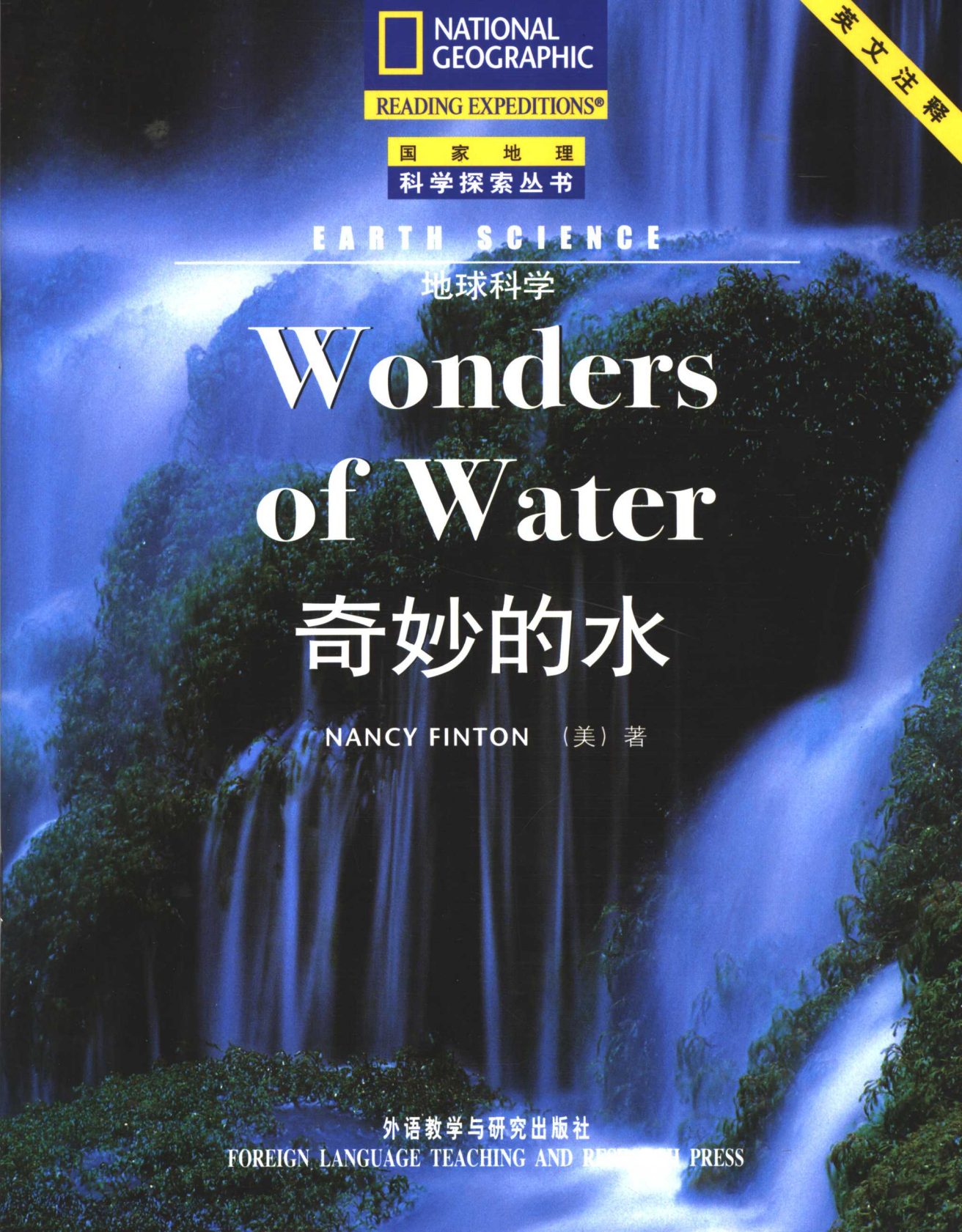
NATIONAL GEOGRAPHIC
READING EXPEDITIONS®
国家地理
科学探索丛书
英文注释
EARTH SCIENCE
地球科学
Wonders of Water
奇妙的水
NANCY FINTON （美）著
外语教学与研究出版社
FOREIGN LANGUAGE TEACHING AND

京权图字：01－2005－2599

图书在版编目(CIP)数据

奇妙的水＝Wonders of Water/(美)芬托(Finton, N.)著. —北京：外语教学与研究出版社，2005.5
(国家地理科学探索丛书：注释版. 地球科学)
ISBN 7－5600－4803－X

Ⅰ. 奇… Ⅱ. 芬… Ⅲ. 英语—语言读物 Ⅳ. H319.4

中国版本图书馆 CIP 数据核字(2005)第 039916 号

出 版 人：李朋义
责任编辑：张志纯
美术编辑：蔡 颖
出版发行：外语教学与研究出版社
社 址：北京市西三环北路 19 号 (100089)
网 址：http://www.fltrp.com
印 刷：北京画中画印刷有限公司
开 本：740×975 1/16
印 张：2
版 次：2005 年 6 月第 1 版 2005 年 6 月第 1 次印刷
书 号：ISBN 7－5600－4803－X
定 价：5.90 元

