

Welcome to:
Our Introduction to Solid Waste
Management Class
("Talking Trash" 101)

First things first. What is Solid Waste Management?

Solid Waste Management
is....

"Taking good care of the
leftovers in a community"

Leftovers are things that people don't think they have a use for. People call them trash, garbage, rubbish, or scraps. Agencies like EPA call them "solid wastes".

Traditional Solid Waste Management.

In our traditional ways, we did not have much left over. What we did have left over belonged to the earth. Even our houses were returned to the earth.



Much of our subsistence wastes still belongs to the earth. We continue to practice good waste management by leaving the remains away from town or feeding our dogs with the scraps.

What is the big deal?

Some wastes today don't belong in the Earth. They can pollute our water and land.

Other wastes might take up too much space, so that there is no place to go.

Some waste attracts birds and animals which can be annoying or dangerous.

Some waste is not much of a problem for us. But when that waste is first made it uses energy or trees or mining chemicals. If we recycle or reuse the waste, we are respecting the earth. So we are keeping our traditions, and that is very important.

We need to look at all of our wastes carefully to make the right decision.

Where does each leftover belong?

- ❄ Do they belong at the dump?
- ❄ Do they belong at the Anchorage hazardous waste facility?
- ❄ Do they belong at a place set aside for salvaging?
- ❄ Do they belong on the ground for the birds or animals to eat?

These are all solid wastes. Which ones do you have to worry about in your community?

- ❄ Food wastes
- ❄ Paper & Cardboard
- ❄ Plastics
- ❄ Textiles
- ❄ Rubber & Leather
- ❄ Yard wastes
- ❄ Wood
- ❄ Glass
- ❄ Tin cans and other metals
- ❄ Aluminum
- ❄ Special wastes (furniture, electronics, large appliances, batteries, etc.)
- ❄ Hazardous wastes
- ❄ Mining, Logging, Cannery wastes

In a good solid waste management program, you figure out where all of these solid wastes belong in your community.



Before deciding what to do with your wastes, you need to know what they are.

You need to know how much of each kind you have.

Finding this out is called a "wastestream analysis". Some people say "waste assessment". Whatever you call it, it is simple. It is looking at what types of wastes your community makes, and counting how much of each waste there is.

What is a wastestream?

A wastestream is like a water stream, but made up of wastes, instead of water. The wastes go in one direction only. Each waste starts from one place. By the time the wastes make it to the dump, they are with lots of other wastes - just like a river can get bigger and bigger when the small streams join together.

In most Villages, one of the biggest wastestreams is from the school. Where is the biggest wastestream in your community?

Each community wastestream is different from other communities. Your job is to figure out what makes your community wastestream special.

"Waste Generation" means how much waste your community creates or brings in from other places.

People talk about a waste generation *rate*. A rate means how much waste is usually made in a day by the community.

HOW MUCH WASTE DO YOU PRODUCE?

Alaska Villages make different amounts of waste.
The Waste Generation Rate in your community
is probably somewhere between:
2.5 to 8 pounds for each person every day.

We think that **Villages without many businesses**, and who have high subsistence diets, **create less wastes**. If you are one of those Villages, then your number is probably closer to 2.5 to 5 pounds. **If you are a regional hub**, your number might be closer to 6 to 8 pounds.

Things that change your community waste generation:

- ❄️ **Summer!** Most rural Villages have more waste in the summer because summer is more active with projects, subsistence, supplies, commercial fishing, and tourists. Anything else happen in your Village that makes waste generation change during a part of the year?
- ❄️ **Schools** are big waste producers. They produce a lot of cardboard when they get their supplies for the year.
- ❄️ **Businesses** like canneries, mining, logging can produce a lot of wastes. Stores can produce a lot of cardboard from all of the boxes they ship in.
- ❄️ **Salmon, Moose, and Walrus!** Subsistence foods aren't packaged so they make less wastes. It is too hard for the moose to walk when they're wrapped up in cellophane. This is just another reason to encourage subsistence lifestyles.
- ❄️ **Rain!** The amount of water in the air (humidity) can make a big difference in how much waste weighs. Because there is so much rain, a community in the Southeast will make about 20 percent more pounds of waste than a tundra Village even when they have exactly the same lifestyle and population. The water will get into the wastes just like it gets into everything else in the Southeast.

