2014 National Mayor's Challenge for Water Conservation

Summary of Pledges and Benefits

I pledge to make the following choices in my home:

- Fix that leaky faucet
- Take shorter showers and use low-flow devices, and turn off the tap
- Wash only full loads of laundry and dishes
- Save even more water by saving watts! Use Energy Star appliances
  Power down to save electricity

I pledge to make the following choices in my yard:

- Landscape with climate-appropriate plants
- Use sprinklers on minimal settings before 8 am
- Sweep instead of hose
- Recycle and properly dispose of waste
- Pick up my pet's poop

I pledge to make the following choices for my community:

- Walk, bike or bus more often or drive a car with better gas mileage
- Fix car leaks and recycle my motor oil
- Find out where my wastewater goes (Psst! we'll show you at the end of the pledge)
- Use reusable shopping bags

I pledge to make the following choices for my life:

- Dispose waste pharmaceuticals safely (hint: don't just flush!)
- Waste less food (save a crop, save a drop!)
- Use a refillable water bottle
- Reduce paper use at work or school

Plus! **More what Mayors and City Leaders Can Do…**

I pledge to make the following choices in my home:

Fix that leaky faucet

Benefits: Did you know that an American home can waste, on average, more than 10,000 gallons of water every year due to running toilets, dripping faucets, and other household leaks? 10,000 gallons is enough to fill a backyard swimming pool!

- A leaky faucet that drips at the rate of one drip per second can waste more than 3,000 gallons in a year.
- A showerhead that drops just 10 drips in a minute wastes more than 500 gallons per year. That's enough water, if you saved it all up, to wash 60 loads of dishes in your dishwasher.
- If you can hear the water in your toilet making noise, even when no one flushed recently, you have a running toilet that could be wasting 200 gallons of water or more every day.

By checking your plumbing fixtures and irrigation systems yearly, you can help ensure that you are not wasting precious water – or money. Fixing easily corrected household water leaks can save homeowners more than 10 percent on their water bills. (Environmental Protection Agency).

Background: The amount of water leaked from U.S. homes could exceed more than 1 trillion gallons per year. That's equivalent to the annual water use of Los Angeles, Chicago, and Miami combined. Ten percent of homes have leaks that waste 90 gallons or more per day – but it's an easy fix. Keep your home leak-free by repairing dripping faucets, toilet valves, and showerheads. In most cases, fixture replacement parts don't require a major investment and can be installed by do-it-yourselfers.

Learn more here: EPA WaterSense's annual "Fix a Leak Week" in March is a great reminder to check your plumbing for leaks. Learn more about how to find and fix a leak and other educational resources: WaterSense Fix a Leak Week

Take shorter showers and use low-flow devices, and turn off the tap

Benefits: Thinking about the water we use in our day to day routine and making small changes can have a tremendous impact – not only on the amount of water we consume but also the amount of energy needed to deliver and heat water to our taps and shower.

- Low-flow showerheads: Simply switching out your old showerhead for new low-flow device saves 754 gallons of water per year. (National Geographic's Water Calculator)
- Shower length: Assuming you already installed your low-flow showerhead, by reducing your shower length by just three minutes will save 156 gallons of water per year. (National Geographic's Water Calculator)
- Turn off the tap: According to the EPA, letting your faucet run for five minutes while shaving or brushing teeth uses about as much energy as letting a 60-watt light bulb run for 14 hours, and uses up to 8 gallons of water a day (2,920 gallons per year).

Background: Faucets account for more than 15 percent of indoor household water use. That's more than 1 trillion gallons of water across the United States each year. Showering accounts for approximately 17 percent of residential indoor water use in the United States – more than 1.2 trillion gallons of water consumed each year. You can purchase quality, high-efficiency shower fixtures for around $10 to $20 a piece and achieve water savings of 25-60 percent. Select a high-efficiency showerhead with a flow rate of less than 2.5 gpm (gallons per minute) for maximum water efficiency. Before 1992, some showerheads had flow rates of 5.5 gpm, so you might want to replace older models if you're not sure of the flow rate.

Learn more here:

- EPA: Conserving Water
- High-Efficiency Showerhead (EPA)
- National Geographic's Water Calculator

Wash only full loads of laundry and dishes

Benefits: Efficient use of home appliances not only saves energy and water costs for consumers, but also reduces water withdrawals and wastewater discharges to our rivers, oceans and other ecosystems.

- Clothes washing savings (per household): The typical American household does nearly 400 loads of laundry per year.
    - Water: The typical conventional washer uses about 41 gallons of water per load. If each household reduces one load per week, that is a savings of 2,132 gallons per year (Environmental Protection Agency).
    - Energy: On average, a load of laundry uses approx. 3 kWh/load (.25kWh for the washer and 2.7kwh for the dryer), (Springfield, Illinois City Water, Light, & Power)
- Dishwashing savings (per household): If the average household runs four loads per week instead of five, the dishwasher is run 20% less. The following savings would result:
    - Water: The average dishwasher uses about 10 gallons per load. Savings = 520 gallons per household per year. (Reference: National Geographic's Water Calculator)
    - Energy: The average dishwasher uses about 2 kWhr per load. Savings = 104 kWhr per household per year. (University of Central Florida: How Efficient are Modern Dishwashers?)

Background: Appliances like clothes washers and dishwashers provide numerous advantages to busy people. Modern appliances and detergents are becoming more efficient and effective through innovation and ratings standards. But it is up to the consumer to use the appliances wisely. It takes as much power and water to clean just a few dishes or clothes as it does to clean a complete load. Running full loads and using the optimal appliance settings can reduce water use and wastewater discharges. Since detergents are used in the cleaning processes, there will also be a reduction of constituents sent to wastewater treatment plants and ultimately to the environment.

