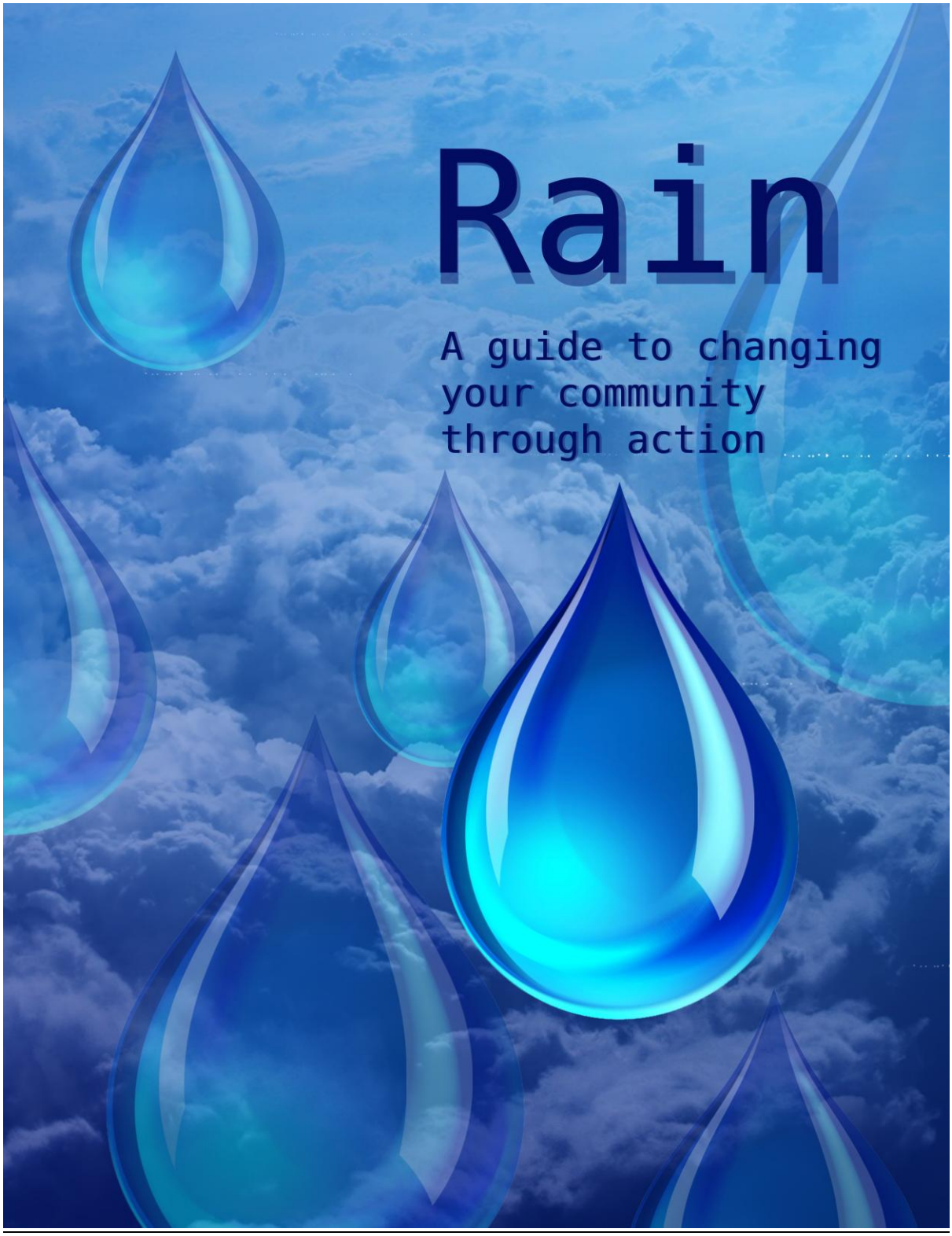
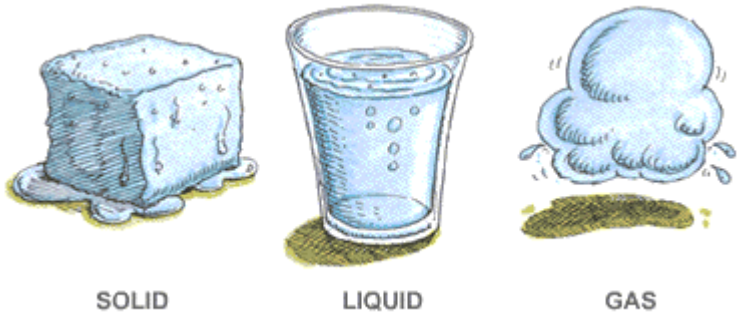

Rain
A guide to changing
your community
through action

Water Cycle

Water is all around us. Did you know that about 70 percent of your body mass is water? That makes it very important for us to learn about why water is so special and how we can protect our water resources.

