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Tasting NASA's Recycled Water

By JOHN SCHWARTZ

A watery moment of truth. (John Schwartz/The New York Times)

KENNEDY SPACE CENTER, Fla. — How does distilled urine and sweat taste?

Not bad, actually.

Here at Kennedy Space Center, the National Aeronautics and Space Administration is getting ready to launch the shuttle Endeavour on a 15-day mission to the International Space Station.

There are many elements of this shuttle mission, which is devoted to further construction of the station and improvements that will allow the station to double its crew size from three to six next year. But the gizmo that is getting the most attention is the “water recovery system,” which will recycle the station’s water supply. That’s right: urine, sweat in the air, waste water and other forms of moisture will be fed into the system, distilled and sent back to the tap.

The system, created at a cost of about \$250 million, will recycle about 93 percent of the water used aboard the station. The cost of lifting supplies up to orbit is so high, though, that NASA estimates the system could pay for itself in as little as two years. Similar systems would be essential to maintaining long-term bases on faraway outposts on the Moon and Mars.

The astronauts don’t have a problem with this system. As Sandra H. Magnus, one of the astronauts who will be among the first to drink water produced by the new system aboard the station, noted in a recent interview, our earthbound water has been endlessly filtered through bodies, evaporated and rained down again. “We drink recycled water every day,” she said, “on a little bit longer time scale.”

The system was developed at the Marshall Space Flight Center, and Robert Bagdigian, who led the project, brought some bottles with him to show to reporters. These were produced in 2005 from a test chamber in which Marshall employees not only used a toilet “to donate, if you will” liquids for the project, but also worked out to put sweat and moisture in the air.

The liquids were processed using the same kind of equipment that is going up on the shuttle, and then treated with iodine to kill germs and ensure that it could be stored over time. The station water will have the iodine removed at the tap.

At the time, the space program put on a number of blind taste tests with the processed waste water pitted against tap water that had been treated with the same process and against untreated tap water. The testers then gave taste scores to each sample. "We couldn't see any statistical difference between the waters," Mr. Bagdigian said.

So, again — how does it taste? Your intrepid reporter opened one of the bottles of "Purified Recycled Water" that Mr. Bagdigian brought with him. The wryly worded label was a little intimidating: "We use only the finest ingredients! Urine, Perspiration, Food Vapors, Bath Water, Simulated Animal Waste, and a touch of Iodine. No Carbs or Calories Added."

With that as my verbal drum roll, I took a sip. Aside from a slight tang of iodine, it tasted like, well, water. I've had tap water that tasted much more like things I don't want to think about.

I don't think NASA's answer to Poland Spring would ever be a big seller, but it has the distinction of being the most expensive bottled water on the planet — "and off the planet," Mr. Bagdigian joked.