So I work hard to eat the good foods like my ancestors. But the plants my grandmother taught me to use don’t grow here anymore. And now I find out that I got this disease, because the fish I ate were swimming in polluted waters so long!

Environmental Issues

- Spiritual trauma

Quote from Native: What happens to the environment, happens to us. We are connected to the earth and the environment.

Quote from Chief Seattle: “Our dead never forget this beautiful earth, for it is the mother of the red man.”
Exposure to Environmental Contamination, Cancer and Health

“Environment” and cancer

About 80+% of all cancer is caused by lifestyle / daily behaviors (habitual tobacco use, not being physically active each day)
About 5-10% are hereditary
About 5-10% are caused by environmental pollution (chemicals).

“The majority of cancers are linked to the environment”
(http://www.cancer.gov/newscenter/benchmarks-vol4-issue3)

This is a statement by the National Cancer Institute (NCI) from their website.

“Environment” when used by the NCI includes daily behaviors of habitual tobacco use, what you eat, drink, infectious agents, as well as pollutants.

Aaron Blair, PhD, NCI

“Environment” and cancer

Most of the cancers caused by pollution are lung, esophageal, throat, head, neck, thyroid
Occasionally, bladder, prostate, lymphoma, myeloma, brain and colon
Very few contaminants are related to breast cancer

Elders’ and Tribal Leaders’ Perspectives

**About five years ago, a tribal member asked me to report to the tribal general council that, after working late into the evening hardening with the dry feathers (dried corn), they turned the lights out to go to their house, and looked back and the first morning glory, my wife woke me up at 12:30 after running the and asked me if I wanted to come out and see the morning glory. And I said, yes, Let’s going to eat them anyway.**

Aaron Re, Medicine, University of Idaho, Pojoaque Pueblo Program (OHS), Pueblo Indian Homeland

Exposure to Environmental Contamination, Cancer and Health

Causes or Factors that may Increase your Risk for Cancer

The most common causes of cancer?

- About 5-10% (1 out of 10) cancers are hereditary
- Most cancers are caused by:
  - Environmental factors (exposure to Radon or asbestos);
  - Lifestyle choices (physical activity, diet, tobacco & other exposures)

Common causes of cancer (cont)

- At least 1/3 (three out of 10) of all Cancer Deaths are tied to damage from habitual tobacco use
- More than 1/3 of cancer may be prevented by eliminating the abuse of commercial tobacco products
- About 1/3 of cancers may be prevented by healthy diets and daily physical exercise

Chemicals and Ways they Enter our Bodies

5 Different ways we could be exposed

#1. Source of contamination (e.g., landfill)

5 Ways we could be exposed

#2. Environmental sources through which contaminants travel (e.g., water)
Exposure to Environmental Contamination, Cancer and Health

5 Ways we could be exposed

#3. Point of exposure (e.g., water tap)

Ways we could be exposed

#4. Route of exposure (keep in mind cultural practices that might result in exposure)

Ways we could be exposed

#5. Exposed population

Environmental Sources

- Water
- Air
- Soil
- Sediment
- Animals
- Livestock, fish, birds
- Plants (medicinal and agricultural)

Environmental Sources

Ways Exposures Get into our Bodies

- Ingestion (eating and drinking)
- Inhalation (breathing)
- Dermal (skin contact)
- Injection (medicinal or accidental)
- Human (placenta, breast milk)

Examples of how pollution may get to you

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Exposure to Environmental Contamination, Cancer and Health

It is hard to understand the ways even a single plant (such as, the cattail) can affect people:

- Pollen: cakes
- Reeds: food storage baskets
- Roots: baked
- Soil contact while collecting and preparing
- Decomposition and release of long-lived contaminants, like some pesticides
- Human food, other uses
- Water drainage for streams and land

People mix with the environment daily through food, cultural, ceremonial, and religious practices:

- Sleeping mats, Basket
- Clothing, Shelter
- Food
- Contamination
- Reeds
- Water
- Cooking Pot

Chemicals that Cause or Increase your Risk for Cancer:

- Tobacco
- Diet/Weight/Physical Inactivity
- Alcoholic drinks
- Ultraviolet Radiation (outdoor sunlight)
- Viruses and Bacteria
- Ionizing Radiation
- Pesticides
- Medical Drugs
- Solvents
- Fibers, Fine Particles, Dust
- Dioxins
- Polycyclic aromatic hydrocarbons (PAH)
- Metals
- Diesel Exhaust Particles
- Toxins from Fungi
- Vinyl Chloride
- Benzidine
- PCBs