Let us go on a journey called the water cycle!

Water can exist in three forms: liquid water, water vapor and ice. Each of the forms has special properties as the temperature varies.

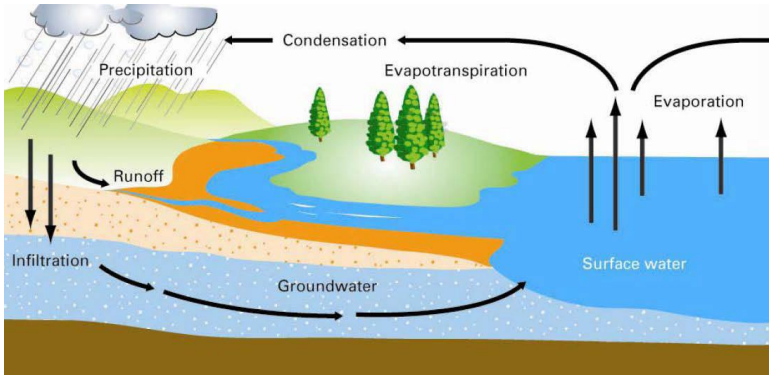


Water vapor is all around us. Look outside! The white and fluffy clouds are constantly floating in the sky. Look down! The soil outside contains a lot of moisture! You are probably also very familiar with liquid water, which can be found almost everywhere in North America.

Everything that we see is made up of tiny molecules. Some molecules are close together, while others are far apart. As water vapor, water molecules are very spread out and have a lot of energy.

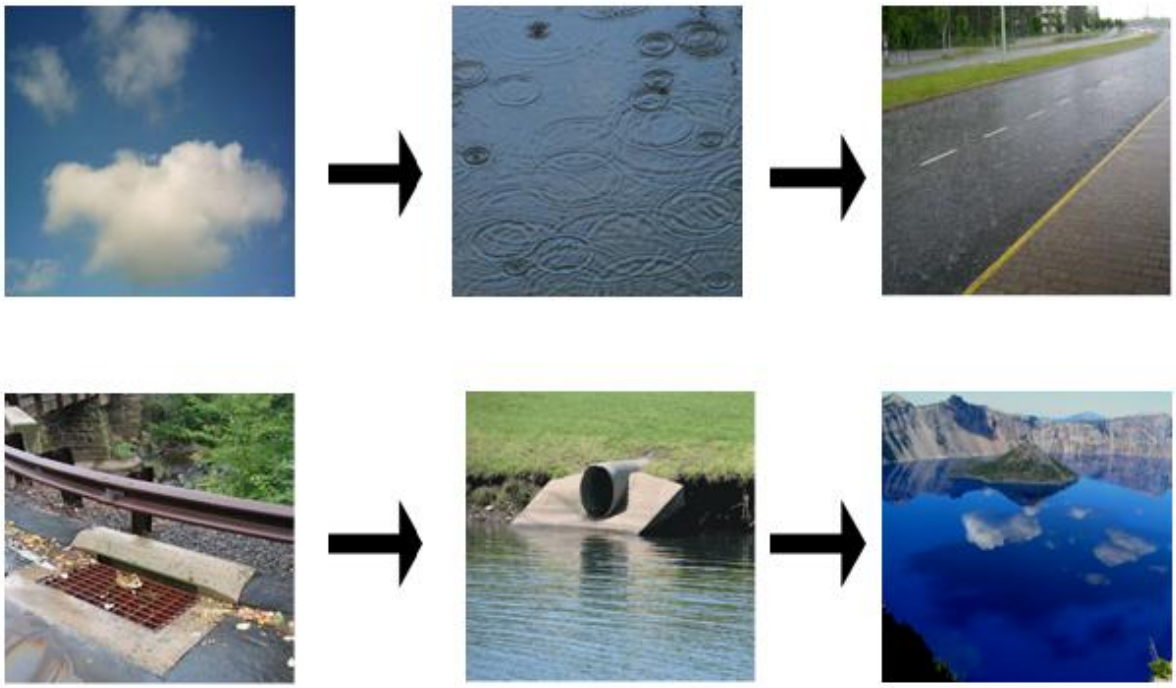
However, when water is cooled, it becomes a liquid through a process called **condensation**. It is now clear, colorless and tasteless. Because liquid is heavier, water falls down as rain in a process called **precipitation.** In the winter, liquid water is also cooled into fluffy snow pieces.