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致读者

如果你希望在享受英语阅读乐趣的同时又能增长知识、开拓视野，由外语教学与研究出版社与美国国家地理学会合作出版的“国家地理科学探索丛书”（英文注释版）正是你的选择。

“国家地理科学探索丛书”（英文注释版）第二辑分为8个系列，共46本，内容涉及自然科学和社会研究，除对本套丛书第一辑已包含的“生命科学”、“物理科学”、“地球科学”和“文明的进程”4个系列进行了补充外，又推出了4个新的系列——“生活中的科学”、“科学背后的数学”、“专题研究”以及“站在时代前沿的科学家”。

这套丛书秉承《国家地理》杂志图文并茂的特色，在书中配有大量精彩的图片，文字地道易懂、深入浅出，将科学性和趣味性完美结合，称得上是一套精致的小百科全书。特别值得一提的是本套丛书在提高青少年读者英语阅读能力的同时，还注重培养他们的科学探索精神、动手能力、逻辑思维能力和沟通能力。

本套丛书既适合学生自学，又可用于课堂教学。丛书各个系列均配有一本教师用书，内容包括背景知识介绍、技能训练提示、评估测试、多项选择题及答案等详尽的教学指导，是对课堂教学的极好补充。

英文注释

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奇妙的水

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北京 BEIJING

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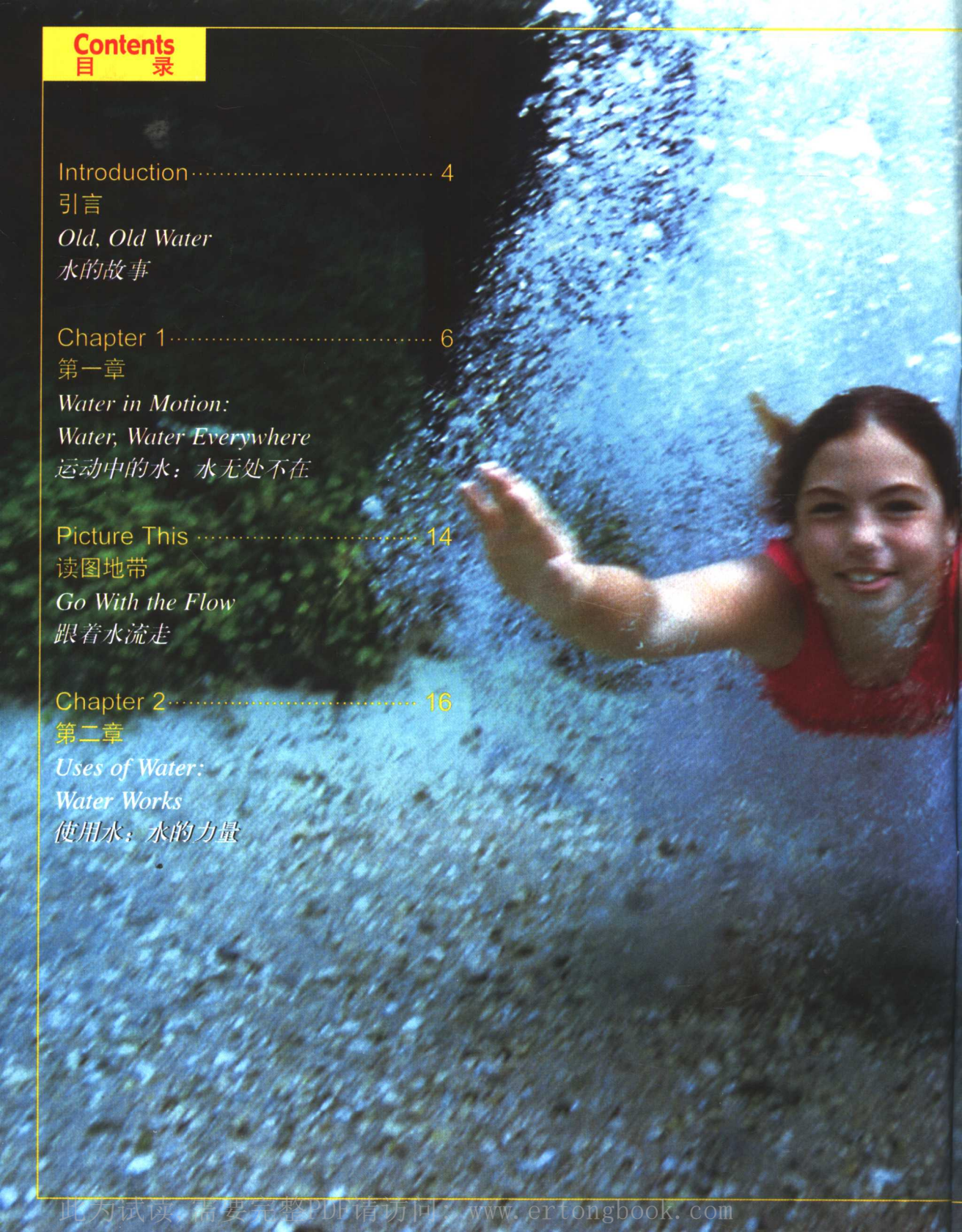
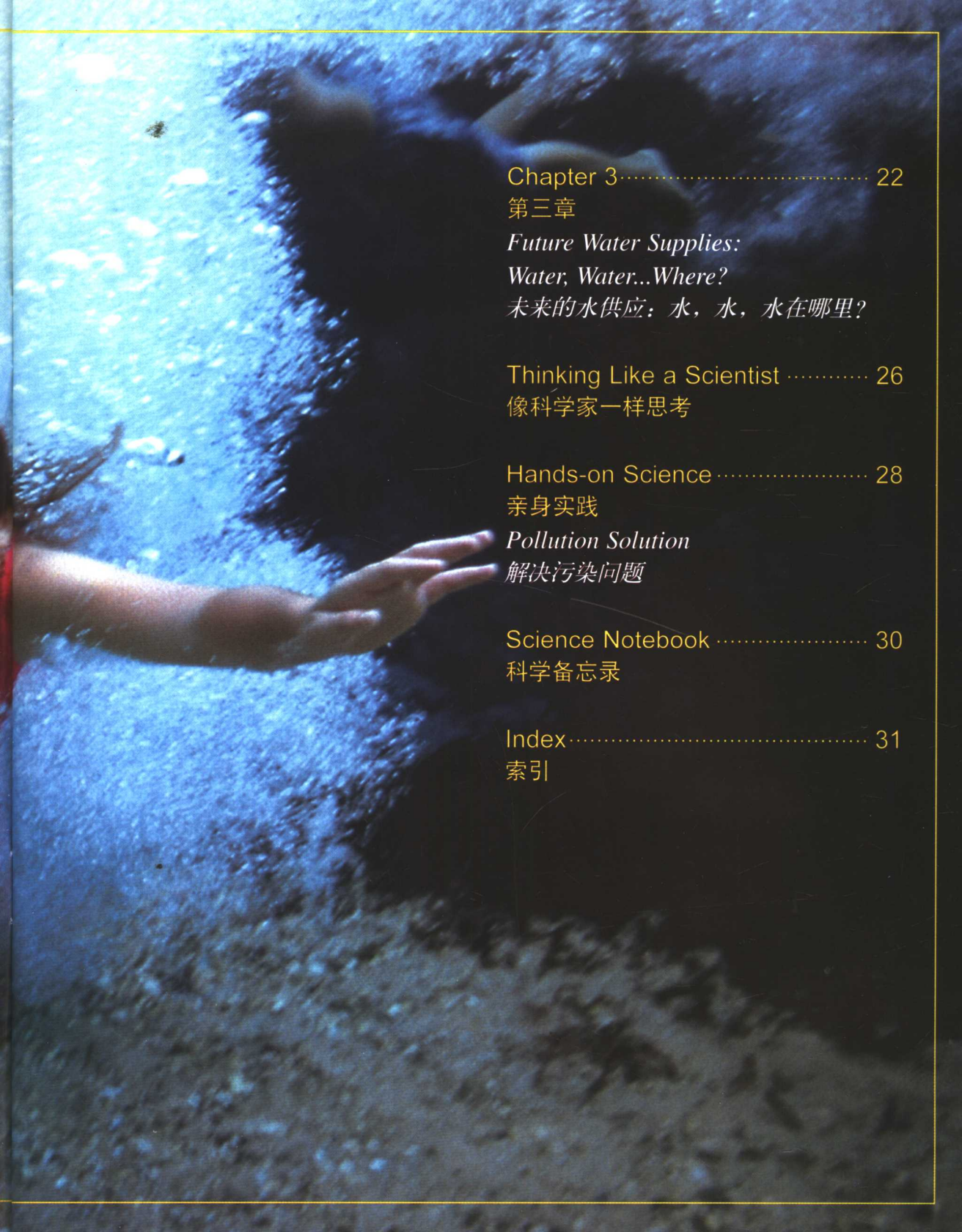




Introduction
引　言

Old, Old Water

水的故事

Did you drink some of the same water the dinosaurs[1] splashed[2]?

1. dinosaur　n.　恐龙
2. splash　v.　溅

About 150 million[1] years ago, the quiet waters of a shallow[2] pond were broken by the splashing of an allosaur[3] chasing[4] dinner. About 500 years ago, a Native American[5] family took shelter[6] in their tepee[7] during a thunderstorm[8]. Half an hour ago, you might have taken a drink from your school's water fountain[9].

What do these events have in common? You, the family, and the dinosaurs all came in contact[10] with Earth's limited[11] supply of water. And here's the real surprise. You could be drinking some of the same water that rained on the tepee or splashed in the pond!

Water can travel. It can go from a river, to a lake, to a cloud, to rain. It can go from the juice in an orange, to the blood in your body, to pipes[12] in a sewer system[13], and back into a river. But water doesn't disappear[14]. And it doesn't make more of itself. So the water we have now is all we'll ever have.