Substances Known to Cause or Likely to Cause Cancer in Humans:

- Tobacco
- Diet/Weight/Physical Inactivity
- Alcoholic drinks
- Ultraviolet Radiation (outdoor sunlight)
- Viruses and Bacteria
- Ionizing Radiation
- Pesticides
- Medical Drugs
- Solvents

Cancer and the Environment:

- Tobacco
- Diet / Weight / Physical Inactivity
- Alcoholic drinks
- Ultraviolet radiation

The following grey background slides are for workshop handout and to only discuss those that the community wants more information on (i.e., it is a resource list taken from Cancer and the Environment).

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*Slide provided by the Mr. Dean Seneca of the Agency for Toxic Substances and Disease Registry (ATSDR), Office of Tribal Affairs, Tribal Environmental Health Education Program; modified by Lisa Kerfoot and Linda Burhansstipanov

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*Slide provided by the Mr. Dean Seneca of the Agency for Toxic Substances and Disease Registry (ATSDR), Office of Tribal Affairs, Tribal Environmental Health Education Program

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*Cancer and the Environment

Cancer and the Environment: Viruses and Bacteria

- **Viruses**
  - Human Papillomavirus (HPV) → cervix and anus
  - Epstein-Barr (EBV) → lymphoma
  - Kaposi’s sarcoma-associated herpesvirus (KSHV) → Kaposi Sarcoma
  - Human herpes virus 8 (HHV-8)

- **Bacteria** (Hepatitis B or C) → liver cancer

Cancer and the Environment: Ionizing Radiation -- “Radon”

- A radon test is cheap → lung cancer
- When radon is found, it can often be turned into low levels by simple ventilation
- Lung cancer risks increased, especially among miners exposed to radon day in and day out --- even more so for those miners who smoke.

Cancer and the Environment: Ionizing Radiation -- “Radon” (continued)

- Of about 160,000 annual lung cancer deaths:
  - Fewer than 3,000 deaths were estimated as being radon-related among nonsmokers.
  - Reminder: Quitting habitual tobacco use is one of the hardest behaviors to change!!!

Cancer and the Environment: Ionizing Radiation -- “Radon” (continued)

- Radon
  - lung cancer
- Nuclear bombs fallout
  - leukemia, breast, thyroid, lung, stomach
  - Iodine 131 (especially children)
  - Radiation treatments (childhood cancers; ringworm, acne)
  - thyroid, head and neck cancers

Cancer and the Environment: Ionizing Radiation -- “Radon” (continued)

- Of about 160,000 annual lung cancer deaths:
  - Radon-related deaths were estimated to probably total 15,400 to 21,800
  - Mostly because of the interaction smoking and radon.


Lisa Kerfoot, MPH; Intertribal Council of Michigan 906-632-6896; Linda Burhansstipanov, Native American Cancer Research, Dean Seneca, ATSDR, CDC
Exposure to Environmental Contamination, Cancer and Health

Cancer and the Environment: Pesticides

- Pesticides (20 chemicals out of 900 tested where cancer-causing in animals) (http://www.aghealth.org for updates)

- Blood and lymphatic systems cancers, lip, stomach, lung, brain, prostate melanoma

- Ethylene oxide
- Amitrole
- Chlorophenoxy herbicides
- DDT
- Dimethylhydrazine
- Hexachlorobenzene

- NCI / NIEHS NIH (Pub No.) 03-2039

Cancer and the Environment: Medical Drugs

- Chemotherapy drugs increase risks of other (second) types of cancer
  - Cyclophosphamide
  - Chlorambucil
  - Melphalan

- Some chemo medications, FDA believes benefits outweigh the risks
  - Cyclosporin
  - Azathioprine

- NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Solvents

- Solvents (paint thinners, pain grease removers, and in dry cleaning industry)
  - Benzene
  - Carbon tetrachloride
  - Chloroform
  - Dichloromethan (methylene chloride)
  - Trichloroethylene
  - Fibers, fine particles and dust
  - Dioxins

- NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Fiber, fine particles & dust

- Asbestos

- Mesothelioma cancer of the lining of the lung and abdominal cavity; lung cancer

