Air

Air

Who to ask: village residents

Indoor Air Quality. Alaskans spend a lot of time indoors. Unfortunately, indoor air can have even more pollutants than outdoor air. Activities like heating, cooking, bathing, and even breathing can all impact indoor air quality. Indoor air pollutants can be chemicals, gases, and living organisms like mold. Other pollutants cause or worsen allergies, respiratory illnesses (such as asthma), heart disease, cancer, and other serious long-term conditions.

99. Do community residents consider cigarette smoke and woodstove smoke a source of indoor air pollution?

☐ Yes ☐ No ☐ ?

Cigarette smoke and wood stove smoke are serious sources of indoor air pollution. Cigarette smoke, in particular, is one of the most widespread and harmful indoor air pollutants. The smoke is a mixture of irritating gases and cancer-causing tar particles. It is a known cause of lung cancer and respiratory illness, and has been linked to heart disease. In Alaska, tobacco related lung cancer is the fastest growing form of cancer among the Native population. Children can also become very sick by inhaling the smoke of others.

The smoke produced by wood stoves is another common source of indoor air pollution. Smoke from wood stoves is particularly a problem in rural Alaska where many homes have been "weatherized" (highly insulated) and there is little circulation of air.

Residents who rely on wood stoves as a source of heat in their homes are at risk for many of the respiratory problems related to inhaling smoke, carbon monoxide, and microscopic particles (particulate pollution). Particle pollution from burning wood contains microscopic solid or liquid droplets that are small enough to get deep into the lungs and cause health problems. Particles less than 10 micrometers can settle in the bronchi and lungs. Particles less than 2.5 micrometers in diameter pose the greatest problem, as they can enter the blood stream through the lungs. Using only dry wood and not allowing the fire to smolder will reduce the amount of smoke produced and be less of a health hazard. Plastics should not be burned in wood stoves. The fumes from burning plastic are poisonous to breathe.

100. Is heating with wood stoves common in the community?

☐ Yes ☐ No ☐ ?

If yes, estimate the percent of homes that primarily burn wood for heating

_____

101. Are the woodstoves EPA Certified?

☐ Yes ☐ No ☐ ?

Algaaciq Tribal Environmental Department

St. Mary's, Alaska

In 2008 the Algaaciq Tribal Government used their EPA Indian General Assistance funding to survey local households to determine how many non-compliant woodstoves were in use. They later received a Community Environmental Demonstration Project grant from the Alaska Native Tribal Health Consortium to purchase and replace eleven stoves and provide homeowners with wood stove education. To learn more about their project and to view some of the forms they've created visit: www.anthc.org/chs/ces/hve/

Clean-burning EPA certified Woodstove. If there are many inefficient and old woodstoves in a community, education many be necessary. By raising awareness of the potential energy cost reduction, as well as cleaner air both indoors and out, individuals may see the importance of replacing old woodstoves with the more efficient and less polluting EPA certified woodstoves. Also, regardless of whether the woodstove being used is certified or not, using the best wood burning practices can lead to cleaner air and less wasted energy from wood. You can help others by sharing information on how to use a woodstove both safely and efficiently on the smallest amount of fuel.

Safe and Healthy Burning Practices

- **Burn the right firewood**
  Wood seasoned for at least 6 months burns hotter, cuts fuel use, and creates less smoke and pollution. Driftwood and trash may release chemicals into your home.
- **Split firewood and store properly**
  Wood split into pieces 4-6 inches thick burn better. Wood should be stored off the ground and covered, because dry wood burns hotter and creates less smoke.
- **Don't let the fire smolder**
  A smoldering fire does not provide much heat, and it increases air pollution.
- **Keep your stove and chimney clean**
  A clean stove and chimney allows air to enter so your fire can burn better and reduces the risk of a chimney fire.

102. Are there visible signs or odor from mold or mildew inside the homes, schools or other buildings?

☐ Yes ☐ No ☐ ?

If yes, has it ever been tested? When?

_____

103. Have there been any mold surveys performed in the community?

☐ Yes ☐ No ☐ ?

If so, by whom and when? How many homes were surveyed?

_____

_____

104. Do people store gas cans, auto mobile fluids, or hazardous materials in their homes or entryways?

☐ Yes ☐ No ☐ ?