There are all kinds of solid wastes. There are a lot of ways to talk about them. We won't go through all of those today. In the end we think you will thank us for that.

The important thing to remember is that **solid wastes have different properties that can make a difference about what to do with them.** When you are deciding what to do with a waste type, ask yourself:

1. What makes this waste different?

2. What does this difference tell me about what I can do with this waste?

One of these waste properties is whether the waste is wet or dry.

- ❄ Waste that is outside will pick up rain, snowmelt, or ice crystals.
- ❄ During winter the air is very dry. The same waste in winter will be drier than in the summer waste.
- ❄ People treat food waste as wet waste too because it has a lot of water in it already.

What difference does wet or dry make?

-  Wet waste is harder to handle.
-  Wet waste is harder to burn.
-  Wet waste weighs more.
-  Because barges charge by the weight, wet waste will cost more to ship out.
-  Urban landfills also charge by weight, so the landfill fee will be higher for wet wastes.

Another waste property is the density.

Wastes have different densities.

What difference does that make?

A lot - if you are worried about space for storage or about space at your landfill!

100 lb of food wastes = one 55-gal drum

100 lb of plastics = five 55-gal drums

Another property is **how fast the waste degrades and how it degrades**. Wastes degrade differently. That means they break up and go back to the earth differently.

Wastes can degrade by:

-  Breaking up into to smaller pieces just from being exposed to the environment.
-  Being eaten by tiny "micro-organisms" that you can't see. Scientists call the organisms "bugs", but they are not usually insects. "Bugs" and some insects and worms eat the waste for their food and then make gas from it. At open dumps you don't notice the gas much because there is so much open air.
-  Transforming to another type of waste due to chemical reaction or fire .

With subsistence, Native people have to be very good at seeing the different factors that make something happen in their environment.

We know there are a lot of things to consider when deciding how the ice will melt, and how fast it will melt.

There are also a lot of things to consider when deciding how a waste degrades and how fast it degrades.

Some wastes, like food scraps, degrade very quickly.
Some wastes, degrade very, very slowly (like metal).

What affects the degrading of wastes?

- ❄ Wet vs. dry. **Wet waste** degrades faster.
- ❄ **Warm waste** degrades faster.
- ❄ **Exposed waste** degrades faster.
- ❄ Waste that is frozen and kept frozen doesn't degrade.
Frozen waste stays there forever.

What else affects degrading?

-  Some waste changes when you burn it. Paper turns to ash and smoke.
-  Some waste doesn't change when you burn it. When metal is burned (at burnbox temperatures) -it still looks like metal and it is still made of metal- even if its shape changed.
-  Some waste changes just by sitting there. Antifreeze is a chemical that degrades to other chemicals after some time has passed.

How does environmental stress affect degrading?

- ❖ Wind can tear up paper and plastic wastes
- ❖ Water can make waste softer or dissolve it
- ❖ Sun energy can cause the structure of waste to start collapsing
- ❖ Animals like lemmings and foxes can scavenge or burrow through wastes, and tear them up
- ❖ Each waste type is affected differently.

Why are we spending so much time on waste degrading? Because you need to decide about the waste differently.

- ❄ Water plus waste degrading makes **leachate**. Leachate is a big waste management problem.
- ❄ Things that don't degrade well will **accumulate**. More and more of it is there - like the plastic bags that make snowbirds. So even if you don't have a plan now for them, **you will need a plan sometime in the future**.
- ❄ When things break up into **smaller pieces** they can cause **different problems**. A piece of Styrofoam does not present a health risk in the dump. But when it breaks up, animals can digest it and get sick. It will be harder to pick up. It can blow around. It can wash away with flooding and be eaten by fish.
- ❄ Things that **degrade well** will take up **less space** over the long run. If you don't want to expand your dump, think about taking out wastes that build up and don't degrade.

What else about degrading?

- ❄ You can help wastes take up less space by burning them, shredding them, wetting them (in summer), and exposing them (turning over and spreading out the wastes lying on the ground).
- ❄ Wastes that degrade to different wastes offer a different way to dispose them.
- ❄ Smoke gets disposed by going up in the air. Ash can get disposed by spreading it out, or using it to cover other wastes.
- ❄ Wastes that degrade to more harmful chemicals need to be cleaned up before they transform.
- ❄ Wastes that degrade to smaller bits-- like pieces of plastic and wet cardboard -- can be harder to clean up once they fall apart. Better to pick them up while they are still whole.