- Used in roofing, thermal and electrical insulation
- Cement pipe and sheet
- Flooring
- Gaskets
- Plastics
- Textile and paper products

- NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Lisa Kerfoot, MPH, Intertribal Council of Michigan; (906) 632-6896 ext 133; Burhansstipanov
Cancer and the Environment: Fiber, fine particles & dust

- Ceramic fibers suspected for lung cancer
- Silica dusts: lung cancer
- Wood dusts: nasal cavities & sinuses cancers

Cancer and the Environment: Dioxins

- More than 100 different types from:
  - Paper and pulp bleaching
  - Burning of waste materials, toxic products, hospital wastes
  - Electrical fires
  - Smelters (industrial plants where metal is extracted from ores)
  - Insecticides, herbicides wood preservatives

Cancer and the Environment: Polycyclic Aromatic Hydrocarbons

- Stored in fats and break down slowly
- TCDD (2, 3, 7, 8-tetrachlorodibenzo-p-dioxin) reduced recently due to changes in industrial processes.
- General public exposed through dairy products, fish, chicken and meat

Cancer and the Environment: Metals

- Arsenic skin, lung, bladder, kidney liver cancers
  - Found in drinking water
  - Mining and copper smelting work
  - Wood preservatives, glass, herbicides, insecticides (ant killers), and pesticides
  - General contaminant of air, food and water

Cancer and the Environment: Metals

- Beryllium compounds lung cancers
  - Primarily in workers for aerospace, defense industries
  - Found in:
    - Electrical components
    - X-ray tubes
    - Nuclear weapons
    - Aircraft brakes
    - Rocket fuel
    - Golf clubs
    - Fiber optics
    - Dental applications
    - Cellular network systems
Cancer and the Environment: Metals

Cadmium metal and compounds
- Lung cancers
- Primarily in workers who remove zinc and lead from minerals
- Produce cadmium powders
- Welding cadmium-coated steel
- Use solders that contain cadmium
- Used to coat metals to prevent corrosion.

Cadmium also found in:
- Plastics
- Batteries
- Stabilizers for polyvinyl chloride
- Fungicides
- Processes release cadmium in the air, surface water, ground water, and topsoil.
- Tobacco smokers at high risk
- Food is main source for nonsmokers

Cancer and the Environment: Metals

Chromium compounds
- Lung cancers
- Used to protect metals from corrosion
- Steel industry
- Found in:
  - Automotive parts (electroplating, layering one metal over another
  - Converts chromium 6, the carcinogen, to a non-carcinogenic form of chromium
  - Those who handle Chromium 6 are at greatest risk

Chromium also found in:
- Nuclear and high-temperature research
- Textile and leather-tanning industry
- Pigments for floor covering, paper, cement, asphalt roofing
- Widely used and distributed in air, water, soil and food

Cancer and the Environment: Metals

Lead acetate and lead phosphate
- Kidney and brain cancers
- Found in:
  - Cotton dyes
  - Coating for metals
  - A drier in paints, varnishes and pigment inks
  - Colorant in some permanent hair dyes (progressive dyes)

Lead is found in:
- Lead smelting
- Lead storage batteries
- Lead-zinc mining and smelting
- Lead-acid battery recycling
- Lead shot and lead-based paint

Cancer and the Environment: Metals

Cancer and the Environment: Metals

Cancer and the Environment: Metals

Cancer and the Environment: Metals

Cancer and the Environment: Metals
- Found in (continued)
  - Explosives
  - Washes to treat poison ivy
  - Stabilizer in some plastics and specialty glass
- Exposures are through skin contact, eating and inhaling

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Metals
- Nickel and nickel compounds
  - nasal cavity, lung, larynx cancers
- Found in
  - Steel
  - Dental fillings
  - Copper and brass, permanent magnets
  - Storage batteries
  - Glazes

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Metals
- Exposures are through skin contact, eating and inhaling / breathing
- Nickel is in the air, water, soil, food and consumer products

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Diesel exhaust particles
- Diesel exhaust particles
- Common among those exposed to high amounts:
  - Railroad workers, mine workers
  - Bus garage workers
  - Trucking company workers
  - Car mechanics
  - People who work around diesel generators

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Toxins from fungi
- Toxins from fungi
  - Liver cancers
- Aflatoxins (carcinogens) are within certain types of fungi growing on food
- Common foods for aflatoxin growth:
  - Grains and peanuts (most common)
  - Meat
  - Eggs
  - Animals that eat aflatoxin-contaminated feed

