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Thanks, Invisible Little Water Filters

| An interview with Professor Elizabeth Edwards
| Environmental Engineer, University of Toronto

How can microorganisms help the environment?

All of the work I do, actually, centres around a theme, which is cleaning up water. There's lots of different ways to clean up water and one way is to use microorganisms that are capable of breaking down some of the chemicals we find in contaminated water and making it better for use.

How does the process work?

Little microorganisms, single-celled creatures, use the things that we think are nasty – contaminants or poisons – they can use them as their food and break them down producing less toxic or less problematic products. Or even just producing themselves, multiplying and growing and making more little single-celled creatures, that then settle out of the water, leaving the water clean. And then you just have to deal, you sort of concentrate the problem in bio-sludge, as it's called.

These are just completely naturally-existing. It's nature's way of cleaning up anyway and what we do in waste-water treatment or ground water remediation, which is what I work in a lot, is just harness natural abilities of these microorganisms, tailor them or tailor the conditions where they exist normally to accelerate the rate at which they decompose these pollutants. And we can now identify them and understand a little bit better how they play together and maybe design more efficient large-scale treatment systems.

How is your research used?

Some of the technology that we have developed in my lab has moved out into practise. So we studied what happens to dry-cleaning solvent when it gets into the ground, when it gets spilled on the ground. We identified some very specific microorganisms that like to break down dry-cleaning solvent and completely turn it into something non-toxic. And as a result of that research, we developed a microbial culture and they sell that now as an inoculant, something you can add to sites that are contaminated with this dry-cleaning solvent and other very related industrial solvents - very common industrial solvents - and now this technology is used around the world.