

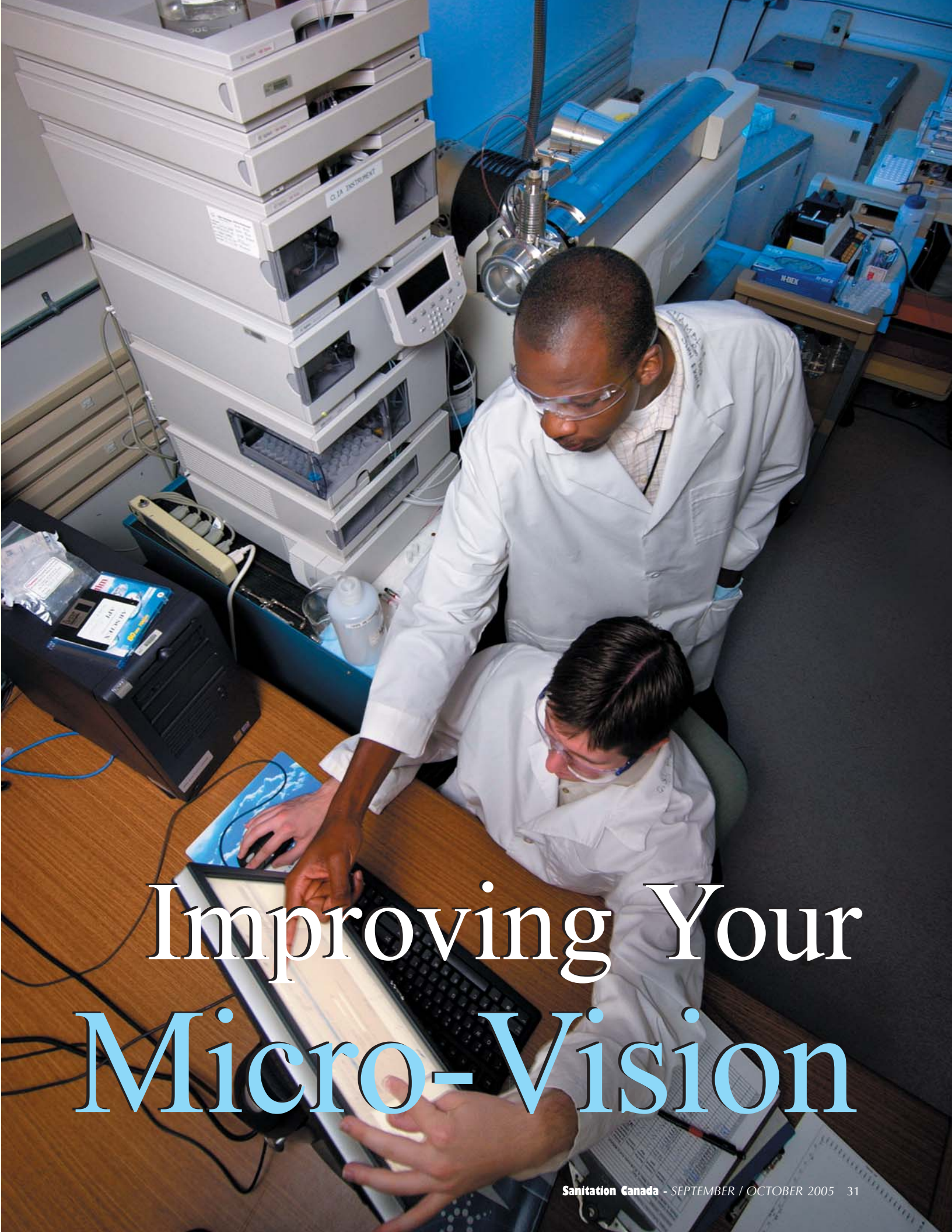
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By NICOLE KENNY, Manager of Professional and Technical Services, Virox Technologies Inc.

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There's a story that I recently heard at a dinner party. A young boy, the son of a southern preacher, spied a pile of warm and inviting cookies that his mother had baked for a church bake sale, and he made a straight dash for the table. Mom intercepted his approach and instructed that before he had a cookie he had to go wash the germs off his hands and then give thanks. He grumbled and stomped, and sullenly allowed himself to be marched off to the bathroom where, while washing his hands, he said in tones loud enough for the whole house to hear, "God and Germs, God and Germs, all I ever hear is God and Germs... and I've never seen either one of them!"