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

Cancer and the Environment: Toxins from fungi
- Aflatoxins
  - Exposure to high levels
  - Agricultural workers who inhale contaminated grain dust
  - US screens peanuts for Aflatoxins before processing
  - NOTE: health-food “natural” peanuts are also supposed to be screened, but cases have occurred due to aflatoxin from health-food store purchases peanuts

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)
Exposure to Environmental Contamination, Cancer and Health

**Cancer and the Environment: Vinyl chloride**
- **Vinyl chloride**
- Colorless gas
- Found in:
  - plastics like containers
  - wrapping film
  - electrical insulation
  - water and drain pipes
  - hosing
  - flooring
  - windows and credit cards
- Lung, blood vessel tumors (angiosarcomas) of the liver and brain cancers

**Cancer and the Environment: Benzidine**
- **Benzidine**
- Found in:
  - Benzidine-based dyes for textiles, paper, and leather products
  - The dyes break down into benzidine inside the body.
- Exposure
  - Limited to workers in dye and pigment plants where wastes may escape or be discharged.

**Cancer and the Environment: Polychlorinated Biphenyls (PCBs)**
- **What:** Colorless to light yellow oily liquids or solids. No known natural sources.
- **How:** Exposure is usually by skin contact, inhalation or ingestion
- **Where:** Exposure can occur from
  - Eating foods with PCBs (mainly fish)
  - Working in a job involving transformers, fluorescent lights, or other electrical devices
  - Breathing air near hazardous waste sites

**PCBs: Health Effects**
- Skin conditions (acne, rashes)
- Liver damage
- May cause cancer

**Age at the time of Exposure to Environmental Contamination**

*Slide provided by the Mr. Dean Seneca of the Agency for Toxic Substances and Disease Registry (ATSDR), Office of Tribal Affairs, Tribal Environmental Health Education Program*
Humans versus Animals (we are all related, but not in all ways)

- The information in this unit is based on what is currently known about environmental risks and breast cancer in humans.
- However, there is a new body of research that is looking at when an individual is exposed to an environmental contaminant and lifetime risk.

Younger ages of puberty for humans

- Caused by products such as:
  - Food (grown with hormones, like cows, chickens)
  - Hygiene products
  - Hair products made with placenta (straightening hair, hair dyes)
  - Make-up
  - Unknown

Examples of Contaminants being Studied (no solid info for humans yet)

- Basically everything (hee hee hee)
- Light (daylight, night lights)
- Make-up, lotions, perfumes, sunscreens
- Clothing, bedding, household furniture
- All cleaning products
- All environmental contaminants
- Note age at time of exposure, length of exposure and intensity/dosage of exposure

Infants versus Adult “tissue”

- Infant tissues are “infantile” whereas adults’ tissues are tougher and more resistant to contaminants
- Baby plants exposed to chemicals are easier to burn or damage and may affect its total growth –
- Adult plants or trees are more resistant to pesticides, chemicals or even bad pruning than is a young plant

Infants versus Adult “tissue”

- A human baby or a child’s exposure to a contaminant may cause more immediate harm or increase risk for breast and other types of cancers later in life

Timing of Exposure

- There is a lot of animal research that suggests:
  - Infants exposed to secondhand tobacco smoke or breast milk from mother who uses tobacco habitually may have higher risk for breast cancer during her life in comparison to infants who were not exposed to habitual tobacco as infants or children
Exposure to Environmental Contamination, Cancer and Health

Timing of Exposure
- Infants, pre-puberty children exposed to environmental contaminants or damaged foods may also be at higher risk.
- These environmental risks are less harmful in adults.
- Infants’ bodies do not have mature tissues that are more resistant.
- We do not know how these animal studies related to human beings.

Prevention and Control

Cancer and the Environment
- For many exposures when cleaning up or using a product that may be dangerous (gasoline, car oil, pesticides):
  - Wear protective gloves
  - Wear face mask and fits snugly and change mask filter hourly

Cancer and the Environment
- Check your home and work place for high levels of radon (increase ventilation)
- Avoid contact with pesticides which primarily comes from skin and breathing

Cancer and the Environment
- Protections (continued)
  - Increase ventilation in room if working with particles (Wear protective gloves and mask)
  - Keep protective equipment well maintained (replace filters; use fans)
  - Clean spills immediately
  - Keep work surfaces free of dust and chemicals
  - Use wet cleaning methods to avoid generating dust.

