



## A Biospherian at Heart

Almost 20 years later, Jane Poynter says the Biosphere 2 experiment is still providing dividends

IN 1991, WHEN JANE POYNTER AND SEVEN COLLEAGUES stepped into Biosphere 2, a 3.4-acre hermetically sealed, space-age greenhouse in Oracle, Ariz., they were taking on the challenge of living a simplified version of life on planet Earth. That meant growing their own food, using all-natural products, and recycling air, waste, and water. Even personal care items had to be 100 percent recyclable and perfume free. "All of our toothpaste had to be able to break down completely and organically without producing anything toxic," Poynter recalls.

Although the interconnections between chemicals and the environment weren't as well understood then, the "biospherians" knew they'd have to avoid toxins or risk spreading them throughout Biosphere 2's five biomes: rain forest, savannah, desert, ocean, and marsh. "The farm I ran had to be completely organic," says Poynter, who details her experiences in the book *The Human Experiment: Two Years and Twenty Minutes Inside Biosphere 2* (Basic Books, 2006). "We couldn't use any chemical pesticides because most of them are toxic. They'd end up in our food and water. We were forced to think about those dynamic systems."

Findings from the two-year experiment continue to influence eco-friendly living and green building practices. For example, the team found that certain household furniture items and paints release volatile organic compounds into the atmosphere, affecting air quality inside a home.

Biosphere 2's water recycling system was perhaps the project's greatest success. According to Poynter, the process began in the wetlands, where the combination of bacteria and marsh plants broke down any waste in the water. The resulting high-nutrient water was then used to nourish other plants, which, in turn, released pure H<sub>2</sub>O to the air from their leaves. "The beautiful thing is, you can take a waste stream and turn it into a habitat, if done properly," Poynter notes.

One of the most important lessons Poynter learned was the integral role she played in the enclosed space. "As we breathed out, the carbon dioxide in our breath fed the sweet potatoes we were growing," she explains. "As those grew, they put oxygen in the air we were breathing. I ate so many sweet potatoes I became orange. I literally was eating the same carbon over and over again."

Following her Biosphere 2 experience, Poynter cofounded Paragon Space Development Corp., in Tucson, which develops technologies for extreme environments like space and the deep sea. She also partnered with World Bank to help Central American and African countries find ways to grow crops in drought conditions.

Poynter found it gratifying that many visitors to Biosphere 2 during the experiment had an "aha" moment. They realized that their environment was a closed system — even if you threw something away, it still existed. "And that's how it happens in Biosphere 1, Earth."  
— Deborah Abrams Kaplan

## Change Is Good

Small changes can make a big difference to our environment, Jane Poynter says. For example, you can improve the air quality of a home or office by using low-VOC (volatile organic compound) paints and opting for rugs without a rubber backing. "Those rugs don't cost more," she notes. You should also ask about where an item is made, the product's life cycle, and what happens when it is no longer useful. For example, if you're buying a window, it might come from China, which means it was shipped a long distance. However, it might be energy-efficient and will reduce coal and electricity consumption. Such choices involve tradeoffs. "But the fact that we're even asking ourselves about these tradeoffs is important," Poynter says. — D.A.K.