# Improving Your Micro-Vision

Germs, also known as pathogens, are microorganisms like bacteria or viruses that can cause disease. If we could see the germs that are on our hands, on that keyboard, or that grocery cart; if we could visualize the disgusting crud on our toothbrushes, coffee mugs, and restaurant cutlery; if we could actually see the microbial “muck” that surrounds us every day, we would undoubtedly demand that action be taken and we would all (or mostly all) live healthier lives. To get a truer sense of the organisms with which we share our environment and our very bodies, we need to acquire a little “micro-vision.”

### Knowledge, Imagination, Responsibility

Micro-vision doesn't require a stethoscope or coke-bottle glasses, or even the ability to squint. In fact, micro-vision doesn't require vision at all. Micro-vision is comprised of equal parts knowledge, imagination and responsibility. Knowledge to know what bacteria, viruses and other microbes are, where they can be found, and how they cause disease. Imagination to be able to actually picture the microbes on and all around us. And, sufficient sense of responsibility to take reasonable action to prevent disease.

### Four Categories

Knowledge of the microbial world is easily found. Even by paying only passive attention to daily news we can't help but learn a little about Mad Cow Disease (caused by a bug among the smallest of microbes and only recently-discovered) to West Nile Virus and Avian Influenza, and even (although, thankfully, not recently) SARS. Generally the microbes that impact our lives can be broken down into four categories – bacteria, viruses, fungi and other. Microbiology purists would cringe at these categories and there are so many more scientifically “pure” methods in which microbes can be categorized, but for our purposes, this will do.

### Since the Primordial Soup

The microbes that are most responsible for making us sick enough to die are bacteria. Bacteria were the first organisms to crawl out of the primordial soup in the early days of our planet and have

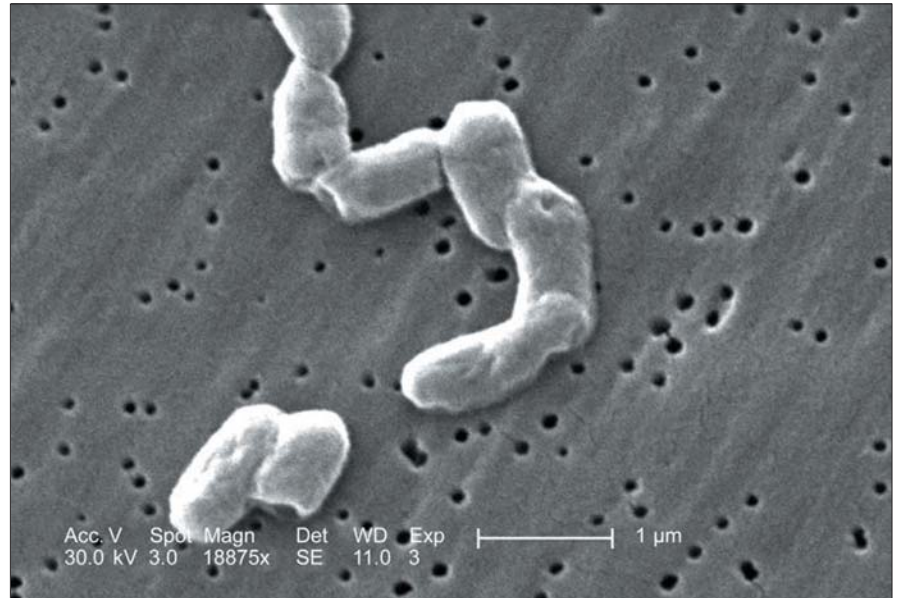


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*Salmonellosis is an infection due to members of a genus of bacteria called Salmonella, of which S.infantis is a member. Most persons infected with Salmonella develop diarrhea, fever and abdominal cramps 12 to 72 hours after infection. The illness usually lasts four to seven days and most persons recover without treatment.*

inhabited just about every corner of it ever since. We humans are covered in bacteria. In fact approximately half of our body mass is bacteria, and without them we would cease to exist (remember that the next time you slather anti-bacterial soap all over your body).

There are a great number of different shapes and configurations of bacteria and some have the ability to surround themselves with a protective shell, called a spore. The bacteria that live on our skin and in our intestines help to digest our food and fight off disease. If there are sufficient “good bacteria” in our system then there is less room for the pathogenic (disease-causing) bacteria that we pick up every day.