Another Waste Property is whether the waste is **hazardous**, and what makes it **hazardous**.

The EPA calls a waste a "hazardous waste" if it is either:

☼ Reactive:



☼ Ignitable:

☼ Corrosive:



☼ Toxic:



What kinds of hazardous materials do you have in your Village?

Common:

- ✓ Fuel and Used oil
- ✓ Batteries (vehicle batteries and small batteries)
- ✓ Computers
- ✓ Antifreeze
- ✓ Chlorine! At your water treatment plant.
- ✓ Household cleaners
- ✓ Paints, insect sprays

Specific to businesses:

- ✓ Mining chemicals
- ✓ Industrial cleaners and degreasers

Identifying all of the hazardous wastes in your Village can be tricky.

Some everyday things we use are not hazardous until we discard them. Then they degrade and the hazardous parts are exposed. These include:

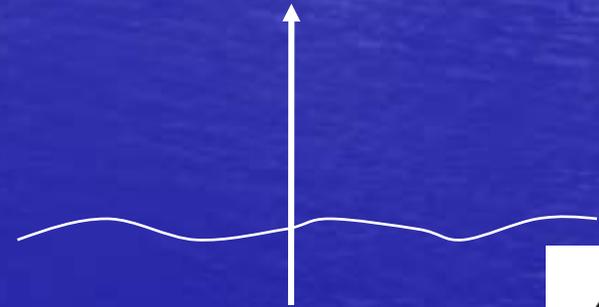
-  Refrigerators and freezers have freon which is bad for the air.
-  Older things can have more hazardous materials - old refrigerators and car doors can have "pcb"s.
-  Old paint has lead. Old thermometers have mercury. Old insulation has asbestos.
-  Some newer things are worse. Kids' shoes that light up can have mercury.

Now that we've talked about the different kinds of wastes, we can talk about the main reason why you want to manage your wastes.

Wastes can present

risks

to our
communities and
environment



?

Do you know the risks that can happen if you manage your wastes poorly?

Poor Design or Management at Waste Disposal Sites

Fire risks

Liability risks

Disease risks

Ecology risks

Injury risks

Quality of life risks



Fire Risks

A lot of our communities have dumps that are set on fire - by accident sometimes and on purpose sometimes.

And many of these dump fires have gone out-of-control. Just like boating accidents that shouldn't have happened, you can read about spread-out dump fires in the paper every summer.

Disease risks: Are your waste disposal practices safe? If not, there are many ways that diseases and poor health can happen:

- ❄ Accidental contact with dangerous medical wastes from the clinic or homes.
- ❄ Breathing problems from smoke inhalation.
- ❄ Long-or short-term illness from toxic fumes, including smoke from dump fires, home burn-barrels, and burnboxes.
- ❄ Animal-borne disease carried by insects, pet dog carcasses, and animal scavengers.
- ❄ Food-borne disease from germs in people's leftovers and wrappings.
- ❄ Disease from germs on honeybucket wastes and liners.

Injury Risks

- ❄ In about half of our villages, some residents use their dumps as a hardware and parts store for their sno-machines, hondas, and other equipment.
- ❄ But walking on and around an open dump is a really dangerous thing! All around Indian County, flareups have caught people on fire. Nails have punctured people's feet. Waste has collapsed and people have fallen and cut themselves or broken an arm.
- ❄ About 1 out of every 5 of our Alaska Native villages reported having a dump accident in the last 5 years.

Liability Risks We're not lawyers, but we can tell you one thing. A few Tribes in the lower-48 have been sued for not managing their wastes well. They were sued under the federal solid waste laws called "RCRA" (pronounced Rick' ra).

Now - for most of us - if someone sues our tribe they will not get much money if they win... But no one wants the trouble of getting sued. And legal suits can place some sovereign rights in question.

It will take most of our communities a long time to get our open dumps closed or turned into what EPA calls a real "landfill" under the RCRA laws. (One word...Funding!) All you can do in the meantime is to change community practices as much as possible to make waste disposal as safe as possible.