How can we look after this water and make sure there's plenty for everyone? This book will show you the ins and outs of the world's water flow. It will show you how we can make clean, fresh water last far into the future.

1. million	*n.*	百万
2. shallow	*adj.*	浅的
3. allosaur	*n.*	异龙
4. chase	*v.*	追赶
5. Native American		印第安人的
6. shelter	*n.*	住处
7. tepee	*n.*	（北美印第安人的）圆锥形帐篷
8. thunderstorm	*n.*	雷暴
9. water fountain		喷泉式饮水器
10. contact	*n.*	联系
11. limited	*adj.*	有限的
12. pipe	*n.*	管道
13. sewer system		下水道系统
14. disappear	*v.*	消失

Chapter 第一章 1

Water in Motion:

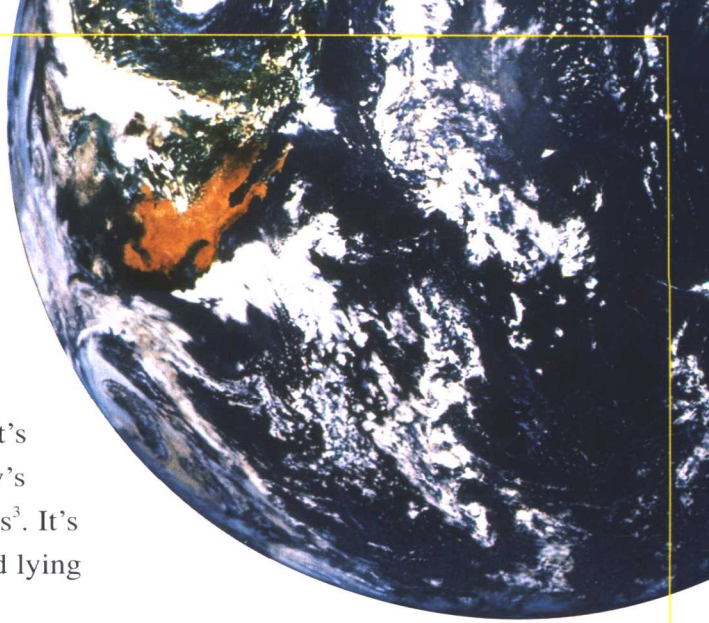
Water, Water Everywhere

运动中的水：水无处不在

Even in the driest desert[1], there's water. It's in the air. It's below the ground. It's hanging from the thorns[2] of a cactus[3] as early morning dew[4].

1. desert	*n.*	沙漠
2. thorn	*n.*	荆棘
3. cactus	*n.*	仙人掌
4. dew	*n.*	露水
5. condense	*v.*	冷凝

Water in the air condenses[5] onto cactus thorns.



Oceans cover nearly three-quarters of Earth's surface. That's why the planet looks blue from space.

You may not pay much attention to the water in your world. You notice it when you brush your teeth or take a shower. But there's much more that you can't see. It's hanging in the air. It's filling your body's cells[1] and streaming[2] through your veins[3]. It's rushing through pipes all over town and lying deep beneath[4] your feet.

All the World's Water

It may be hard to imagine the incredible[5] amount[6] of water on Earth. Start by looking at a globe[7]. See all that blue? That represents[8] about 200 billion[9] liters[10] of water for every man, woman, and child on the planet!

That doesn't mean that there's always plenty to drink, however. Most of Earth's water is salty ocean water. Salt water is fine for tuna[11], lobsters[12], and other sea creatures[13]. But it's not fine for humans and most other animals.

Only 3 percent of Earth's water is fresh water. And most of that is locked up in glaciers[14]. These giant[15] ice blocks[16] are found high on some mountains and near the North and South Poles[17]. So where is the water we can use?

1.	cell	*n.*	细胞
2.	stream	*v.*	流；流动
3.	vein	*n.*	静脉；血管
4.	beneath	*prep.*	在……之下
5.	incredible	*adj.*	难以置信的
6.	amount	*n.*	数量
7.	globe	*n.*	地球仪
8.	represent	*v.*	代表；表示
9.	billion	*n.*	十亿
10.	liter	*n.*	升
11.	tuna	*n.*	金枪鱼
12.	lobster	*n.*	龙螯虾
13.	creature	*n.*	生物；动物
14.	glacier	*n.*	冰川；冰河
15.	giant	*adj.*	巨大的
16.	block	*n.*	大块
17.	North and South Poles		北极和南极