Mold and Mildew. Indoor air quality can diminish during the winter when windows and doors are kept closed. Newer and remodeled homes are more air-tight than older, less insulated homes, reducing air exchange. Proper air exchange reduces humidity, reducing the conditions that cause black mold to grow. Household cleaners and other airborne pollutants can cause difficulties breathing. Here are some ideas to improve indoor air quality:

- Occasionally open a window or door to exchange air
- Use non-toxic cleaners
- Have mats to catch dirt and don't wear shoes in the house
- Use bathroom fans to control household humidity

Chemical Storage. Storing toxic chemicals, such as gasoline, cleaning agents, and household pesticides, can cause volatile organic chemicals (VOCs) and toxic air pollutants to be released in to the indoor air environment, where most of the family's members spend their time. By breathing these chemicals, the risks to their health are significantly increased. Community members need to be made aware of which chemicals pose the most risk. They also need to know what other alternative storage options are available that pose less risk.

105. Do people idle vehicles near door ways or air vents?

☐ Yes ☐ No ☐ ?

Exhaust. Warming up combustion engines, such as snow machines, snow blowers, and ATVs (4wheelers or Hondas) can allow their exhaust to seep indoors through windows, air vents or doorways which will significantly reduce the quality and breathability of the indoor air. It's important that everyone is aware of the need to prevent exhaust (carbon monoxide) from being transferred into homes and offices. Having a carbon monoxide detector in each home is a simple way to help avoid poisoning and loss of life. People and animals are unable to see or smell carbon monoxide, until it is too late! Help your community to understand the behavior changes that can help prevent disease and loss of life.

106. Is dust an issue in the community?

☐ Yes ☐ No ☐ ?

Does dust get on foods such as fish, meat, berries and plants that people collect from around roadways?

Dust is a general name for a solid particle in the air that arise from various sources such as soil, roads, volcanic eruption and pollution. Air quality professionals pay attention to particulate matter because these very small particles can cause health problems when inhaled.

There are many alternatives to help control dust**.** Here are some of the more common options for dust control:

- Reducing the numbers of vehicles
- Reducing vehicle speed
- Correcting road design problems
- Increasing moisture content
- Covering unpaved road surface soils with gravel

107. Can smoke from burning garbage at the landfill be smelled in the village?

☐ Yes ☐ No ☐ ?

_____

_____

108. Is asthma common in the village?

☐ Yes ☐ No ☐ ?

If yes, please describe?

_____

_____

Burning Trash. While any smoke is not good to breathe, inhaling smoke from burning garbage can have many different health effects on individuals:

- *Short-term* effects include: wheezing, watery eyes, "cold" symptoms, pneumonia, and bronchitis.
- *Long-term* effects include: allergies, sinus infections, asthma , emphysema, heart disease and cancer.

Children are at greater risk for getting sick from inhaling smoke because their lungs are still forming and they take in 50% more air per body weight than adults do. Respiratory problems are the leading cause of chronic illness in children today. Other individuals who are at greater risk from smoke pollution include the elders and people with asthma and heart or respiratory disease.

Before a large amount of garbage is burned at the landfill, a test burn should be done to see where the smoke will go. It should go straight up for about 200 feet and be transported away from the village and residences in order to prevent the smoke from being inhaled by people in the village. If the smoke goes toward the community school or houses, you should wait until the weather changes and there is a better time to burn. Using a properly built burn unit for the community is preferred over the use of burn barrels and open-burning because it reduces the production of toxic air pollutants and is more controlled.

Asthma is very common in Alaska's adults and children. Asthma causes a persons airways to become inflamed resulting in shortness of breath, coughing, wheezing attacks, and chest tightness. Some asthma triggers include:

- Animals (hair / dander)
- Dust
- Chemicals in the air or in food
- Changes in the weather
- Mold
- Dust mites
- Pollen
- Respiratory infections, such as a cold
- Stress
- Tobacco smoke or other smoke

109. Is burning plastic the main odor smelled when garbage is burning?

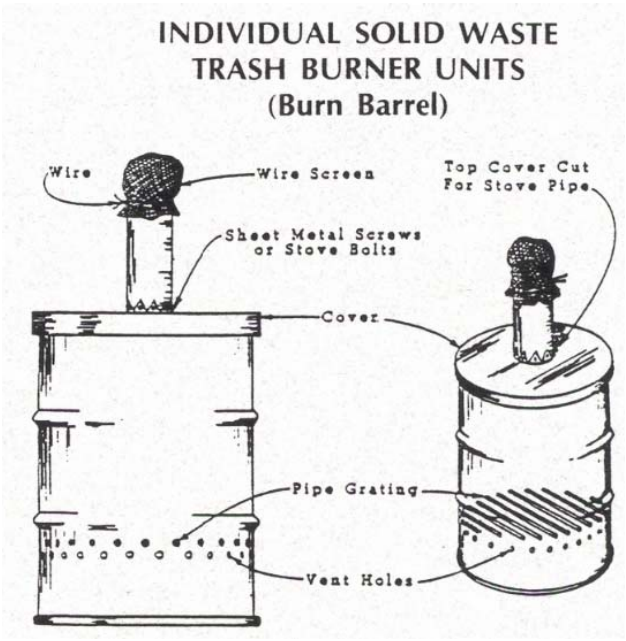
☐ Yes ☐ No ☐ ?