When deciding about how you want to manage your wastes you should consider legal risks. For example, businesses have been sued when they shipped their garbage to an outside landfill and the garbage contained "hazardous wastes". But there are likely to be some legal risks no matter what you decide to do.

Of course-- not doing anything about your wastes will be the biggest risk of all.

Ecology Risks happen because most wastes break down into smaller pieces-- like chemicals, ash, gas, and bits of metal-- that get into our surroundings (and us).



Some of these small pieces are okay and some are not. An important thing to remember is: **wastes don't need to be "hazardous wastes" for them to cause trouble.**

- ❄ **Paper** isn't called a "hazardous waste", but when it is burned it gives off smoke that can affect the air quality and ash can settle in the water.
- ❄ **Plastic** isn't called a "hazardous waste" but burning it can cause chemicals to go into the water and air.
- ❄ **A tin can** isn't called a "hazardous waste", but when it gets weathered, metals like lead and nickel and cadmium can get into the ground. This is a ground we don't want our kids to play at, our berries to grow on, or our moose to live on.

"Quality of Life" Risks Most of us that live in communities with open dumps feel that our daily lifestyle could be improved by just having a decent place to discard our wastes.

- ❄ Besides health and environmental risks, our enjoyment of our lifestyle can be affected by having to look at the dump, smell the dump, and visit the dump.
- ❄ Dumps with poor access are hard to deal with. People who don't or can't use the dump then dump their garbage in their yard. That makes the town less nice to live in.
- ❄ When the dump smoke and odor can be smelled from town, it isn't just unhealthy for us- it is really unpleasant.

Scientists now recognize that this type of risk should count for something too. And we agree!

Quality of Life Risks: Subsistence and traditions

- ❄ Our health study that we carried out in the Year 2000 found that about **64 percent of us are changing our subsistence practices because we are afraid of pollution** from our dumps and from the poor disposal practices by people in our communities. Some of us are **changing the places where we gather berries** because we are afraid of pollution.
- ❄ But a **risk to the way we do subsistence is a very big deal**. Subsistence doesn't just bring us healthy food to make us strong.
- ❄ Most of us **live a subsistence lifestyle**. Subsistence is the reason for many of our **traditions**. Subsistence is what we **pass on to our children**. Subsistence is part of almost every aspect of our life - **how we socialize** and visit, **how we share** our foods, and **how we teach respect** for elders and their wisdom.

When our subsistence is changed, we change.

When our subsistence dies, our ways-of-life die.

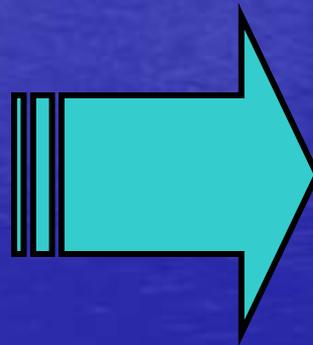
Lets get back to managing wastes. The things we have talked about all affect what you decide to do with your wastes.

Waste properties

Waste assessment

Waste amount

Waste risks



Waste

Management

How??

Why??

Why??

How??

What are the ways you can manage wastes?

- ❄ Landfill wastes
- ❄ Burn wastes
- ❄ Remove wastes
- ❄ Sack wastes
- ❄ Reduce or Refuse wastes
- ❄ Recycle or Reuse wastes
- ❄ Compost wastes

This is an introduction class only. We will describe each of these methods very quickly here! At the end of this class we will give you a way to find out about each of the methods in more detail.

A "landfill" is a well-run dump that is not in an important environmental area. It is designed to pollute drinking and fishing water as little as possible.

Health concerns are greatly reduced by controlling animals, birds, and insects through a variety of methods.

Honeybuckets or wastewater are dumped in a separate area.

Access is controlled so that people do not risk injury, or needlessly track germs from the landfill to their homes.

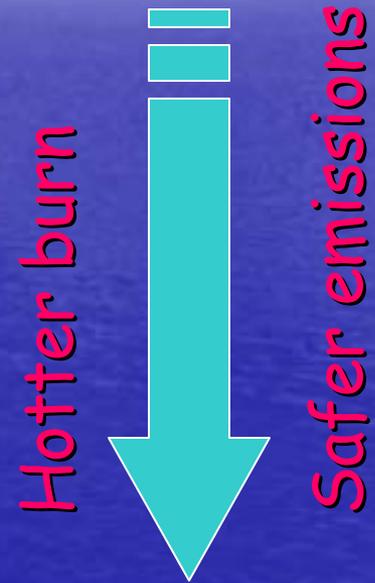
Any salvage areas are separated from the regular garbage

areas. The area where new garbage is dumped is small, and the wastes are covered with dirt pretty regularly.