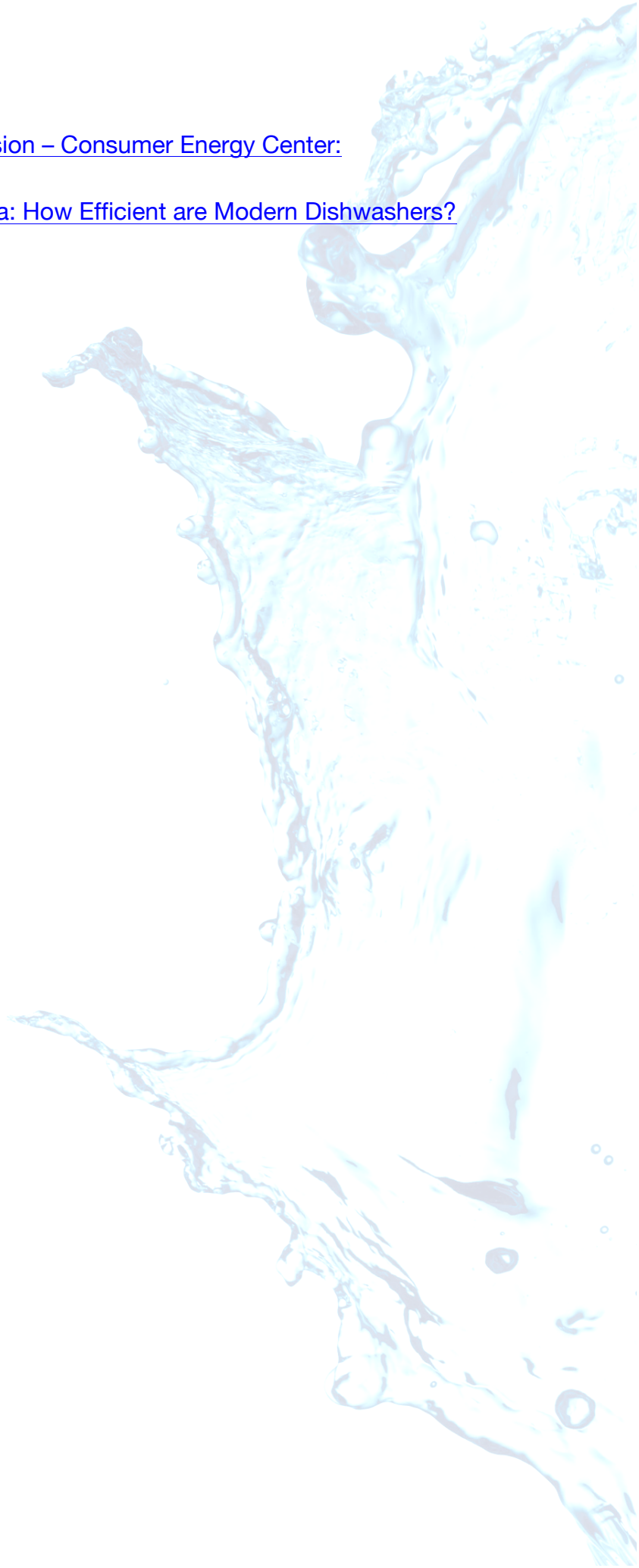
Learn more here:
Clothes Washing Machines:

- US EPA Energy Star Program for Washing Machines

Dishwashers: Avoid pre-rinse cycles and use the no-heat drying option, if available. Scrape dishes instead of prerinsing to save water.

- US EPA Energy Star Program for Dishwashers

- California Energy Commission – Consumer Energy Center: Dishwashers
- University of Central Florida: How Efficient are Modern Dishwashers?



Save even more water by saving watts! Use Energy Star appliances

Benefits: According to U.S. Energy Information Administration, in 2010, the average annual electricity consumption for a U.S. residential utility customer was 11,496 kWh. ENERGY STAR rated appliances consume on average 20 to 30% less energy than required by federal standards. Assuming reductions of 20%, use of Energy Star appliances would save 2,299.2 kWh per year per household.

It takes water to make energy. By reducing energy consumption, each of us can money directly in our energy bills and also reduces water and raw fuel feedstocks used in energy production. Reductions in energy use benefits the environment through decreases in water withdrawals and discharges, air emissions and solid waste disposal.

Background: In the power industry, large amounts of water can be required for cooling, steam generation and flue gas treatment. The major consumptive use of water is from cooling tower evaporation in thermal electric power production. While water can also be required during resource extraction, the amount is small relative to power production. In addition, the water intensity of power production increases when carbon capture and storage (CCS) efforts are utilized to reduce carbon emissions. A wide range of water intensities exist in power production, ranging from about almost no water in wind production: 30 gal/MWhr in solar photovoltaic power production, 190 gal/MWhr in natural gas power production to 720 gal/MWhr in nuclear power production (based on recirculating systems). The major consumptive use of water is from cooling tower evaporation in thermal electric power production. (Center for a Better Life)

Learn more here:

- About Energy Star
- Find Energy Star Products
- Seeking Energy/Water Balance

Power down to save electricity

Benefits: Minimizing electricity use saves consumers money directly in their energy bills and also reduces water and raw fuel feedstocks used in energy production. Reductions in energy use benefits the environment through decreases in water withdrawals and discharges, air emissions and solid waste disposal.