Cancer and the Environment
- Protections (continued)
  - Clean spills immediately
  - Keep work surfaces free of dust and chemicals
  - Use wet cleaning methods to avoid generating dust.
Cancer and the Environment

Protections (continued)

- Certain careers have more exposure to environmental contaminants (tell your provider that you work in these fields)

NCI / NIEHS NIH (Pub No.) 03-2039 (cont)

How to avoid or reduce exposure

- Rinsing and thoroughly clean foods, game, vegetables and fruits before eating or serving them

How to avoid or reduce exposure

- Wear a protective breathing mask (most lose effectiveness after 1 hour) if you know you are going into an area just sprayed

How to avoid or reduce exposure

- Obviously, it is better to avoid any area just sprayed, but sometimes you are not informed of the spraying schedule

List of Safety and Materials

- Note: list of Material Safety Data Sheets) for hazardous products is available
  - http://www.cdc.gov/niosh/topics/chemical-safety
  - (or 1-800-356-4674)

There are many aspects of our Land, Water, Game, and Air environments that we DO have control over and that MAY help prevent diseases like breast cancer.

Exposure to Environmental Contamination, Cancer and Health

The Land

Our health is tied to the well-being of the Earth.

- “It is with thanks that life is taken so we might live, but we must also seriously consider the well-being and preservation of all species and look forward to the needs of the Seventh Generation.”
  - “Preserving the Circle of the Seasons,” Great Lakes Indian Fish & Wildlife Commission

Environmental Issues: “Land Is Life”

- Threat to subsistence lifestyles: fish consumption, plants (medical purposes), and animals

Mother Earth

- Mother Earth Provides our food, clothing, water, medicine, and homes.
- We are each responsible for taking care of these things that she provides, and we are each responsible for teaching others to do the same.
- Take only what you need, and leave the land as you found it.


Our health is tied to the well-being of the Earth.

- As those that walked before provided for the well-being of today’s people, so must we think of who will walk the Circle in many years to come.
  - “Preserving the Circle of the Seasons,” Great Lakes Indian Fish & Wildlife Commission

Environmental Issues: “Land Is Life”

- Threat to subsistence lifestyles: fish consumption, plants (medical purposes), and animals
- Threat to cultural practices: sweat lodges, basket weaving, and pottery making
- Polluted land and waterways: environmental compensation (ask Dean, page 7 top slide from ATDSR Tribal training notebook)

Plants, grown foods and herbs (related to breast health or cancer treatments) and MI-based tribes?

- Home gardens (also 7th generations garden includes fruits vegetables, herbs)
- Location of sweets at 7th Generations

What are some safe(r) ways we can grow or gather plants, herbs, foods?

- Find out what the land has been exposed to in the past (ask tribal elders)
- Monsanto seeds (genetically modified to not allow natural re-seeding)
- When taking or planting we need to do a spiritual offering (e.g., tobacco)
- Tobacco seeds, garlic, marigolds surrounding and near by plants help protect from insects and some chemicals

Plants, grown foods and herbs (related to breast health or cancer treatments) and MI-based tribes?

- Potentially protective foods for breast health
  - Lycopenes (red vegetables like tomatoes)
  - Cruciferous vegetables (like broccoli, cauliflower, Brussels sprouts)

What are some safe(r) ways we can grow or gather plants, herbs, foods?

- When you buy potting soil, check what chemicals are included or if it is just “good dirt” with nutrients


What are some safe(r) ways we can grow or gather plants, herbs, foods?

- Use hydroponics (water-based plants rather than growing within soil)
- Epcot Center at Disney World in FL grows most plants, fruits and vegetables this way (you can visit a behind the exhibit tour when you are there, but make a reservation to do this)

What are some safe(r) ways we can grow or gather plants, herbs, foods?

- Choosing small seedlings and plants for medicines or foods that look healthy
What are some safe(r) ways we can grow or gather plants, herbs, foods?

- When gathering,
  - Wear protective gloves, shoes, hat and sometimes mask

What are some safe(r) ways we can grow or gather plants, herbs, foods?

- When gathering,
  - Collect the plants in a “safe” container (i.e., a basket not exposed to pesticides)

What are some safe(r) ways we can grow or gather plants, herbs, foods?

