



## **Radiation is good for you?**

**Some spas--and a few scientists--insist that in small doses it is.**

### **Forbes Life**

A Pinch of Poison

Emily Lambert, 12.22.03

Rest, relaxation, and radioactivity: it's not everybody's prescription for good health. Yet at places like Bad Gastein in the Austrian Alps, visitors crave alpha particles as much as California spa goers clamor for seaweed wraps. The Radium Palace in the Czech Republic, built in 1912 and renovated in 1997, offers underwater massages in irradiated waters.

In the U.S. you won't yet find radon offered at Canyon Ranch--but never say never. "There are some people [for whom] I might theoretically suggest radon treatment," says the ranch's medical director and physician, Mark Liponis.

So, what's this theory that a known carcinogen is good for you? It's the controversial thesis of University of Massachusetts toxicologist and school of public health professor Edward Calabrese that small doses of certain poisons may have the paradoxical effect of lengthening life spans. Radon might be such a substance.

Radon is a gas, a product of decaying radium and an emitter of particles. It's blamed by public health officials for an estimated 15,000 to 22,000 U.S. lung-cancer deaths annually. The Environmental Protection Agency calls radon "extremely toxic," and the Harvard Center for Risk Analysis in 1998 listed it as the most frequent cause of premature death from a hazard in the home. In 1988 the Indoor Radon Abatement Act led to a more than \$100 million-a-year industry devoted to eradicating radon from residences.

Yet at hot springs and thermal spas where radon typically is found in the air or water along with carbon dioxide, sulphur gases and trace elements of other minerals, health-seekers sing its praises. Its fans will tell you that it relieves a variety of ills--from asthma, hay fever and sinus infections to chronic pain, arthritis, inflammation and migraine.

Less than a century ago radium was called "liquid sunshine" and appeared as an ingredient in everything from toothpaste to hair tonic. People believed it was good for the body, and its presence became a selling point for spas and hot springs in Arkansas, New York and Massachusetts. Its heyday ended with the well-publicized death at 51 of Pittsburgh steel millionaire and sportsman Eben M. Byers, who drank a daily dose of two 2.2-ounce bottles of radium-laced water, which, he said, made him feel zippy. By the time he keeled over in 1932, he had lost not only zip but teeth, most of his having been pulled in an attempt to stop bone decay. He sported abscesses and had shrunk to 92 pounds.

Now some scientists are giving radium, radon and other toxins a second look. If Calabrese is right, a wide range of toxic chemicals and dangerous rays do not follow the linear dose/response curve that has long been taken as gospel in environmental science. "Linear" here means that if a certain dose kills 5% of the lab rats (or people) exposed, then a hundredth of that dose will kill 0.05%. Calabrese says that many poisons follow, instead, a U-shaped curve: The death rate goes down as the dose climbs from zero to a certain small amount, what you could call the optimal exposure. Only at larger doses does the mortality curve change course and head upward. This theory of toxicity goes by the name "hormesis."

The phenomenon has been known to laboratory scientists for many years: Rats exposed to slightly higher than natural doses of radiation live longer than ones with natural exposure. A plausible explanation is that small doses of carcinogens whip cellular defense systems into shape, repairing mutations in an animal's DNA caused by either this toxin or any of the other insults that flesh is heir to.

Does it work in humans as well? Maybe. And what's the right dose? No one knows. But perhaps for radon concentration in the air, a radiation level of 5 to 10 picocuries per liter is about right for maximum benefit, speculates Myron Pollycove, a professor emeritus of laboratory medicine and radiology at the University of California, San Francisco. That assumes you spend 12 hours in the radon-laden air daily. For radon-infested bathwater, the "good" level could be much higher. Ten picocuries per liter is just 3% the level you might get in your well water if you lived in much of Chester County, Pa.. It's a fraction of the 18,000 picocuries/liter at Bad Gastein's thermal springs and the 115,000 picocuries/liter at the Radium Palace.

All this scientific debate hasn't yet roiled waters at Europe's medically oriented spas. The four-star Thermál Hotel on Hungary's Lake Héévíz, for example, offers one to four weeks of radioactive relaxation for as little as \$547 per week. Héévíz, with its low level of radon, is not the only option. There is radon at spas in Bad Brambach, Germany, and Ischia, Italy, among other places.

In British Columbia the Fairmont Hot Springs Resort, not far from Banff, Alberta, boasts dissolved radium in its swimming pools (2.7 picocuries/liter), and the nearby town of Radium Hot Springs offers visitors two outdoor radium pools--one hot, one cold--each of which, says Parks Canada, inflicts on a bather about as much radioactivity as a watch with a luminous dial. "I think it reduces stress," says Wendy Klein, 51, an account executive for Partners in Planning, a financial services company, who spent an hour soaking before treating herself to a hot-stone massage. "I let all my thoughts of business go and just kind of enjoyed the moment."

In southwestern Montana there are five underground radon facilities--some former uranium and silver mines--which together welcome upwards of 1,000 health-seekers per year. Patrons go below ground to play cards, sleep, exercise and work on laptops--all the while inhaling air that can have 1,700 picocuries of radon per liter (about 1,300 times as much as air in the average home). "It's more homey than luxurious," says Pollycove, who visited the Free Enterprise Radon Health Mine in Boulder, Mont. once to lecture on hormesis. He says he didn't stick around long enough to notice any health benefits.