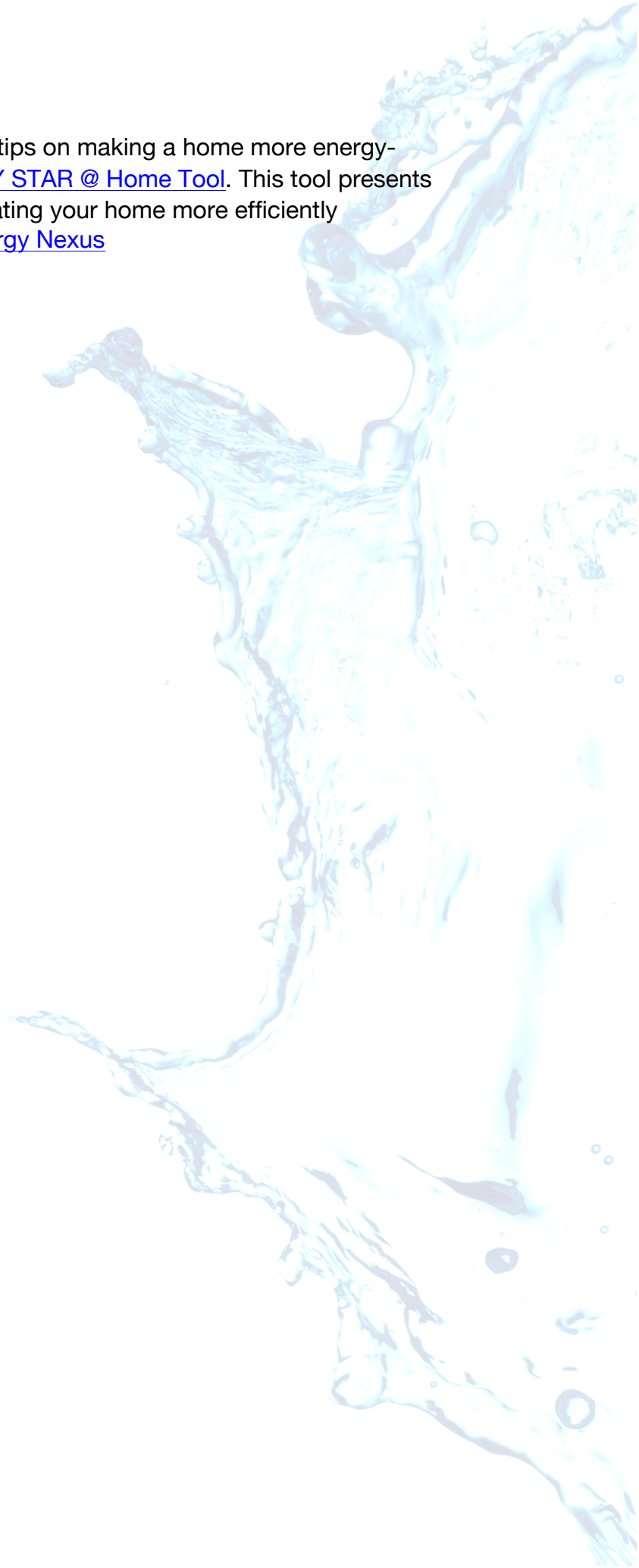
Energy cost savings: Numerical benefits of reducing electricity use are difficult to make because electricity rates range from $0.37 per kWhr in Hawaii to less than $0.09 per kWhr in Louisiana (Source: US EIA). Electricity use is also heavily influenced by local climatic conditions with annual per capita usage rates ranging from about 900 kWhr/yr in Connecticut to over 25,000 kWhr/year in Wyoming (Source: statemaster.com). The national average annual electricity consumption for a U.S. residential utility customer according to EIA, in 2010, was 11,496 kWh. According to the Bureau of Labor Statistics, as of April 2012, the average cost price of residential energy in the US is $0.128/kWh. Reducing electricity usage by 10% would save 1,149.6 kWh and $294.30 per year.

Background: It takes water to make most types of energy. A wide range of water intensities exist in power production, ranging from about almost no water in wind production, 30 gal/MWhr in solar photovoltaic power production, 190 gal/MWhr in natural gas power production to 720 gal/MWhr in nuclear power production (based on recirculating systems). The major consumptive use of water is from cooling tower evaporation in thermal electric power production. While water can also be required during resource extraction, the amount is small relative to power production.

Learn more here:

- US EPA Energy Saving at Home: EPA has a wide variety of information, on-line tools and calculators to help homeowners get started on evaluating energy use in their home and finding cost effective ways to solve problems and make their home more energy efficient. An assessment of your home may be the best place to start.
    - Compare your home's energy use to similar sized homes and climates across the country with the Home Energy Yardstick (home utility bills needed) to see how you measure up with your neighbors.
    - Find the recommended home improvements to make your home more energy efficient based on the climate where you live by answering a few questions about your home using the Home Energy Advisor.

    - Get practical pointers and tips on making a home more energy-efficient using the ENERGY STAR @ Home Tool. This tool presents energy saving tips to operating your home more efficiently
- Sandia National Labs: Water-Energy Nexus
- Seeking Energy-Water Balance



I pledge to make the following choices in my yard:

Landscape with climate-appropriate plants

Benefits: According to the EPA, the typical suburban lawn consumes 10,000 gallons of water above and beyond rainwater each year. Using native plants and landscape designs that optimize local conditions can reduce irrigation water use, as well as reduce soil erosion, lower maintenance costs, and preserve natural resources.

By simply changing your landscape to a GreenScape, over time you can save time and money and protect the environment.

- Save money by eliminating unnecessary water and chemical use
- Save time by landscaping with plants that require less care
- Reduce waste from grass clippings (approximately 300 pounds of grass clippings per 1,000 square feet annually). (Source: CalRecycle)
- Protect the environment by:
    - Conserving water supplies
    - Using chemicals properly and only when necessary to keep waterways and drinking water clean
    - Reducing yard waste by recycling yard trimmings into free fertilizer and mulch

Background: Of the 26 billion gallons of water consumed daily in the United States, approximately 7.8 billion gallons, or 30 percent, is devoted to outdoor uses. The majority of this is used for irrigation. In the summer, the amount of water used outdoors by a household can exceed the amount used for all other purposes in the entire year. This is especially true in hot, dry climates.

Many people believe that stunning gardens and beautiful lawns are only possible through extensive watering, fertilization, and pesticide application. However, eye-catching gardens and landscapes that save water, prevent pollution, and protect the environment are, in fact, easily achieved.

By making your landscape a GreenScape, you can save time and money by eliminating unnecessary watering. Select plants that grow well in your area of the country and are appropriate given the amount of sun, rainfall, and soil type. Because native plants are adapted to local soils and climatic conditions, they typically do not require fertilizers, and are more resistant to pests and disease. In most climate zones, it makes sense to use low-water plants to save the time and expense of watering. Also, focus on preserving as many existing trees and

shrubs as possible because established plants usually require less water and maintenance.

When selecting plants, avoid those labeled "hard to establish," "susceptible to disease," or "needs frequent attention," as these types of plants frequently require greater amounts of supplemental water, fertilizers, and pesticides. Be careful when selecting non-indigenous species, as some of them may be invasive. An invasive plant might be a water guzzler and will surely choke out native species. (Source: EPA)

Learn more here:

- Environmentally Friendly Garden Guide For Every Climate
- Conserving Water: Landscaping and Irrigation
- GreenScaping
- Best Management Practice: Water-Efficient Landscaping

Use sprinklers on minimal settings before 8 am

Benefits: According to the Metropolitan Water District of Southern California, watering your plants in the early morning or evening to reduce evaporation and ineffective watering due to wind can save up to 25 gallons of water per time. Assuming that you water your lawn 5 days a week, that's a savings of 6,500 gallons of water per year.