Look Underground

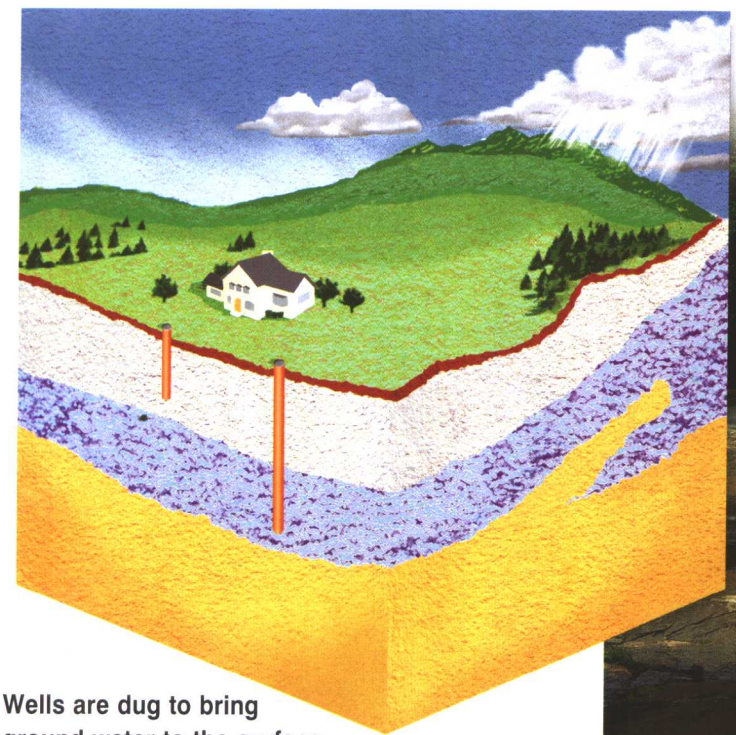
Thick layers[1] of rock lie beneath the soil. Much of the rock has spaces like a sponge[2]. The spaces can be as tiny as pinpoints[3] or as big as caves[4]. Water seeps[5] down and collects in these spaces. Water can move along underground from space to space. This underground water storage[6] area is called an aquifer[7].

An aquifer can be as small as a field or as large as a few states. The Ogallala Aquifer[8] is the world's largest. It stretches[9] from South Dakota[10] to Texas[11].

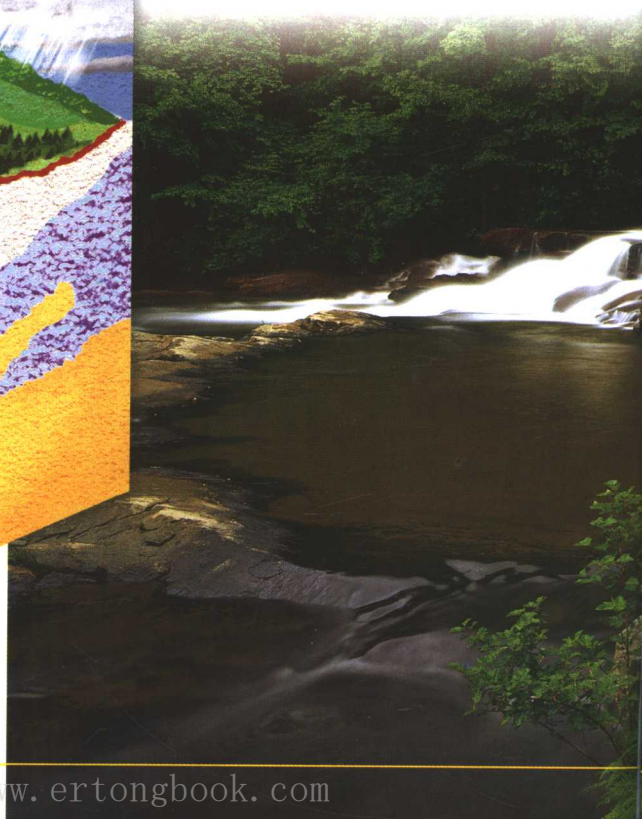
Aquifer water is ground water[12]. The water flowing from your faucet[13] may be ground water. Five out of ten Americans drink it.

Do you think your drinking water comes from surface water[14] or from ground water?

1. layer	*n.*	层
2. sponge	*n.*	海绵
3. pinpoint	*n.*	针尖
4. cave	*n.*	洞穴
5. seep	*v.*	渗漏
6. storage	*n.*	贮藏
7. aquifer	*n.*	地下蓄水层
8. Ogallala Aquifer		奥加拉拉地下蓄水层
9. stretch	*v.*	伸展，延伸
10. South Dakota		南达科他州
11. Texas		得克萨斯州
12. ground water		地下水
13. faucet	*n.*	水龙头
14. surface water		地表水
15. pump	*v.*	用泵抽（水等）