- When gathering,
  - Wash before you taste the product (like yummy berries)

The Water

WATER - NIBI

- Water is the source of life and, as such, women are supposed to help protect the water, but it is a responsibility of us all.

**“Preserving the Circle of the Seasons,” Great Lakes Indian Fish & Wildlife Commission**

WATER - NIBI

- We compare the Earth’s water system to the human circulatory system.
- Nibi must be protected, kept pure, for all life now and to come.*

**“Preserving the Circle of the Seasons,” Great Lakes Indian Fish & Wildlife Commission**
Exposure to Environmental Contamination, Cancer and Health

Make WATER safer by:
- Getting well water tested for pesticides, chemicals, and bacteria
- Treating contaminated water
- Making sure you swim at a safe beach
- Not using pesticides in gardens
- Teaching your children and family about water pollution
- Speaking out against pollution

Make WATER safer by:
- Buying or making water filters when you are out camping or even for rural cabins
- Plastic bottle with small wholes and within the cap is another tiny screen

Make WATER safer by:
- Water filters (continued)
  - Public Health Department or Office of Wildlife and Wilderness or Natural Resources can provide instructions on how to make inexpensive, but effective water filters

Make WATER safer by:
- Buying a commercial water filter
- Getting water purification pills to put into your water and then boiling it (can get from outdoor camping stores, like REI)
- At a minimum, boil the water before drinking it

What are ways to protect our water sources from waste products, like oil, gasoline, medications water and land

- Issue: a lot of trash is now being left on the beaches and recreation areas near the Great Lakes.

What are ways to protect our water sources from waste products, like oil, gasoline, medications water and land

- The MI Public Health Department and other Environmental protection organizations have done little to help (i.e., no budget for such local clean-ups)
Ways to protect from wastes (cont)

- Do not dispose of left-over paint, cleaners, stains and varnishes, car batteries, motor oil, pesticides...

- By pouring them in or on the
  - Ground
  - Toilet
  - Street drains
  - Public trash
  - Public dumps
  - Streams, lakes, ponds, etc.

Do not store left-over paint, cleaners, stains and varnishes, car batteries, motor oil, pesticides around the house

- Exposures and potential harms by either of the above bullets to sanitation workers, children, pets, wild animals

Ways to protect from wastes (cont)

- Call the Michigan Public Health Department and/or Tribal Health to find out where and how they want you to get rid of these products (like special areas at the dump)

Ways to protect from wastes (cont)

- Store household hazardous wastes in their original containers (do not put them into food containers or bottles)

- NEVER remove the original warning labels

Ways to protect from wastes (cont)

- Some of the original containers will corrode over time.

- Contact Tribal or Public Health Department for instructions on how to re-package the hazardous materials

- Store hazardous products on adult eye level high shelves
Store hazardous products
Possible place within a cookie sheet with ½" high rim or kitty litter pan with paper towel lining the bottom so that you can see if there has been any leakage
Obviously the cookie sheet or pan can never be reused for either food or animal wastes

- Store hazardous products on adult eye level high shelves
- Allows the adult to see the hazardous products
- Also keeping the products away from
  - Curious children from handling, breathing or drinking the product
  - Pets licking spillage

Left-over or new hazardous products are NEVER mixed with other household products
Combining chemicals may cause caustic chemical reaction in air (explode, ignite, contaminate entire garage and house)
- Easy for the adult to take one breath, pass out and cause serious health problems
- Similar exposure can kill a child

Follow instructions for safe disposal written on the label of the product
Household Hazardous Waste Collection
Days during the year
Homeowners slag burn collection days and sites during the year

Open burning (slag burn days)
- poison oak / sumac cautions
  - These should be burned indoor incinerator to avoid air particles with oak oils being inhaled by people who are hyper-sensitive
  - Sumac-sensitive people may need to be hospitalized for several rashes on skin and inside breathing tissues (esophagus)
Exposure to Environmental Contamination, Cancer and Health

Beach and Community Clean-ups

- Tribal and MI Public Health Department have written guidelines on how the community clubs can take on such clean-ups
- All participants must wear protective clothing
  - gloves (plastic trash bags if run out)
  - masks
- mechanical trash recovery (pick up sharp needles / lids hidden under sand without pricking the skin)

Fresh Water Fish - GIIGOONH

- Fish is a healthy food.
- Eating fish can help lower the risk of diabetes, heart disease, arthritis and stroke.