Background: The best time to water plants is usually in the early morning, both to maximize the efficiency of water used and to promote healthy flora.

Mornings tend to be cool and without strong winds, so the amount of water lost to evaporation is much less than during the middle of the day. Yes, evenings are typically similar, but if plants stay damp overnight they are more likely to be damaged by fungal and bacterial diseases. Ideally, use a drip or soak system instead of a regular sprinkler, which wastes a lot of water and drenches the leaves, which are prone to damage as well as disease. (Source: The Daily Green)

Learn more here:

- Conserving Water: Landscaping and Irrigation
- Water Saving Tips For Lawns

Sweep instead of hose

Benefits: According to the Metropolitan Water District of Southern California, using a broom instead of a hose to clean driveways and sidewalks saves up to 150 gallons of water per time. Assuming that you clean your driveway and sidewalks once a month, that's a savings of 1,800 gallons of water per year. You'll also keep unwanted pollutants out of the storm drain.

Background: An outdoor hose can use between 20-30 gallons, that is 80-120 liters, of water per minute. A broom can often often clean a driveway, sidewalk or patio just as well as a hose. In addition, by not using a hose but a broom, you reduce storm water runoff which, combined with chemicals on your driveway, impacts on water quality. Oil leaking from cars is a major cause of water pollution, and that, as well as spilled or leaked antifreeze can get into the storm drains and watercourses by use of a hose to clean your drive. Antifreeze kills fish when it reaches streams. Remember, most of the water from your driveway and sidewalk flows directly into streams without treatment and thus any stuff that you wash down from your drive or sidewalk will end up straight in streams and rivers. (Source: Green (Living) Review)

Learn more here:

- Outdoor Water Saving Tips

Recycle and properly dispose of waste

Benefits: The EPA estimates that 75 percent of solid waste is recyclable. Recycling is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products. Recycling can benefit your community and the environment:

- Reduces the amount of waste sent to landfills and incinerators - By recycling all eligible solid waste, each person would reduce their discarded waste by 1,233.7 pounds per year
- Conserves natural resources such as timber, water, and minerals
- Prevents pollution caused by reducing the need to collect new raw materials
- Saves energy - According to the Clean Air Council, recycling saves 3 to 5 times the energy generated by waste-to-energy plants, even without counting the wasted energy in the burned materials. (Source: Global Alliance for Incinerator Alternatives. Incinerators)
- Reduces greenhouse gas emissions that contribute to global climate change
- Helps sustain the environment for future generations
- Helps create new well-paying jobs in the recycling and manufacturing industries in the United States
  (Source: EPA)

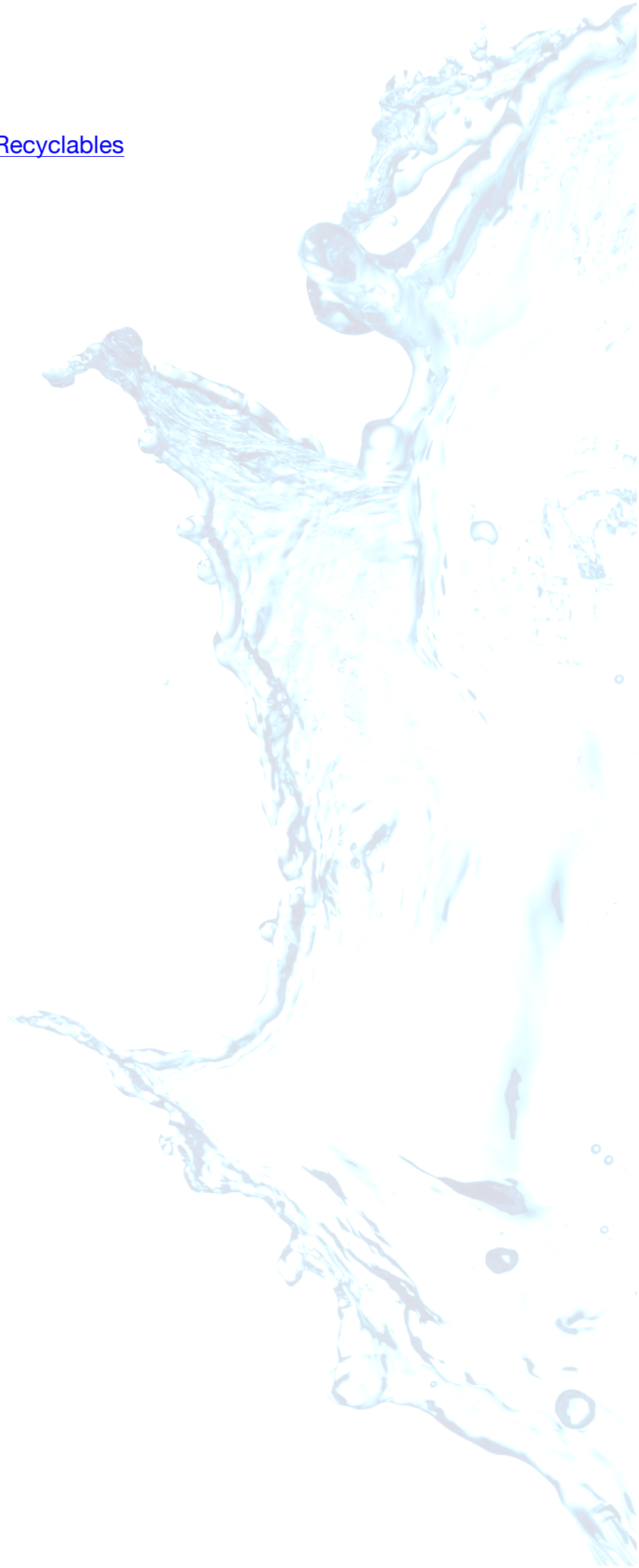
Background: According to the Clean Air Council, in 2008, the average amount of waste generated by each person in America per day was 4.5 pounds (1,642.6 lbs per year). 1.1 pounds of that was recycled, and .4 pounds, including yard waste, was sent to composting. In total, 24.3% of waste was recycled, 8.9% was composted, and 66.8% was sent to a landfill or incinerated.