110. Do village residents use burn barrels?

☐ Yes ☐ No ☐ ?

Approximately how many are in use?

_____



Burning Plastic. Plastic becomes very toxic when burned and can be harmful to both your body and to the environment. Plastic items should be separated from other garbage that is going to be burned. Reducing the amount of plastic used can help prevent plastic from getting into the waste stream in the first place.

Burn barrels have been used extensively at Alaska residences. These devices are essentially 55- gallon drums that are modified with passive under-fire draft. Some have a stack and spark arrestor screen. Burn barrels are one way to reduce the amount of paper/wood products that end up in the landfill. Although burn barrels are convenient and reduce the amount of times that you need to go to the dump, they are harmful if used improperly.

Hazardous wastes and plastics should be removed from other wastes placed in a burn barrel. The smoke produced from burning plastic is extremely dangerous to breathe. Hazardous wastes that are not separated from other garbage may cause a dangerous explosion in the burn barrel and produce toxic fumes as well.

Inside View

Cover burn barrel until ready to use

Remove ash regularly

Burn barrels operate at low temperatures (400° F to 500°F) and generally burn wet garbage, resulting in the incomplete combustion of the waste and the production of smoke. Burning materials such as plastics, asphalt, and rubber generates hazardous air pollutants. This can cause serious health threats and can be a nuisance for nearby residents. Burn barrels often emit acid vapors, carcinogenic tars, and "heavy metals" as well as unhealthy levels of carbon monoxide and particulates (smoke) when burning non-separated household garbage. For these reasons, the Alaska Department of Environmental Conservation discourages property owners from using burn barrels to burn household garbage.

The materials that can be burned effectively in a burn barrel include dry leaves, plant clippings, paper, cardboard and clean untreated wood. Burn barrels should not be used in close proximity to homes or areas where people can be exposed to the smoke. The closer one stands to the burn barrel, the more harmful chemicals can be inhaled. Burn barrels and burn piles can also lead to uncontrolled fires unless the following precautionary steps are taken:

- Clear all combustible materials and vegetation within 10 feet of the burn barrel
- Place a metal mesh screen (spark arrestor) over the top of the burn barrel. The openings should be 1/2 inch or smaller.
- Place your burn barrel on concrete blocks and drill some small holes in the bottom to allow rainwater to drain.
- Don't start your fire unless you are prepared to monitor it until it is completely out.

111. Are residents aware of natural hazards and their potential impact on health?

☐ Yes ☐ No ☐ ?

Mount Redoubt 2009

Natural Hazards. Natural hazards such as wildfires and volcanoes can be significant sources of air pollution. While these sources are not typically ones that a community can have much control over, it is important that residents are aware of the potential health risks and precautions that they can take when warning of one of these natural events is received. By helping a community and its leaders to understand how they should respond to these natural events before they occur, it is more likely that the best actions will be taken in the event an air impacting disaster occurs. For example, you can encourage residents and health clinics to have proper face masks on hand.

During the summer months wildfires can be a large source of airborne fine particulate matter. Wildfires can include prescribed burns, tundra fires, rangeland fires, and forest fires. Wildfires release $PM_{2.5}$, nitrogen oxides (NO_x), volatile organic compounds (VOC), ammonia (NH_3) and small amounts of sulfur dioxide (SO_2). Emissions from fires contribute to elevated ambient concentrations of $PM_{2.5}$ and impairment of visibility. Similar to petroleum and woodstove emissions, wildfires can have serious effects on respiratory health.

112. Are there industrial activities that occur in our near the community?

☐ Yes ☐ No ☐ ?

If so, please identify all that apply

☐ Mining

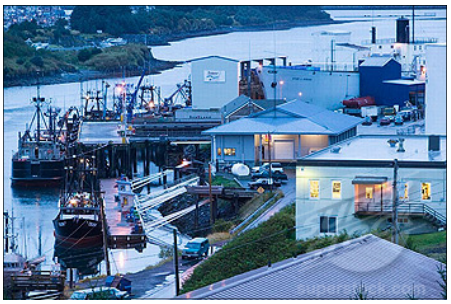
☐ Logging

☐ Oil & Gas Drilling

☐ Manufacturing

☐ Seafood Processing

☐ Other: _____



113. Are residents aware of the health and environmental risks associated with industrial activities?

☐ Yes ☐ No ☐ ?