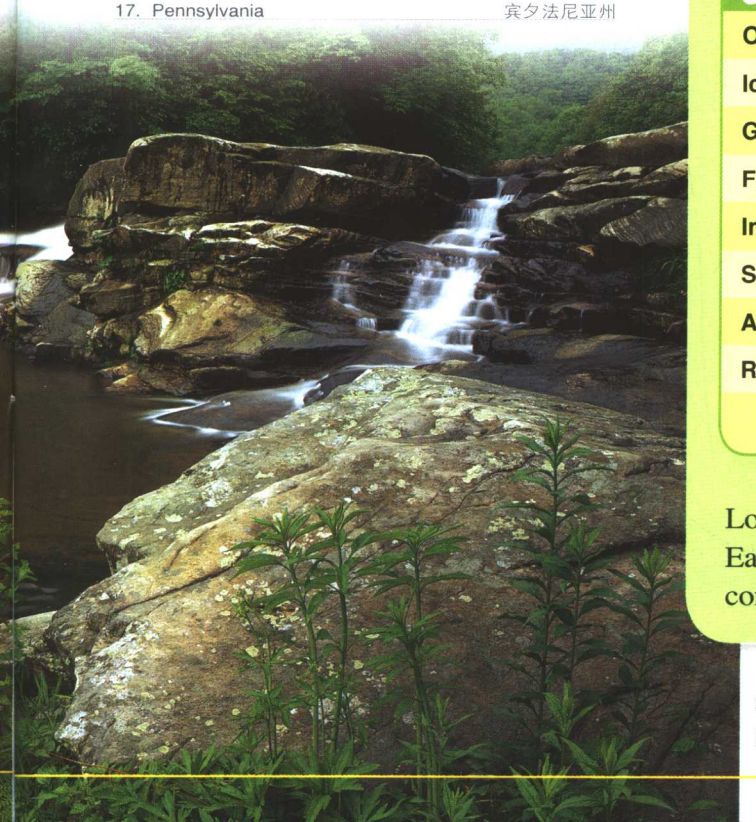
Wells are dug to bring ground water to the surface. Sometimes a well pumps[15] out all the water it can reach. A deeper well reaches more water.



Look On the Surface

Earth's surface water bodies are connected. Streams join and form larger rivers. Rivers run into lakes or oceans. Lakes and rivers spill[1] over onto wetlands[2], which are soggy[3], swampy[4] areas. Wetlands soak[5] up water that could otherwise cause a flood.

1.	spill	*v.*	溢出
2.	wetland	*n.*	[~s] 湿地
3.	soggy	*adj.*	湿润的
4.	swampy	*adj.*	沼泽似的
5.	soak	*v.*	吸收
6.	refill	*v.*	重新注满
7.	interpret	*v.*	解释，说明
8.	datum	*n.*	(*pl.* data) 资料，数据
9.	chart	*n.*	图表
10.	icecap	*n.*	冰盖，冰冠
11.	inland	*adj.*	内地的，内陆的
12.	moisture	*n.*	湿气
13.	atmosphere	*n.*	大气
14.	hydrologic cycle		水文循环，水循环
15.	U. S. Geological Survey		美国地质调查所
16.	contain	*v.*	容纳
17.	Pennsylvania		宾夕法尼亚州



Streams and rivers flow downhill, like this stream in Pennsylvania[17].

Surface water is also connected to ground water. Water in wetlands seeps down into the ground and refills[6] aquifers.

Thinking Like a Scientist: Interpreting[7] Data[8]

When you need to compare lots of numbers, it helps to line them up in a chart[9]. The chart below shows where Earth's water lies. If you want to find out how much ground water there is, find the phrase "Ground water." Then look to the right of that phrase to find the amount. How much is there?