Each recycled material results in varied savings of resources – from water to energy to oil consumption. Because of this, precise benefits are difficult to calculate as a generalization. Because organic materials continue to be the largest component of municipal solid waste — with paper and paperboard accounting for 29 percent — and paper has one of the highest recycling rates, the National Mayor's Challenge for Water Conservation uses paper for calculation purposes as an example of the benefits of recycling and proper waste disposal. Studies show that one ton of paper from recycled pulp saves 17 trees, 3 cubic yards of landfill space, 7,000 gallons of water, 4200 kWh (enough to heat your home for half a year), 390 gallons of oil, and prevents 60 pounds of air pollution. (Source: UCLA Sustainability)

Learn more here:

- Recycling Basics

- How Do I Recycle...Common Recyclables
- Recycling Statists



Pick up my pet's poop

Benefits: Eliminating pet waste left on pathways and streets reduces discharges of bacteria and excess nutrients to our rivers, oceans and other ecosystems. Numerical benefits of eliminating releases of pet wastes into the environment are difficult to make on a person or household basis. However, the alternative cost to add and operate stormwater treatment facilities to remove the contaminants is very high.

Background: Pet waste left on pathways and streets gets washed into the storm drain and is released without treatment into our lakes, rivers, and oceans. This is called "non-point source" pollution because it comes from many small sources instead of one major source. But small discharges like pet waste can add up and harm the environment. According to research, non-human waste represents a significant source of bacterial contamination in urban watersheds. Genetic studies concluded that 95 percent of the fecal coliform found in urban stormwater was of non-human origin.

This bacteria can pose health risks to humans and other animals, and result in the spread of disease. Pet waste can also be a factor in eutrophication of lakes. The release of nutrients from the decay of pet waste promotes weed and algae growth, limiting light penetration and the growth of aquatic vegetation. This in turn can reduce oxygen levels in the water, affecting fish and other aquatic organisms

Learn more here:

- Video about Stormwater and Pet Waste
- Pollution Prevention Fact Sheet: Animal Waste Collection
- US EPA Website on Polluted Runoff (Nonpoint Source Pollution)

I pledge to make the following choices for my community:

Walk, bike or bus more often or drive a car with better gas mileage

Benefits: Reducing the amount of fuel we use – whether by reducing the amount miles we drive or improving our vehicle fuel efficiency – can have a significant impact. While there are still many challenges to overcome when it comes to new fuel-efficient technology, there are also substantial benefits:

- Monetary savings – As of January 14, 2013, the average cost for a gallon of gasoline in the US is $3.303 (Source: EIA). Reducing the amount of gasoline consumed can save you hundreds of dollars each year. Plus, certain models of fuel efficient vehicles are eligible for a federal income tax credit. (Source: FuelEconomy.gov)
- Water savings - According to the EPA, it takes 70 gallons of water to produce one gallon of gasoline
- Increased energy sustainability – Oil is a non-renewable resource, and we cannot sustain our current rate of use indefinitely. Using it wisely now allows us time to find alternative technologies and fuels that will be more sustainable (Source: FuelEconomy.gov)
- Reduced greenhouse gas emissions – Gasoline- and diesel-powered vehicles emit greenhouse gases (GHGs), mostly carbon dioxide (CO_2), that contribute to global climate change. In fact, 19.564 pounds of CO2 are emitted per gallon of gasoline (Source: Energy Information Administration Fuel and Energy Source Codes and Emissions Coefficients)
- Reduce oil dependence and related costs - Today, about half of the oil we use is imported, and our dependence will increase as we use up domestic resources (Source: FuelEconomy.gov)
- Reductions in air pollution - Highway vehicles emit a significant share of the air pollutants that contribute to smog and harmful particulates in the U.S.

Background: According to USA Today, the standard MPG for a passenger vehicle is 27.3. And according to the Department of Transportation, the average American drives 13,476 miles per year. New technologies including hybrids, hybrid plug-ins, electric vehicles, flex-fuel vehicles, diesels, fuel cell vehicles, and alternative fuels are available on the market today and provide varied benefits and challenges. Take the time to research what is the bet option for you

- Driving alternatives: Driving short distances is especially wasteful on gas. The efficiencies of highway driving do not apply as much on short trips, which have frequent startups and idling during stops.
    - It takes the average person about 15 minutes to walk a mile and about 4 minutes to ride a bike the same distance. In the summer, with warm weather and long daylight hours, it makes sense to walk or bike to nearby destinations. These simple actions not only save gas, they also deliver the benefits of exercise. (Source: Earth Easy)
    - If each person establishes a "no drive within a mile policy" at on average one 1-mile trip a week (more in nice weather, less in bad weather), he/she would save 2.32 gallons of gasoline each year.
- Fuel-efficient vehicles: In August 2012, the Obama administration issued new rules that require auto manufacturers to increase the average efficiency of new cars and trucks to 54.5 miles per gallon by 2025. The rules for 2025 represent a victory for environmentalists and advocates of fuel conservation. The administration estimates that the rules will reduce oil consumption by 12 billion barrels of oil, saving Americans $1.7 trillion in fuel costs, resulting in an average savings of more than $8,000 per vehicle by 2025. It also said the new rules will cut greenhouse gas emissions in half by 2025 and reduce emissions by 6 million tons over the life of the program. Currently, auto companies are working toward achieving a 35.5 miles-per-gallon average by 2016. (Source: New York Times)

Learn more here:

- FuelEconomy.gov – Find and compare cars, calculate your MPG, and get cost saving tips
- Regulations and Standards
- EPA Green Vehicle Guide

Fix car leaks and recycle my motor oil

Benefits: Eliminating oil and antifreeze leaked onto driveways, parking lots and streets reduces discharges of chemicals to our rivers, oceans and other ecosystems. Numerical benefits of eliminating releases of oil and antifreeze into the environment are difficult to make on per person or household basis, though it is estimated that one quart of motor oil can pollute 250,000 gallons of water, and one gallon of gasoline can pollute 750,000 gallons of water (Source: Massachusetts Government). The alternative cost to add and operate stormwater treatment facilities to remove the contaminants is very high.