Industrial Activities. Development of natural/industrial resources is becoming more common throughout Alaska. New mines, oil and gas development, as well as manufacturing, can impact a community's air quality. Being aware of what industrial activities have occurred, are occurring, or may begin to occur in or near the community will help to bring a better understanding of the potential air quality impacts. By working with regulatory agencies, such as the State of Alaska DEC or the EPA, communities may be able to reduce the hazards posed by these industries.

Your community may wish to conduct a source inventory of all the sources of air pollution in your area and calculate the nature and quantities of pollution being emitted, along with the likely risks to human health and the environment. With this information you can increase the awareness with the tribal community of the risks posed by the industrial source and work with regulators to ensure these are as low as possible. You can also work with directly with the industrial company for voluntary reductions that are possible.

Air pollution from **oil and gas exploration** and production is very similar to emissions coming from burning fossil fuels for heat but on a larger scale. Sources necessary for oil and gas exploration and production emit nitrogen oxide, volatile organic compounds, carbon monoxide, and particulate matter. The size of the source and distance from the community can influence its impact on the community. If any air permits are held by the sources, these can provide useful information on the amount and type of pollution they are releasing.

Air pollution from the **mining** industry is typically particulate matter. Identifying a mining operation close to the community can help identify potential impacts from the source. Identifying the source can help to inform the community about what precautions are necessary, especially on windy days when dust from the mine is prevalent. The type of mine and the distance from the community can influence the impact on the community. The mine's air permit holds a wealth of air quality information about the source. If a mining operation is near to the community, it is helpful to review the air quality permit for limits and controls the mine is subject to. When natural resource/industrial development activities are located near communities, it is important to observe the prevailing wind direction to determine the potential impact of the pollution source. It's possible for wind to carry air pollution from the resource development site to the community. Communities may wish to conduct a source inventory of all the sources of air pollution in the area. Calculating and determining the nature and quantities of pollution, along with the likely risks to human health and the environment can be included in the inventory.

This information can be used to increase awareness within the tribal community regarding the risks posed by the industrial source. Additionally, communication with the regulators is necessary to ensure that pollution levels are set at the appropriate level.

Aerosol Monitor

Indoor Air Quality Monitor

Radon Home test kit

Instant home mold test kit

EPA Air Quality Resources Quick List

EPA Publications can be requested directly from:
Public Environmental Resource Center (PERC):
http://yosemite.epa.gov/r10/extaff.nsf/PERC/PERC
1-800-424-4372 or 206-553-1200
Order Form: http://yosemite.epa.gov/R10/EXTAFF.NSF/webpage/Publication+Order+Form
EPA Air Topics: http://yosemite.epa.gov/r10/airpage.nsf/webpage/air+quality

Monthly Teleconference: Alaska Tribal Air Work Group
Second Tuesday of each month 10:00 AM – 12:00 Noon AK Time
Call in number: 1-866-299-3188 Access code: 206-553-2770

NW Tribal Healthy Homes Working Group:
Find resources for indoor air quality and sign up for webinars, training, networking and conference calls at: http://www.thhnw.org/ For further information contact Gillian Mittelstaedt at 425-677-8103

Tribal Air Calendar: To request a school calendar for outreach to school students contact:
- Region 10: Anne Dalrymple at 206-553-6313 or dalrymple.anne@epa.gov

Indoor Air Quality Tools for Schools: http://www.epa.gov/iedweb00/schools/pubs.html

EPA Tribal Air Program:
- **R10 Tribal Air home page**
  http://yosemite.epa.gov/r10/tribal.nsf/programs/tribalair
- **R10 Tribal Air in Alaska**
  http://yosemite.epa.gov/r10/tribal.nsf/programs/tribalairalaska
- **R10 Tribal Air Resources**
  http://yosemite.epa.gov/r10/tribal.nsf/programs/tribalairresources
- **National Tribal Air Program**
  http://www.epa.gov/air/tribal/

Alaska Tribal Air tool Kit: Alaska Air **Fact Sheets** and ***"Clean Air, Healthy Villages"*** video series,
http://yosemite.epa.gov/R10/TRIBAL.NSF/programs/tribalairalaska
Region 10 Main Number: 1-800-424-4372