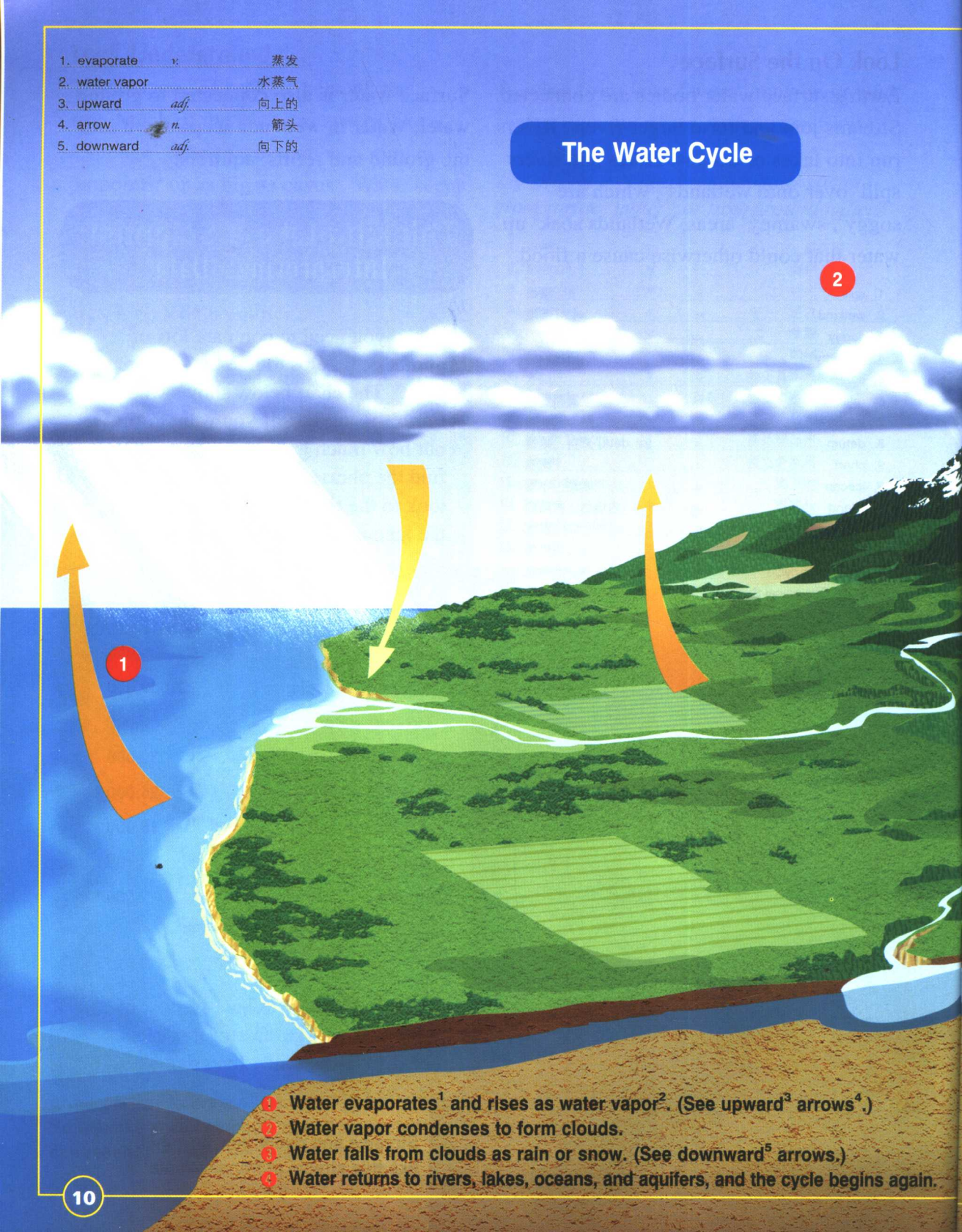
Water source	Water volume in cubic miles
Oceans	317,000,000
Icecaps[10], Glaciers	7,000,000
Ground water	2,000,000
Freshwater lakes	30,000
Inland[11] seas	25,000
Soil moisture[12]	16,000
Atmosphere[13]	3,100
Rivers	300

Source: Nace, *The Hydrologic Cycle*[14], U.S. Geological Survey[15], 1984

Look at the chart. Where is most of Earth's water? Do freshwater lakes contain[16] more water than rivers?

1. evaporate *v.* 蒸发
2. water vapor 水蒸气
3. upward *adj.* 向上的
4. arrow *n.* 箭头
5. downward *adj.* 向下的

The Water Cycle



1. Water evaporates[1] and rises as water vapor[2]. (See upward[3] arrows[4].)
2. Water vapor condenses to form clouds.
3. Water falls from clouds as rain or snow. (See downward[5] arrows.)
4. Water returns to rivers, lakes, oceans, and aquifers, and the cycle begins again.

Water on the Go

Is it raining? Can you see clouds? If so, you're seeing part of the water cycle—the constant[1] movement of water around the globe[2].

Water Rises Every day about 860 trillion[3] liters (about 227 trillion gallons[4]) of Earth's surface water evaporates into the air. The water becomes an invisible[5] gas called water vapor. Plants also add water vapor to the air.

Water Condenses As water vapor drifts[6] upward, it cools. As it cools, the vapor may condense, or turn back into water droplets[7]. Or if the air is cold enough, the vapor forms tiny ice crystals[8]. The droplets and crystals are smaller than the period[9] at the end of this sentence. They gather to form clouds.

Water Falls When enough droplets or crystals cling[10] together, they become heavy enough to fall. Depending on the weather, you might get rain, snow, or even hail[11].

Water Flows Some rainwater or melted[12] snow trickles[13] through the soil, watering plants or reaching an aquifer. Some runs downhill over the ground, forming streams that could end in a lake or an ocean. Little by little, this water turns to vapor and rises. The water cycle goes on and on.

1. constant	*adj.*	不断的
2. globe	*n.*	地球；世界
3. trillion	*n.*	万亿
4. gallon	*n.*	加仑
5. invisible	*adj.*	看不见的
6. drift	*v.*	飘
7. droplet	*n.*	小滴
8. crystal	*n.*	晶体；晶粒
9. period	*n.*	句号
10. cling	*v.*	聚集
11. hail	*n.*	冰雹
12. melt	*v.*	融化
13. trickle	*v.*	滴；淌

Wastewater from factories may contain harmful chemicals.

Keeping It Clean

As water travels, it can run into some serious pollution. Although there are laws against it, some factories still spill out harmful[1] chemicals[2]. The chemicals might be piped into a river. Even chemicals dumped[3] on the ground can seep into an aquifer. But that's not the only way people pollute water.

Farmers and gardeners[4] spray[5] their plants with fertilizers[6] and pesticides[7]. Rain washes these chemicals from plants and can carry them into ponds, rivers, lakes, or the ocean. Fertilizers that help plants grow can turn a pond into a green swamp, overgrown[8] with water plants. Pesticides designed[9] to kill bugs[10] can hurt fish, frogs, and other animals.