Background: Leaking oil and antifreeze goes from cars to driveways, parking lots and streets. Then it gets washed into the storm drain and is released without treatment into our lakes, rivers, and oceans. This is called "non-point source" pollution because it comes from many small sources instead of one major source. But small discharges like oil leaks can add up and harm the environment. Oil doesn't dissolve in water. It lasts a long time and sticks to everything from beach sand to bird feathers. Oil and petroleum products are toxic to people, wildlife, and plants. Used motor oil is the largest single source of oil pollution in lakes, streams, and rivers. (Source: Massachusetts Department of Environmental Protection).

Learn more here:

- How can you use and change your motor oil and help keep our waters clean?
    - Stop drips.
    - Check for oil leaks regularly and fix them promptly.
    - Keep your car tuned to reduce oil use.
    - Use ground cloths or drip pans beneath your vehicle if you have leaks or are doing engine work.
    - Clean up spills immediately.
    - Collect all used oil in containers with tight fitting lids. Do not mix different engine fluids.
    - Never dispose of oil or other engine fluids down the storm drain, on the ground or into a ditch.
    - Recycle used motor oil. Many auto supply stores and gas stations will accept used oil.
    - Buy recycled (re-refined) motor oil to use in your car.

- US EPA Website on Polluted Runoff (Nonpoint Source Pollution)

Find out where my wastewater goes (Psst! we'll show you at the end of the pledge)

Benefits: Understanding where your community's wastewater goes is valuable because it builds awareness of your personal water cycle and the infrastructure in your community. When a person is connected to the source and discharge of water that they use, they can better understand the consequences of wasting water resources and discharging harmful substances to wastewater treatment plants.

Background: eHow.com provides a good explanation of What Happens to Wastewater:

Where Does Wastewater Go?

Wastewater is used water that comes from several different sources. Domestic wastewater includes water from homes, businesses, hospitals and schools through sinks, toilets, washing machines, dishwashers, showers and baths. Wastewater from these sources travels through sewage lines until ending up in a basin at a municipal wastewater treatment facility. The WaterMatch map shows the locations of municipal wastewater treatment plants around the world.

What Does a Wastewater Treatment Facility Do?

Wastewater treatment facilities process wastewater to separate trash and other material particles from the wastewater until all that remains is sludge and contaminated water. The trash and material particles are removed and disposed of while the sludge and water are treated through several separate processes to remove harmful bacteria. Upon completion, both the sludge and water may be used in the environment in healthful, productive methods. The purpose of the CH2M HILL WaterMatch Initiative is to promote beneficial reuse of treated municipal wastewater in industry, energy and agricultural operations.

How Individuals Can Help

People can assist in the treatment of wastewater by conserving water. Water conservation essentially reduces the amount of wastewater that has to be processed at the wastewater facility. Additionally, refrain from putting harmful solutions into drains, sinks and toilets. Residue from harmful chemicals can remain after the wastewater treatment process and could end up back in the environment

Learn more here:

- USGS Website: Where does our home wastewater go?
- US EPA Office of Wastewater Management

Use reusable shopping bags

Benefits: Eliminating plastic bags provides numerous benefits to the environment of your local community and also to more distant ecosystems. According to Reusethisbag.com:

- Reusable bags save trees
- Reusable bags save water
- Reusable bags save gas and oil. In the United States alone, an estimated 12 million barrels of oil is used annually to make plastic bags that Americans consume. (Source: reusablebags.com)
- Reusable bags save energy (on average 0.02 kWh per bag according to the EPA)
- Reusable bags reduce landfill waste
- Reusable bags help air pollution
- Reusable bags help our oceans
- Reusable bags help our sea creatures
- Reusable bags save 700+ bags over the span of their lifetime

Background: According to NDRC, the average family uses 1,500 plastic bags a year. And as a nation, Americans throw away around 100 billion polyethylene plastic bags a year, according to the Worldwatch Institute. Only a small percentage of them are recycled—Environment California estimates five percent, while the US EPA says its closer to twelve percent.

Many plastic bags are lightweight and not disposed securely in landfills. Many plastic bags end up in parking lots, streets and culverts. They then get washed into the storm drain and are released into our lakes, rivers, and oceans. This is called “non-point source” pollution because it comes from many small sources instead of one major source. But small discharges like plastic bags can add up and harm the environment and wildlife. Plastic bags don’t dissolve in water. They last a long time and aggregate into sizable masses. They can plug storm drain lines. There is now a Great Pacific Garbage Patch in the Pacific Ocean that has been caused by an agglomeration of primarily plastic waste materials. A study by the Ocean Conservancy found plastic bags made up about nine percent of the debris along various U.S. coasts.

Learn more here:

- How to remember to use them: The trick to reusable bags is remembering to bring them with you. Set yourself up for success by stashing them in car trunks, purses, and jacket pockets. Canvas versions are best for heavy hauls. For regular errand runs and groceries, bags made from recycled bottles stand up to most loads. While there are tons

of cute reusable bags on the market, don’t overdo it. Any bag takes energy and resources to make.

- 25 Reasons to Use Reusable bags

I pledge to make the following choices for my life:

Dispose waste pharmaceuticals safely (hint: don't just flush!)

Benefits: Proper disposal of pharmaceuticals reduces discharges of chemicals to wastewater treatment plants and ultimately reduces releases to our rivers, oceans and other ecosystems. According to research done by the Kaiser Family Foundation in 2006, the average number of prescriptions per person per year increased to 12.5 in 2005. If just one person flushes each of their prescriptions instead of properly disposing of them, 37.5 gallons water are used and the drugs have an exponential impact on our waters as they dissolve and spread. Because of this, numerical benefits of eliminating discharges of pharmaceuticals are difficult to make on a person or household basis. However, the alternative cost to add and operate treatment facilities is very high.

Background: Studies have shown that pharmaceuticals are present in our nation's waterbodies. In 2002, the U.S. Geological Survey sampled streams in 30 states. Of the 139 streams tested, 80 percent had measurable concentrations of prescription and nonprescription drugs, steroids, and reproductive hormones. Studies show exposure to even low levels of drugs has negative effects on fish and other aquatic species, and also may negatively affect human health.

Wastewater treatment plants are not designed to remove pharmaceuticals and additional treatment is complicated and costly to install and operate. Because they dissolve easily and don't evaporate at normal temperatures or pressure, pharmaceuticals can make their way into the soil and into aquatic environments via sewage, treated sewage sludge (biosolids), and irrigation with reclaimed water.