Game (Strontium 190)

- Deer, elk, rabbits, and birds eat the grasses
- A hunter kills and brings home the animal that has eaten the contaminated grasses

Make eating FISH safer by:

- Choose fish such as Lake Whitefish, Lake Herring and Perch; Fish from Lake Superior are the safest.
- Limit or avoid fish with known high Polychlorinated Biphenyls (PCB) levels such as Pike, Walleye, and Loche (or Burbot). Fish from small inland lakes and streams are less safe; and "farm grown"
- Limit the amount of canned tuna you eat, and in restaurants, avoid Shark, Tilefish, Swordfish and King Mackerel

The Game (fish, animals, birds)
Eat More Fish ... But Choose Wisely

Just Remember These Easy Tips:

SOURCE
Contaminant levels can vary greatly. For example, Lake Superior, Michigan and Huron typically have lower mercury levels than tributary lakes.

SPECIES
Some fish species tend to accumulate fewer contaminants than others. For example, lake whitefish and lake herring are very low in contaminants.

SIZE
When choosing between fish of the same species, remember that the smaller fish generally have lower contaminant levels than the larger fish.

Removing fat and skin before cooking – this gets rid of over 65% of the chemicals!

TRIM, SKIN & GRILL
To avoid mercury, choose fish with few mercury-trick, like lake whitefish, lake herring, smelt or perch. Mercury accumulates in the liver, not the fat.

Remove the fat and skin before cooking to remove a significant portion of contaminants. Like fish, (see graphic on left) Grill your fish so even more fat can be removed out.

Lisa Kerfoot, MPH, Intertribal Council of Michigan 906-632-6896; Linda Burhansstipanov, Native American Cancer Research, Dean Seneca, ATSDR, CDC

Make Game and Birds Safer

Make certain all cleaning materials (knives, blades, scrapers) are sterilized before using (and before working on the next animal) clean repeatedly while cleaning the game or bird.

Make Game and Birds Safer

Thoroughly wash the food in clean water before eating

Only eat what looks healthy and smells healthy

When removing the skin, the meat should look and smell right

Lisa Kerfoot, MPH, Intertribal Council of Michigan 906-632-6896; Linda Burhansstipanov, Native American Cancer Research, Dean Seneca, ATSDR, CDC

Make Game Safer [Michigan Venison, 2001: How to Field Dress, Butcher, Prepare, Cook; Preserve. pp.3-5]

Venison – cooked to 165 degrees Fahrenheit (165°F)

Books available explain

WHERE to aim on the animal

to avoid puncturing organs (stomach, bowel, bladder) which contaminates the meat (and gives it a gamey taste)

that is standing still and to not shoot at a running animal

Lisa Kerfoot, MPH, Intertribal Council of Michigan 906-632-6896; Linda Burhansstipanov, Native American Cancer Research, Dean Seneca, ATSDR, CDC
Exposure to Environmental Contamination, Cancer and Health

Make Game Safer [Michigan Venison, 2001: How to Field Dress, Butcher, Prepare; Cook; Preserve. pp.3-5]

- How to field dress and clean the animal
- How to hang and age the meat (below 40° F)
- Avoid contaminating the meat with dirt or dirty water
- Leave fat and white connective tissue on the red meat

Make Game Safer Michigan Venison, 2001: How to Field Dress, Butcher, Prepare; Cook; Preserve. p. 17

- Clean hands, cooking utensils and surfaces often
- Separate; don’t cross-contaminate among the animal or with other foods
- Cook to 165°F
- Chill by refrigeration (keep meat below 40°F) at all times other than when preparing it for meal

AIR - Ikwanaamo

- Air: A mixture of nitrogen, oxygen, and minute amounts of other gases that surrounds the earth and forms its atmosphere.
- Ikwanaamo: Draw Breath In

Make breathing AIR safer by:

- Quitting Smoking
- NOT smoking around your mothers, daughters, grandmothers, aunts, sisters or ANY other family members

Smoking and Breast Cancer Treatment

- If the woman is a habitual tobacco smoker or chewer, she needs to quit before doctors will do reconstruction surgery
- Doctors prefer to not to any surgery on anyone who smokes
- More susceptible to infections
- Slows healing from the surgery
Exposure to Environmental Contamination, Cancer and Health

Make breathing **Indoors** AIR safer by:

