

From Ranger Joe to CEO

Forestry grad is head of the only company that knows how to put prions in their place

By STEVE TALLY

Many scientists believe mad cow disease is caused by convoluted proteins known as prions, and Purdue grad Joseph Wilson says his Indianapolis company has the only known technology that can destroy them.

Prions have confounded scientists because of their unique characteristics. Prions can't be destroyed by methods currently in widespread use, which means that the disease could be transmitted on supposedly sterile items such as surgical instruments.

Last year, Wilson, chief executive officer of Waste Reduction by Waste Reduction, or WR², landed on the front page of *The Wall Street Journal* claiming his company had a method of destroying prions.

WR² sells medical waste disposal equipment to hospitals. Now Wilson wants to market a scaled-down tissue digester to farmers and animal shelters for disposal of dead animals on-site, thus reducing the risk of transmitting diseases.

Malformed molecules

Proteins in prions fold in such a way that instead of sliding through tissue normally, they form plaques that ram through brain tissue, causing microscopic holes. These holes can give brain tissue the appearance of a sponge, which has led to mad cow disease's formal name, bovine spongiform encephalopathy.

Although prions behave much like viruses, they don't contain any genetic material. They can reproduce, however.

Scientists suspect that when a malformed prion comes in contact with a normally folded protein, it disrupts the exposed protein, causing it to refold into a prion.

Mad cow disease first appeared in Britain in 1986, but alarm became widespread throughout Europe in 1996 when British authorities announced that 10 people were believed to have contracted a variant of Creutzfeldt-Jakob disease from eating infected beef. Creutzfeldt-Jakob is a degenerative, fatal brain disorder for which there is no cure.

Only one sterilization technology is known to destroy prions, and that is the technique used in the equipment produced by WR².

Forester turns entrepreneur

Wilson, an avid fisherman in his spare time, earned a forestry degree in 1977 and hoped to get a job as a Forest Service Ranger. "But jobs were tough in '77," Wilson remembers. "So I went to work as a manager for a furniture company instead."

Wilson realized within a few months that his first employment choice wasn't a good fit, so he went to work for his uncle, making grinders to destroy syringes and needles.

Although he hadn't considered a career in medical waste disposal, he soon realized that it was a nearly perfect fit with his education at Purdue.

"A big issue for waste disposal is the environmental effects of disposal, and my forestry degree prepared me to deal with that. In fact I took a course in environmental impacts," he says. "I had taken courses in microbiology, chemistry, a graduate-level course in soils, so I understood the issues."

In 1990, Wilson launched his own company, EcoMed, producing a small biohazardous waste processing system.



Photo by Tom Campbell

Joseph Wilson's company, WR² manufactures high-temperature disposals that convert contaminated waste products into harmless inert matter.

Six years later, Wilson sold EcoMed to Steris Corp., an industry leader in instrument sterilization for medical and scientific institutions. Wilson became vice president of solid waste management systems for Steris. While at Steris he became aware of WR², and the founders of the company asked him to become CEO in 1998.

Since then, Wilson has raised more than \$12 million in capital for the company. He used that money to build the business and to acquire a related company, Sterile Technology Industries Inc., which manufactures sterilization equipment for medical institutions.

WR² is founded on a disposal technique developed by two doctors at the Albany Medical College in Albany, N.Y. in 1992. The process uses a combination of heat, pressure, and alkali to completely destroy biological tissue.

Cross-contamination concerns

A year ago a reporter asked Wilson why his company didn't offer a smaller version of the hospital tissue digester, saying farmers depend on rendering trucks to dispose of livestock, and that these trucks travel from other farms or facilities where there may have been animal disease outbreaks.

"What's more, it is the little guys, the farmers who are least able to withstand the economic impact of a disease outbreak that have the greatest risk of cross-contamination," Wilson says.

Wilson says he first thought there was no way his company could address this livestock producers' need because the company's institutional tissue digesters are room-sized devices that can cost more than \$1 million.

"Over the next few weeks, I realized that farmers

would produce much less material to be digested than animal diagnostic centers like Purdue, and so how fast the machine worked wasn't as important," he says. "We developed a machine that takes 16 to 18 hours to do its job, and we call it the 'Agri-Lyzer.' Now producers have something they can use on site that is prion-free and reduces their risk of exposure to other livestock diseases."

Wilson says the company began taking orders late last year and plans to build the first Agri-Lyzer in February.

Small company tackles big problems

Headquartered in Indianapolis, WR² maintains a research facility in Rensselaer, N.Y., and a European subsidiary in Scotland.

The company's main focus is selling processing systems to hospitals, diagnostic centers and research facilities as a way to dispose of biohazardous and biological waste. This may include organs and amputated limbs, but also hard hospital waste such as needles, lab cultures, blood vials, or surgical sheets.

Wilson says chemical tissue digestion has several advantages over incineration, but admits he spends quite a bit of time evangelizing about his company.

"People have been using incineration and steam in autoclaves for 100 years," he says. "Until recently, non-incinerating technologies were viewed as gimmicks. But now there is a demand for our technology."

Wilson hopes to grow the company from the current 35 employees to over 400 in the next two to three years. "We're a little

company with great technology, and we're bringing it to bear on the problems," he says.

Wilson's favorite memories of Purdue are of the Department of Forestry's summer camp and of the time spent at his Purdue home of Terry Courts.

"I had a big bunch of friends there. Lived there all four years," Wilson recalls. "We had the highest GPA and highest rate of return of any dorm on campus. We were all so close it was like we were fraternity brothers."

After graduating, Wilson married his sweetheart, Barbara, from his hometown of Speedway, and they have four children, Luke, Samantha, Hanna and Chelsea. Wilson proudly points out that his two oldest both attend Purdue. Luke is a junior in agricultural economics, and Samantha is a freshman in pre-veterinary medicine. "And when my other two are old enough, they're going to go to Purdue, too," he says.

Personal Profile:

Joseph Wilson

Occupation: CEO, WR²
Degree: BS (Forestry & Natural Resources) '77
Residence: Indianapolis

Top Five

Wilson's favorite fishing destinations

1. Islamorada, Fla. (tuna and dolphin)
2. Inland waterways around Naples / Marco Island, Fla. (sheepshead, redfish, drum)
3. Manistee, Mich. (trolling for Chinook salmon)
4. Walker, Minn. (pike and bass)
5. Puerto Rico (marlin)