People sometimes pollute without knowing it. Suppose you're fixing your bike chain[11] in the driveway[12] and spill a can of oil. If you don't clean it up right away, what happens? The next time it rains, water washes the oil down the driveway into the street gutter[13]. Then it goes into the sewer. From there, it might go into a stream.

When water runs down a drain[14], it probably goes to a treatment plant[15]. At the treatment plant, much of the pollution is taken out. But nasty[16] chemicals like paint or turpentine[17] might be too much for the treatment plant to handle[18].

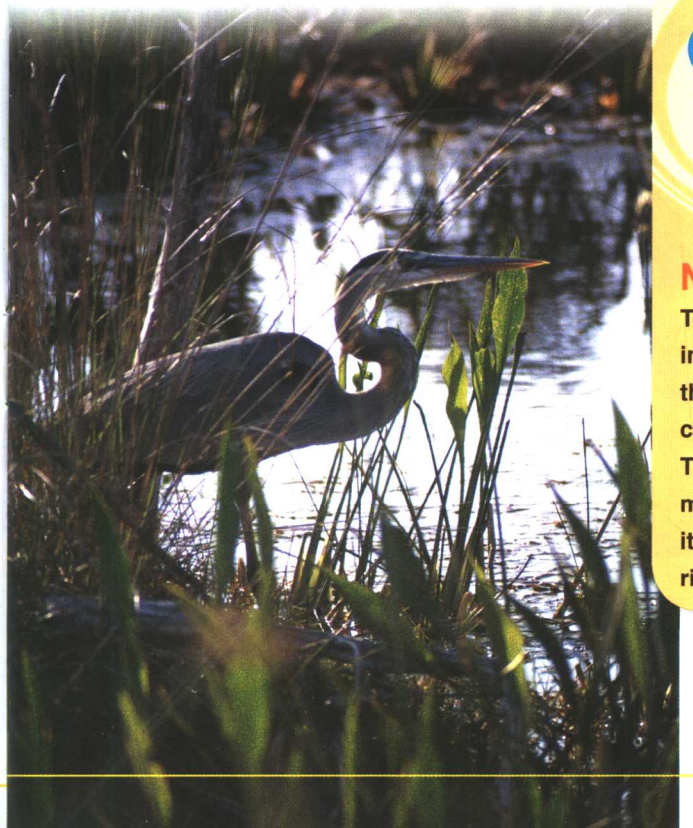
1. harmful	*adj.*	有害的
2. chemical	*n.*	化学（制）品
3. dump	*v.*	倾倒
4. gardener	*n.*	园丁
5. spray	*v.*	喷
6. fertilizer	*n.*	肥料
7. pesticide	*n.*	杀虫剂，农药
8. overgrow	*v.*	长满
9. design	*v.*	设计
10. bug	*n.*	虫子
11. chain	*n.*	链条
12. driveway	*n.*	车行道
13. gutter	*n.*	排水边沟，街沟
14. drain	*n.*	排水沟
15. treatment plant		污水处理厂
16. nasty	*adj.*	难处理的
17. turpentine	*n.*	松脂，松节油
18. handle	*v.*	处理

Natural Cleanup[1]

Dirty water can clean itself. When water evaporates, dirt stays behind. So when water vapor condenses and forms rain, the rain starts out clean. Then as raindrops fall to Earth, they mix[2] with chemicals that float[3] up from cars and factories. Some of these chemicals turn rain into acid rain[4]. This type of pollution can kill trees and fish and can damage[5] buildings. Laws have reduced acid rain but haven't stopped it.

Evaporation isn't nature's only way of cleaning water. On its way down to an aquifer, water is filtered[6] clean by rock and soil. Wetland plants and bacteria[7] can eat up some poisonous[8] chemicals. The soil in wetlands breaks down some harmful chemicals. In fact, wetlands are so good at cleaning water that some factories create artificial[9] wetlands to clean up their pollution!

1.	cleanup	*n.*	净化环境
2.	mix	*v.*	混合
3.	float	*v.*	漂；浮
4.	acid rain		酸雨
5.	damage	*v.*	破坏
6.	filter	*v.*	过滤
7.	bacterium	*n.*	(*pl.* bacteria) 细菌
8.	poisonous	*adj.*	有毒的
9.	artificial	*adj.*	人造的
10.	stay tuned		别走开；继续关注
11.	Utah		犹他州
12.	detergent	*n.*	洗涤剂
13.	plus	*adv.*	另外
14.	rinse	*n.*	漂洗



Wetlands help clean polluted water.

Stay Tuned[10]!

No Soap!

To help keep water clean, two scientists in Utah[11] are working on a washing machine that doesn't need detergent[12]. Detergent changes water so that it cleans better. This new machine would contain a solid material that does the same thing. Plus[13], it uses less water because there's no rinse[14] cycle. Will it work? Stay tuned!

Go With the Flow

跟着水流走

Follow the numbers to see where your tap-water[1] comes from and where it goes.

1. tap-water *n.* 自来水