Once water reaches the ground, it will begin to flow downhill. In most cases, water flows into our sewage system or seeps into the soil as runoff. The process of water seeping down the soil is called **infiltration** and will eventually enter the ground water.



Plants can also absorb rain water. Under the sun, some water molecules in plants are lost to a process called **evaportranspiration**. Similarly, water molecules can also absorb energy to evaporate from bodies of water, such as lakes and rivers, through a process called **evaporation**.

Let us review the journey of water. *Try to identify which each arrow represent (e.g. condensation).*



All Around Us

Watershed *(drainage): Area of land and waterways which hold forms of water.*
**A system where a ridge of land that separates two adjacent river systems.*

Watersheds are all around us. In fact, they form our community and are essential to small animals such as crayfish and squirrels. These animals need water to survive.

Sadly, water is increasingly more easily contaminated than before. For example, on average, fertilizers are used fifteen times more today than in 1945. It is important for us to do what we can to protect the environment. Let us be aware of how water resources can be contaminated.

Water pollution results in waste materials that cannot be naturally broken down. Sources of water pollution can be classified as point source and non-point source. Point sources are facilities that are clearly responsible for excreting waste, such as factories and manufacturing plants. Non-point sources are sources of pollution that cannot be traced, such as runoff fertilizers and gaseous chemicals.

Sources of water pollution include agricultural wastes, gas emissions, mining. As shown in the game, *Rain*, bodies of water come into contact with the wastes and become contaminated. Contaminated water is dangerous for living things, such as animals and vegetations.

Industrial Activities

The federal government of Canada has set up regulations for types and amounts of pollutants that can be emitted by companies. However, in some countries, companies can buy pollution credits from companies who are under the targeted amount.

Heat is also considered a form of pollution, because the heat released can also be dangerous for living things. (After all, we, the humans, cannot live under extreme heat.) Therefore, factories must cool the

water prior to releasing it in order to protect the ecosystem.

Logging, mining and construction activities can also pollute bodies of water. The sediments can clog bodies of water and hurt aquatic organisms.

Agricultural Activities

Agricultural fertilizers and livestock wastes contain a lot of phosphorus and nitrogen, which can cause algae to grow rapidly in water. Algae boom can be dangerous, because some algae can produce natural toxins that harm other organisms.

Harmful algae booms are large accumulations of algae on the surface of bodies of water.

This problem is becoming more serious. Since 1999, the number of livestock in Manitoba increased by 65 percent. This signals a sharp increase in the amount of waste emitted to bodies of water.

What's next?

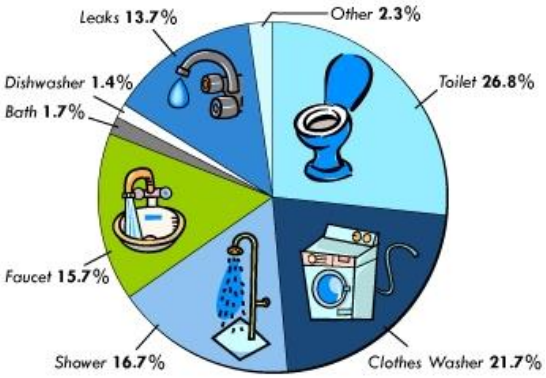
We all share our water resources. That is why everyone should try to protect our shared resources.

Here are some action tips:

1. Conserve water (close the tap when you are not using water).
2. While cleaning dishes in a sink, soap up all plates and then run water until the sink is about half full

and rinse soap off plates.

3. Clean up after your pets (pet waste can run down the storm drain and spread bacteria).
4. Do not use antibacterial soaps (regular soap contains far less trichlosan, which is a pesticide).
5. Plant green vegetations in your lawn.



Indoor use of water in an average family

How you can be an ambassador for change:

1. Host a debate in your school or in your class to tell others about water pollution.
2. Keep informed through reading local newspapers.
3. Volunteer to help out with green projects in your community.

Some projects that might interest you:

1. Test your tap water (http://www.youtube.com/watch?v=HEhXsaL0Vh0)
2. Ask your teacher to help you join an environmental organization
3. Write a letter to your local government or authority to find ways to get involved

Here is a link for you to learn more about water and pollutants.
http://www.epa.gov/safewater/kids/wsb/pdfs/FACTS.pdf

Thank you for playing Rain and taking your time to read this guide.