- Eliminating sources of pollution
- Getting your home tested for radon and/or other chemicals and carcinogens (contact local tribe or the local health department)
- Radon is linked to lung and respiratory cancers
- Such as, asbestos increases risks for lung and respiratory cancers

Make breathing **Indoors** AIR safer by:

- Young girls (pre-initial moon) exposed to plutonium during the Japanese nuclear bombings have a 20 time increased risk for developing breast cancer in their life time.
- There is little known about what other types of chemicals in air pollution may be linked to breast cancer

Make breathing **Indoors** AIR safer by:

- Increase ventilation (even in the winter, occasionally open the windows to freshen the air)
- Consider using an air cleaner
- Buy a Carbon Monoxide monitor for your home
- Be careful how you use cleaning products and know what chemicals are in them.

Make breathing **Outside** AIR safer by:

- Being very careful what you put in a burn barrel. Burning plastic of any kind releases chemicals into the air which are known to increase the risk of cancer.

Examples of Agencies with more Environmental Health Information


Exposure to Environmental Contamination, Cancer and Health

**Environmental Information**

- **Environmental Protection Agency (EPA)**
  - Protect human health and safeguard the natural environment
  - [http://www.epa.gov/enviro](http://www.epa.gov/enviro)
  - [http://www.epa.gov/epahome/comm.htm](http://www.epa.gov/epahome/comm.htm)
  - Toll Free: 1-800-775-5037
  - TTY number is 1-800-553-7672

- **EPA Pesticide Information**
  - Provides public database of hazardous substances within pesticides
  - [http://npic.orst.edu](http://npic.orst.edu)
  - Toll Free: 1-800-858-7378

- **EPA Superfund Hotline for hazardous wastes**
  - Identifies and provides information to clean up hazardous waste sites
  - [http://www.epa.gov/superfund/about.htm](http://www.epa.gov/superfund/about.htm)
  - Toll Free: 1-800-775-5037
  - TTY: 1-800-553-7672

- **Food and Drug Administration (FDA)**
  - Helps safe and effective products reach the public in a timely way and monitors the products for safety after they are in use
  - [http://www.fda.gov](http://www.fda.gov)
  - [http://www.cfsan.fda.gov](http://www.cfsan.fda.gov)
  - Toll Free: 1-800-463-6332

- **Occupational Safety and Health Administration (OSHA)**
  - Prevent work-related injuries, illnesses, and deaths
  - [http://www.osha.gov](http://www.osha.gov)
  - Toll Free: 1-800-321-6742
  - TTY number is 1-877-889-5627

- **US Department of Agriculture (USDA)**
  - Food safety inspection, animal and plant inspection services, nutrition programs and agricultural research programs
  - [http://www.usda.gov/services.html](http://www.usda.gov/services.html)

Environmental Information

Agency for Toxic Substances and Disease Registry (ATSDR)
Involved with hazardous waste issues and has fact sheets on various chemicals / agents.
http://www.atsdr.cdc.gov
Toll Free: 1-888-422-8737

Environmental Information

Centers for Disease Control and Prevention
Promotes health and quality of life by preventing and controlling disease, injury, and disability
http://www.cdc.gov
http://cdc.gov/niosh (National Institute for Occupational Safety and Health)
Toll Free: 1-800-356-4674
http://cdc.gov/nceh (National Center for environmental Health -- Health Line)
Toll Free 1-888-232-6789

Environmental Information

National Institute of Environmental Health Sciences (NIEHS)
Reduce human illness caused by unhealthy substances in the environment
http://www.niehs.nih.gov
Toll Free: 1-800-638-2772
TTY number is 1-800-638-8270

Environmental Information

National Cancer Institute
Conducts and supports cancer research, training, & health information dissemination
http://www.cancer.gov
Toll Free: 1-800-422-6237
TTY number is 1-800-332-8615

Environmental Information

National Library of Medicine
Compiled a list of the ingredients in common household products and their health effects.

Environmental Information

National Tribal Environmental Council’s (NTEC)
The preservation of tribal lands and to approaches that focus on sustaining natural resources and preserving the ecological, recreational, economic, aesthetic, and spiritual values that those resources embody
http://www.netc.org
505-242-2175

Environmental Information

Poison Control Centers
Organized by state; has information on health effects that are associated with environmental hazards and contaminants
http://www.medicinenet.com/poison_control_centers/article.htm

Thank you for sharing your time with us