You can **burn** your wastes with different kinds of equipment. Unfortunately, the **safer** the resulting smoke and the more **complete the burn**, the **more money** it costs.

- ❄ **Open Burning:** A burn trench at the dump
- ❄ **Burnbox/burncage (\$):** A metal tank or cage with a vent system.
- ❄ **Air controlled system (\$\$):** A chamber with good control and filters.
- ❄ **"Incinerator"(\$\$\$):** A "high tech" chamber with excellent air cleaning.



*Burning is really good for **reducing wastes**. Remember, you can always **separate out the safer waste** to burn - like paper, cardboard, and food. Landfill or recycle the rest. That way you get the good parts of burning without the bad.

Burning Wastes - Like managing everything else, when you decide to manage wastes, you decide to make choices about what you want.

Here is what a burnbox looks like:



One of the bad things about burning-- You still need to deal with the ash. To empty the ash, people tilt this burnbox with a dozer. But burnboxes can be made with a handle to tilt by hand, or you can shovel the ash out.

Here is a fancy incinerator:



Incinerators are operated with computers. You can even have the computers "talk" through the internet to a trained person in the lower 48. The person will be warned if something goes wrong. They can trouble-shoot many problems from their office.

A “transfer station” is a place to drop off and store wastes so they may be hauled to their final disposal site.

Usually, a “station” is just 1 to 3 shipping/hauling containers, and a platform for easy unloading. Weight scales and fencing are often added. Some stations, inside of warehouses to the winter. Some stations for in-town people away from the mostly haul out wastes landfill. Tribes in the wastes to Seattle. If the road system, you’ll need to arrange with a hub city to see if they will take your garbage at their landfill. You’ll need to bale your wastes. You’ll need a place to store wastes in-between barges. Most likely, shipping wastes out will cost a lot.



like Unalakleet's, are store wastes over Villages use small sta- “drop-offs” to keep dump. Road Villages by truck to a city Southeast ship their your Village is off

"Supersacks" are heavy-duty plastic bags that are used by some Alaska business to ship up or store loose materials or wastes, like sand, gravel, and mining wastes. These sacks can be used to dispose or store all or some of your wastes.

The sacks come in all sizes. Most are 1 to 2 cubic yards. They look like a big plastic box when filled. Because they can hold 5,000 pounds, they can easily hold your wastes. You can fill these bags and even stack them two-high at your dump. What are the **advantages** of using these sacks? They **keep wastes from blowing out**. You can **keep your dump and injury risks**. If you want, and then ship them out later, that the plastic **stops waste "leachate"** from getting into bad thing is that **the sacks can find a local industry** (like your regional corporation?) **to give you their used bags**.



around and keep insects neat and reduce health you can **store wastes** now The other very good thing is **drainage** (i.e. the your ground and water. The **can cost a lot** unless you

An important choice to make is how much you want to **reduce or refuse** your wastes. We can show you many ways to do this at the end of this class.

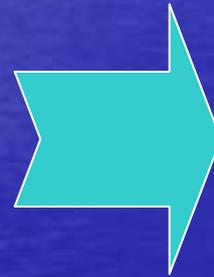
~~Hazardous~~

~~Packaging~~

~~Non-returnable~~

~~Non-degradable~~

~~Non-recyclable~~



Wastes

Wastes

Wastes



Recycling and reusing wastes are another good way to reduce your wastes. There are many ways to do this. Sometimes you can even save money!

