

SOCIETY**● Putting Freshwater Problems on Ice**

Imagine how different your life would be if you couldn't get fresh water. What would you drink? How would you clean things? The Earth has enough fresh water to supply 100 billion liters to each person, yet water shortages affect millions of people every day. So what's the problem?

The Ice-Water Planet

Three-quarters of Earth's fresh water is frozen in polar icecaps. Plenty of fresh water is there, but people can't use water that is frozen and thousands of kilometers away. The ice sheet that covers Antarctica is thousands of meters thick and is almost twice the size of the United States. Hundreds of huge chunks break off its edges every year. These icebergs, which are made up entirely of frozen fresh water, float away into the sea and eventually melt. Water from 1 year's worth of these icebergs would be enough to supply all of southern California for more than a century. So why not use it?

Obvious but Not Easy

Transporting icebergs to areas that need fresh water is harder than it sounds. For one thing, many of the icebergs are huge. The largest ever recorded was about the size of Connecticut. Even small icebergs may be 2 km long and 1 km wide.

Researchers have considered many methods of transporting icebergs. Most of the ideas involve pushing or towing icebergs through the water. A few ideas involve attaching engines and propellers directly to the icebergs. However, because icebergs are so large, it takes a long time to move them. And when an iceberg finally does get somewhere, a considerable amount of it has melted. To prevent melting, insulating materials could be wrapped around an iceberg.

A Worthy Investment

Lakes and ground water still provide the cheapest fresh water in most areas. However, if there is no lake, river, or well water available, icebergs may then be a reasonable option to consider. Even though transporting icebergs is difficult, it may still be worthwhile to try. Irrigating 100 km² of desert with water from icebergs might cost as much as \$1 million, but purifying enough sea water to irrigate that amount of desert could cost over \$1 billion.

People in arid regions have spent considerable time on iceberg research. So far, no one has set up a program for harvesting icebergs. But someday water from icebergs may flow from our household faucets.

An Icy Investigation

Float an ice cube in a bowl of cold water, and record the time it takes the cube to melt. Then try to insulate other ice cubes with different materials, such as cloth, plastic wrap, and aluminum foil. Which material works best? How could this material be used on real icebergs?