While it may not practicable to reduce pharmaceuticals that are excreted by humans, it is possible to eliminate disposal of waste medication that was previously sent down the drain or down the toilet. Most drugs can be thrown in the household trash, but consumers should take certain precautions before tossing them out, according to the Food and Drug Administration (FDA).

Sources (US EPA, US FDA, CalRecycle)

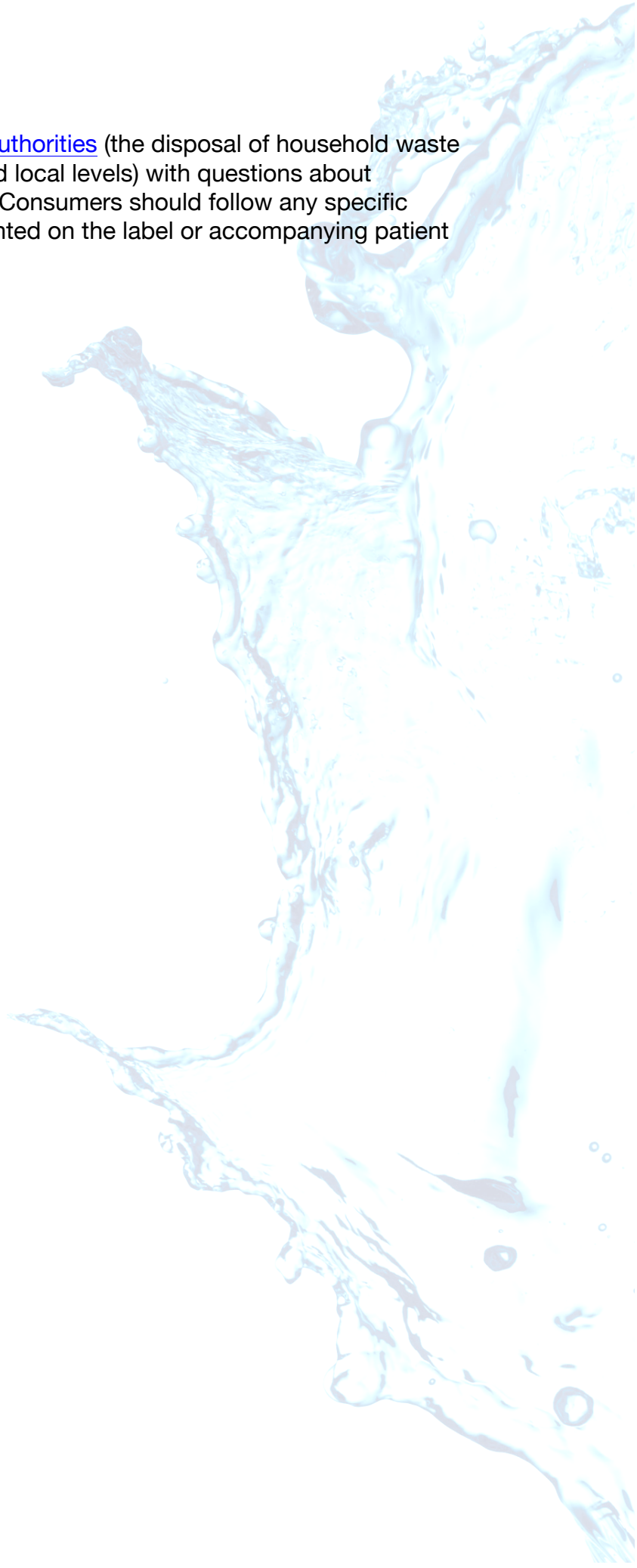
Learn more here:

How do I properly dispose of unwanted pharmaceuticals?

FDA worked with the White House Office of National Drug Control Policy (ONDCP) to develop the first consumer guidance for proper disposal of prescription drugs. Issued by ONDCP in February 2007 and updated in October 2009, click here to download the FDA guidelines.

EPA encourages the public to take advantage of pharmaceutical take-back programs or household hazardous waste collection programs that accept pharmaceuticals. If there are no take-back programs near you, contact your

state and local waste management authorities (the disposal of household waste is primarily regulated on the state and local levels) with questions about discarding unused pharmaceuticals. Consumers should follow any specific disposal instructions that may be printed on the label or accompanying patient information.



Waste less food (save a crop, save a drop!)

Benefits: Minimizing food waste saves consumers money directly at the grocery store and also reduces water, fertilizer and energy used in growing, processing and transporting the excess raw food and waste products. Reductions in food waste benefit the environment through decreases in water withdrawals and discharges, air emissions and solid waste disposal.

Food cost savings: The average U.S. family of four people wastes about $1,600 dollars per year in household food waste. If the average household reduced waste by 20%, an annual savings of $320 per household (or $80 per person) would result. (Source: Cost basis from Barilla Center for Food and Nutrition).

Background: The US Department of Agriculture estimates that every year Americans throw away 30% of the total food intended for human consumption, the equivalent of $48.3 billion or a fourth of the total food expenditure. According to a report by the Barilla Center for Food & Nutrition, waste happens mostly (60%) in homes and in restaurants or food services in the U.S. The report estimates that the amount of edible food wasted in the average US home is 243 lbs (110 kg) per person per year. This quantity, which corresponds to 26% of food available for human consumption every year, is mainly from wasted fruits and vegetables, milk, grains, and meat.

It takes water to grow and process crops. Agricultural products are essentially virtual water products through the amount of water it takes to grow and process them. Food wasted in home kitchens cafeterias and crops lost in supply chains cause needless wastes of water, use and discharges of fertilizers and carbon emissions to the environment. A 2011 WRAP/WWF comprehensive study of water and energy in food waste in the UK, an industrialized country similar to the US, showed that 243 liters (64 gallons) per person per day and 330 kg (728 lbs) CO2 equivalent may be saved through elimination of completely avoidable food waste.

Learn more here:

- US EPA Food Waste Reduction and Prevention website: Reduce Your Food Waste in the Kitchen:
    - Reduce over-purchasing of food
    - Reduce prep waste and improperly cooked food
    - Consider secondary uses for excess food - Leftover bread can become croutons, excess rice can become fried rice, leftover fruit can be a dessert topping, and vegetable trimmings can help form a base for soups, sauces, and stocks.

