Volume 11, No. 29
July 20, 1983

Bacteria introduced to help purify drinking water

Tiny bacteria that feast on micro-organisms in the Ottawa River may soon be producing pure, virtually chemical-free drinking water, says inventor Sam Klein.

To prove it, he has released a horde of microbes on samples of the raw, rusty-looking liquid that flows daily into a filtration plant.

Klein, who has a grant from the National Research Council, has hooked up an "aerobic sludge" system in the plant and is testing its efficiency against the conventional chemical method that currently furnishes tap water in the capital.

"I've always been interested in water and I figured the best way to clean it is to use nature's own methods," he said. "There are bacteria that will quite willingly eat up the pollutants in water. I wanted to harness them and put them to work. Who wants a lot of chemicals in their drinking water?"

Method

Although it is uncertain which bacteria do the trick, Klein has found he can encourage a slew of helpful microbes by adding oxygen to their environment.

This results in a bacteria sludge he uses to coast a stainless steel filter designed by his company, Klein Engineering of Ottawa. The slimey covering, combined with a very fine sand, sticks to the filter as raw water flows over it.

As the water passes, the hungry microbes devour meaty micro-organisms and pollutants such as phenols, phosphates, fertilizer, lead, radionuclides and chlorinated hydrocarbons.

"Then and only then do we add a little bit of chlorine, just to pick up residue," Klein says proudly.

The noticeably-clearer looking water then washes over a filter of activated carbon.

Conventional system

Mr. Klein's biological water treatment philosophy, shared by many environmental groups concerned about chemical additives, differs markedly from the conventional system which uses five chemicals – chlorine, silica, aluminum sulphate, lime and fluoride – to meet Ontario health standards for drinking water.

The Ottawa engineer said his test results are as good as those from the normal systems, at much less cost.

That remains to be proved, say federal health officials. But they admit they're getting interested.

"At this point it's too early to say how effective the process will be," said Dr. Richard Tobin of Health and Welfare. "But the federal and provincial governments realize it's important to encourage any new ideas or developments that might be less costly or could be used as an alternative to current methods."

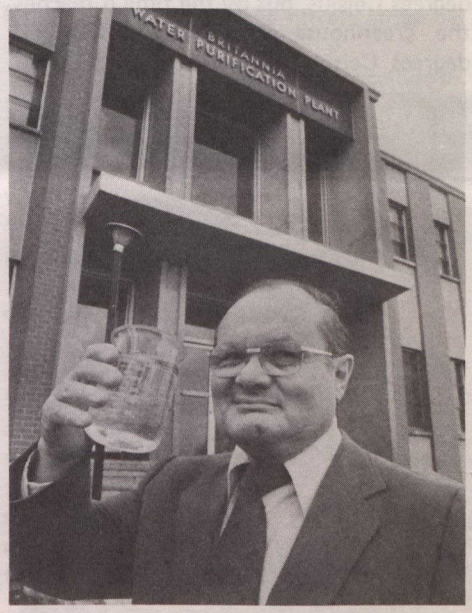
The health evidence so far has been encouraging. Studies on how effectively the system filters out viruses, for instance, have been positive.

Dr. S.A. Sattar, a microbiologist at the University of Ottawa, said he released a harmless polio-like virus into the raw water of Klein's filtration system and found the ravenous microbes capable of destroying "99.9 per cent" of the virus.

"We need a higher degree of challenge for it though – greater volumes of water to see how we can better relate it to the conventional system."

The next step will be to test a larger-scale model and try to cut down further on the small amounts of chlorine used now.

"This could have applications besides municipal water supplies: the beverage industry, even fish farms, anywhere where a cheaper, easier method of water filtration is needed," said Mr. Klein.



Ottawa engineer, Sam Klein has hooked up an "aerobic sludge" system in a filtration plant to test his theory that bacteria can help provide pure chemical-free drinking water.

Dial-a-diet

A medically-approved and computerized diet plan with menus that include Italian, French and Spanish cuisine will soon be only a "touchtone" away, reports the *Canadian Press.*

Dr. Jacques Benoit said he hoped to begin the dial-a-diet service in the next year because he wants to make medically-approved diets for the overweight easily available.

"Weight control has gone way beyond the medical field," he said. "It's really a free-for-all."

Users will be able to call a toll-free number and report basic physical statistics – age, sex, weight, height, health problems, and food preferences – to a computer fed with more than 11 000 dietetic equations, plus the latest research on nutrition and exercise.

Within 30 minutes after the call, a diet and exercise plan worked out by the computer will be in the mail for a fee of about $25.

Special conditions

The service will also offer plans for specific health conditions such as ulcers, diabetes, hypertension, cardiac problems and kidney disease.

Dr. Benoit said he is negotiating with three American firms interested in marketing his plan. His slimming plans – the result of diets he studied from 80 hospitals in Canada and the United States – produce an average weight loss of about one kilogram a week over 60 to 90 days.

If too large a weight loss in too short a time is requested by a customer, the computer will balk and suggest the correct time frame for a caller's needs. Most of the diets average 1 200 to 1 800 calories a day, depending on physique and activity requirements. No diet below 800 calories a day will be prescribed.

"Under 800, it's a very irrational diet," said Dr. Benoit. He noted that the exercise component of the program is essential to reactivate flabby muscles and improve looks and fitness. Another distinctive feature is the 21-day duration of the diet. The latest nutritional research shows it takes a minimum of 20 days to alter eating habits, said Dr. Benoit.

"My purpose with this diet is to get the patient to learn to eat differently. Most people who have a weight problem just need to be shown how much nutrition food contains," he said.