Indoor Air
- EPA http://www.epa.gov/iaq/is-imprv.html
- EPA IAQ Fact sheets & videos http://yosemite.epa.gov/R10/TRIBAL.NSF/programs/tribalairalaska
- ANTHC http://www.anthc.org/cs/dehe/envhlth/research/tribal-air-quality.cfm
- Asthma http://www.epa.gov/asthma/ and http://www.asthmacommunitynetwork.org/
- Carbon monoxide poisoning http://www.epa.gov/iaq/co.html
- Mold http://www.epa.gov/mold/
- Radon http://www.epa.gov/radon/
- School Air Quality http://www.epa.gov/iaq/schools/
- Tobacco Smoke http://www.epa.gov/smokefree/
- American Lung Association – Alaska http://www.lungusa.org/associations/states/alaska/
- HUD Office of Native American Programs http://portal.hud.gov/hudportal/HUD?src=/program_offices/public_indian_housing/ih/codetalk/onap
- Indian Health / Alaska Native Tribal Health Consortium http://www.anthctoday.org/ or http://www.anthc.org/cs/dehe/envhlth/research/tribal-air-quality.cfm
- NW Clean Air Agency http://www.nwcleanair.org/resources/nwcaaPubs.htm#PUBLICATIONS
- Northwest Tribal Healthy Homes Working Group www.thhnw.org

Gillian Mittelstaedt, Working Group Coordinator: gmittelstaedt@thhnw.org 425-677-8103

R10 Contacts: Susan Titus titus.susan@epa.gov 206-553-1189

- Alaska Native Children's Environmental Health Initiative Workgroup

Region 10 Contacts: Margo Young young.margo@epa.gov 206-553-1287
Erin Mader mader.erin@epa.gov 206-553-1254

Diesel Fuel Use

- Alaska Division of Air Quality http://www.dec.state.ak.us/air/
- National Library of Medicine "Tox Town" http://toxtown.nlm.nih.gov/index.php
- Particulate emissions from diesel-fueled engines as a toxic air contaminant http://www.arb.ca.gov/toxics/dieseltac/dieseltac.htm
- Ultra Low Sulfur Diesel (ULSD) http://www.dec.state.ak.us/air/anpms/ulsd/ulsdretro.htm
- WestCoast Collaborative (a public private partnership to reduce diesel emissions) http://westcoastcollaborative.org/

Region 10 Contact Wayne Elson elson.wayne@epa.gov 206-553-1463

Road Dust

- EPA Road Dust Control http://www.epa.gov/owow/NPS/gravelroads/sec4.pdf
- Alaska Department of Environmental Conservation http://www.dec.alaska.gov/air/anpms/pm/pmmain.htm
- BIA Indian Reservations Roads Program http://www.bia.gov/WhoWeAre/BIA/OIS/Transportation/IRR/index.htm
- EPA Region 10 contact Mary Manous manous.mary@epa.gov 206-553-1059

Solid Waste Burning

- EPA Region 10 Tribal Solid Waste Management Resources http://www.epa.gov/wastes/wyl/tribal/index.htm
- EPA National Tribal Solid Waste Resources http://yosemite.epa.gov/R10/TRIBAL.NSF/programs/tribal_solid_waste
- Open burning http://www.epa.gov/epawaste/nonhaz/municipal/backyard/index.htm
- Alaska Department of Environmental Conservations Solid Waste Program http://www.dec.alaska.gov/eh/sw/index.htm
- RurALCAP Solid Waste Resources http://www.aerho.org/solid_waste_mgt/solid_waste.html
- Zender Environmental http://www.zendergroup.org/viewdocs.htm

EPA Region 10 contacts
Ted Jacobson tjacobson@ruralcap.com 907-279-2155 ext 7363
Heather Valdez valdez.heather@epa.gov 206-553-6220

Wood Stoves / Wood Smoke

- EPA http://www.epa.gov/burnwise/
- Alaska Department of Environmental Conservation http://www.dec.state.ak.us/air/anpms/pm/wshome.htm

EPA Region 10 contact Claudia Vaupel vaupel.claudia@epa.gov 206-553-6121

IAQ Tools for Schools

- General Information http://www.epa.gov/iaq/schools/index.html
- Healthy Schools http://www.healthyschools.org/
- http://www.cleaningforhealthyschools.org/
- http://www.nationalhealthyschoolsday.org/
- Healthy School News http://www.epa.gov/region10/pdf/publications/healthy_school_news_winter2011.pdf
- Compliance Assistance http://yosemite.epa.gov/r10/tribal.nsf/programs/tribal+schools
- Environmental Kids Club http://www.epa.gov/students/index.html

EPA Grants http://yosemite.epa.gov/r10/HOMEPAGE.NSF/Information/Grants

Alaska Native Knowledge Network http://ankn.uaf.edu/Resources/