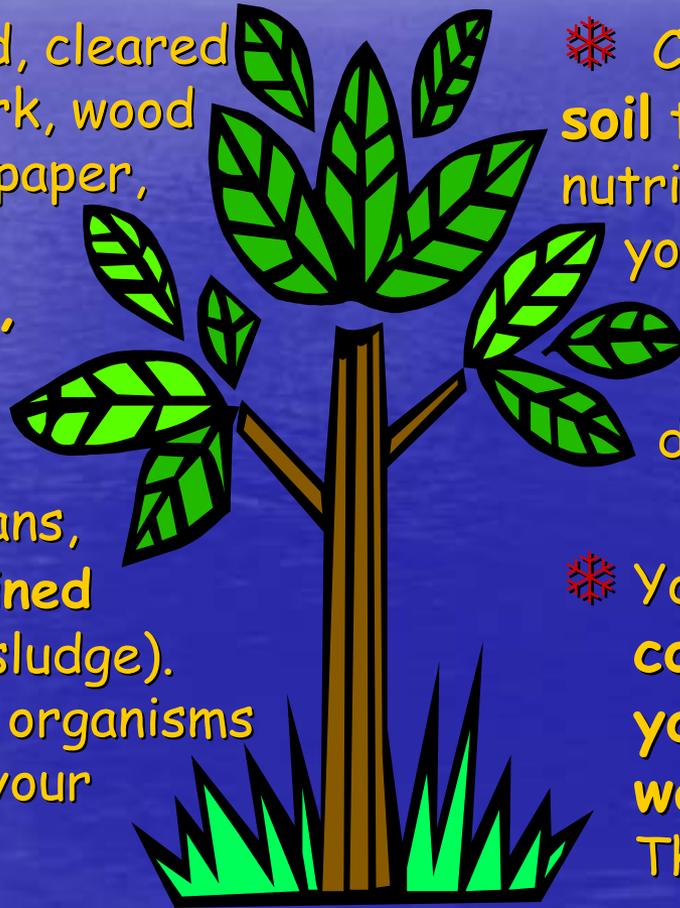
- ❄ Reuse wastes in-home
- ❄ Reuse in-community
- ❄ "Materials Exchange"
- ❄ "Materials Recovery Facility"
- ❄ Haul wastes to a "Buy-back"



Composting is returning wastes to the earth. In the lower-48, it is a very popular method now. Of course-- our Native cultures were using composting a long time ago!

❄ You can compost food, cleared out bushes, wood, bark, wood chips, sawdust, fish, paper, cardboard. Most of what you can burn, you can compost.

❄ With some careful plans, you can **compost drained waste-water** (called sludge). This removes disease organisms so they don't pollute your lands and waters.



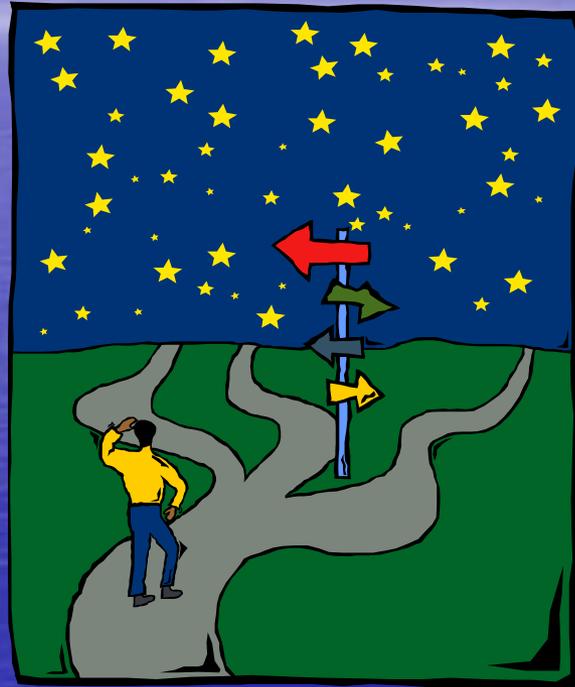
❄ Composting makes soil that has lots of nutrients for plants. Or you can use the soil to cover up the rest of the garbage at the dump.

❄ You can even order **compost toilets** so you don't need water hook-up! They can work well!

Congratulations!

You have finished our Introduction Class!

There are a lot of places to go from here. We suggest going to a couch with a cup of coffee. Or maybe fishing. Then you can think about all we've talked about.



We think learning and doing "good solid waste" is a long journey. Like many things, this journey probably does not have an end. The good thing is -- all along the way there are chances to stop and help your community. That is -- to stop the **reading**-learning and start the **doing**-learning... Please let us know if you thought of anything to do while you were in this class. We can share it with other Villages.