    - Ensure proper storage techniques - In order to reduce spoilage, food products should be stored in proper condition and organized to ensure that older products are used first**.**
- US EPA Food Waste Management Cost Calculator

Use a refillable water bottle

Benefits: According to *National Geographic*, the average American uses 222 plastic water bottles each year. Using a reusable water bottle instead provides ample benefits:

- Reduces the amount of fossil fuels and toxins released into the air during production
- Decreases your carbon footprint. The manufacture of every ton of PET produces around 3 tons of carbon dioxide (CO2). Bottling water thus created more than 2.5 million tons of CO2 in 2006. (Source: Pacific Institute)
- Tap water is more cost-efficient. The recommended eight glasses of water a day, at U.S. tap rates equals about $.49 per year; that same amount of bottled water is about $1,400 (Source: Ban the Bottle)
- Better for your health and the health of your family by using a BPA-free, lead-free reusable bottle
- Convenient. Most public facilities have water fountains to fill up your water bottle
- Reduced energy and oil use. According to the plastics manufacturing industry, it takes around 3.4 megajoules (0.944 kWh) of energy to make a typical one-liter plastic bottle, cap, and packaging. (Source: Pacific Institute)
- Reduced water consumption. In addition to the water sold in plastic bottles, the Pacific Institute estimates that twice as much water is used in the production process. Thus, every liter sold represents three liters of water.
- Reduced landfill waste.

Background: According to *National Geographic*, Americans drink more bottled water than any other nation, purchasing an impressive 29 billion bottles every year. The recycling rate for those 29 billion bottles of water is low; only about 13 percent (or 3,770,000,000 bottles) end up in the recycling stream where they are turned into products like fleece clothing, carpeting, decking, playground equipment and new containers and bottles. In 2005, that meant approximately 2 million tons of water bottles ended up in U.S. landfills, according to the National Resources Defense Council (NRDC).

Making all the plastic for the 29 billion bottles used annually in the United States uses 17 million barrels of crude oil. That is equivalent to the fuel needed to keep

1 million vehicles on the road for 12 months. If you were to fill one quarter of a plastic water bottle with oil, you would be looking at roughly the amount used to produce that bottle. The Earth Policy Institute estimates that the energy used to pump, process, transport, and refrigerate bottled water is over 50 million barrels of oil annually. (Source: National Geographic)

Learn more here:

- Ban the Bottle

Reduce paper use at work or school

Benefits: Americans use 85,000,000 tons of paper a year; about 680 pounds per person. (Source: Recycling Revolution) Reducing paper use can have a significant positive impact. Benefits include:

- Less waste. If each person reduced their paper consumption by 30%, they would save 204 pounds of waste per year in the final paper product alone. There is also significant waste in the manufacturing process including sludge and other wastes generated during pulp and paper manufacturing which generates a total of 1,756 pounds per year.
- Money savings. Each sheet of paper costs an average of $0.02 – plus it can cost up to 31 times the original cost to send information on paper (printing, copying, postage, storage, filing, recycling, etc.). (Source: Triple Pundit). With the average office worker in the U.S. uses 10,000 sheets of copy paper each year according to the Clean Air Council, U.S. office workers spend thousands of dollars a year on printing, copying, mailing, storing, and filing papers.
- Reduced water consumption. It takes 2.6 gallons of water to produce a single sheet of paper. (Source: Orange County Water District)
- Reducing paper use reduces greenhouse gases
- Saves energy. Around 500 kWh of energy are required to make 200 kg of paper (440.925 lbs). (Source: Paperonline.org)
- Reduces greenhouse gases.
- Reduces wood use and saves trees.

Background: A typical office disposes of about 350 pounds of wastepaper per employee per year. Identifying ways to reduce paper use can save natural resources – and money.

- Case Studies
    - In 2005, the EPA Region 10 offices (in the Northwest United States) made a concerted effort to reduce paper use. Through a variety of initiatives including default double-sided printing and collection of scrap paper for reuse, the office cut paper consumption by 30 percent, yielding an annual savings of $49,000. (Source: NRDC)
    - In 1994, **BankAmerica** (now Bank of America) partnered with EPA's WasteWise program and began implementing measures to reduce paper use. By encouraging double-sided printing in offices, centralizing distribution of company procedure manuals, and switching to double-sided printing on customer banking

statements, the bank was able to save more than $1million annually. (Source: NRDC)

Learn more here:

- **NRDC'S SMART PAPER PRACTICES TOOL KIT**
- EPA'S WasteWise

Plus! More what Mayors and City Leaders Can Do…

Promoting municipal water reuse

Benefits: When municipal effluent is reused by industries and agriculture, there are numerous benefits to communities and the environment:

- **Environmental:** Industrial and agricultural freshwater use is reduced, increasing freshwater supply for human use and/or ecosystems. Municipal wastewater is beneficially reused. Energy may be saved from reduced treatment and transportation.

- **Economic and Human Health:** Wastewater treatment costs for municipalities may decrease because the required quality for industrial or agricultural use may require less treatment than discharge. Industries may provide some funding for municipal wastewater treatment plants in developing countries. In urban environments, this promotes the sustainability of cities.

Background: The beneficial reuse of municipal effluent for industrial and agricultural use on a global basis starts at the grassroots level.

Learn more here:

- US EPA: Water Recycling and Reuse

Working to measure and improve our water use

Benefits: There are two reasons to measure water use: “If you treasure it, you’ll measure it” and “What gets measured, gets managed”. Water metering is proven to be one of the most effective means to monitor water consumption and promote conservation.

Background: The process of metering, measuring, and managing water use and discharge in cities is complicated, but it is essential for effective water management. Metering and measuring help in analyzing a city's water usage and identify opportunities for improving water efficiency. Making sure that distribution and collection systems are run correctly and maintained properly are needed to preventing excess water usage through leaks and malfunctioning mechanical equipment.

The most appropriate type of metering system depends on local factors. Some communities are adopting the latest technology in an effort to come to terms with water usage, to account for leaks, loss, and overuse, with the hope of better accountability and conservation efforts. Other communities are making incremental improvements to existing systems.

Learn more here:

- Measuring and Managing: Conserving water through more efficient meter reading
- Wikipedia: Water meter