Many scientists and natural health proponents think that we should increase our bacterial intake through dairy products, other foods and pills. This school of thought is called “probiotics” and may some day supplant antibiotics as preferred treatment for bacterial and some viral infections.

### Efficient Little Machines

The bugs that make us sick most often though are viruses. These are the little buggers that make the news. Of the four modern diseases that I men-

tioned earlier on, three of them are viruses. Compared to other microbes, viruses are incredibly easy to acquire. For bacteria to be infectious, you would have to acquire at least several dozen and usually several thousand bacterial particles. For viruses to be potentially infectious, usually only one virus particle (called a viron) is required. A certain kind of virus, called a phage, actually hunts down and kills disease-causing bacteria. Because viruses are such efficient little machines, scientists have genetically modified them to fight diseases like cancer. These are very simple organisms and yet some of them are very resistant to many of the household and commercial disinfectants that we use.

### Visually Repulsive

The bugs that cause a great deal of soft-tissue discomfort and are visually (and often nasally) repulsive are fungi. They only rarely cause diseases severe enough to be fatal, but they can get into the blood stream, an open wound or the lungs, and do a lot of damage. In the “other” category we have all sorts of weird and wonderful organisms that, for the most part, have both beneficial and detrimental behavior.

## Giving and Taking

Knowledge of microbes should also include knowledge of how they are passed from person to person or from the environment to people. For those of us who have had to go to a hospital, only to emerge with an infection that we didn't have when we went in, micro-vision certainly would have helped us see what was on the hands of healthcare workers or the scope that probed our private areas, or even on the tongue depressor that they poked halfway down to our lungs. Most infections, however, happen outside of the healthcare system, in our regular life.

Toothbrushes left in the "splatter zone," too close to a toilet, will acquire a coating of E. coli bacteria among a zoo of other types of bacteria. Handles of

grocery carts are classically contaminated by Salmonella. Unwashed hands of people who emerge from petting zoos invariably carry bugs that will give those people some gastrointestinal liquidity later in the day - although they will probably blame it on lunch. Hot tubs and foot spas that haven't been properly maintained can be a wonderful reservoir and means of transmission for bacteria and other organisms (more on the danger from hot tubs in a future article).

The bottom line on transmission is that life is truly give and take. We give our bugs to others and take theirs. We pick up most pathogens from our environment and from each other on our hands, and we pass most pathogens to each other on our hands. Hence the obsession with hand

hygiene in healthcare facilities. Hand hygiene, along with surface cleaning and disinfection are key mechanisms to interrupt microbial transmission.

## Just Imagine

So we know that the bacteria, viruses, fungi and other microbes are all around us, but we can't see them with our eyes. We can, however, see them with our imagination. Whenever we shake hands with someone, we should imagine that the hand reaching toward us has a film of feces on it. Whenever we eat something that hasn't been cooked, peeled or wrapped in packaging we need to imagine little crab-like creatures waiting to burrow into our intestines. Whenever we touch a doorknob, pick up a phone, work on a computer, grab the steering wheel, push a grocery cart, sit on a toilet or turn on a faucet, we should picture luke warm, month old crab chowder or something equally repulsive, dripping and oozing from those surfaces in all its disgusting, slippery gooiness. When we soak in a hot tub we should see, in the haze of bubbling water, the nasty little globs of body fluid bacteria bouncing toward our mouth, nose and eyes. Picture gobs of spit and snotty sneezes coating the rim of your office coffee mug, the one that only gets a finger cleaning ... in cold water ... if we're lucky. Imagine what is on the magazines, chair arms and toys in the doctor's waiting room. If we don't know what the bugs look like for real we can at least picture something to represent them. Try it. It'll change your life.

## Responsibility

So now that we've become at least a little more aware of the microbes in our environment and we're visualizing all sorts of creatively disgusting representations of what we know to be all around us, it's time to take action. If we have any sort of affection for ourselves, our family, our co-workers or at least our pets, then we need to take responsibility for our own hygiene and how it impacts others.

When someone comes at you with that hand that you are picturing covered in

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*Continued On Page 34*

feces, go ahead and shake it. Just don't pick your nose or rub your eyes right away. Wash your hands first. Wash often and wash well. A quick tinkle-fingers-under-water-and-wipe-dry-on-pants won't cut it. You need a good lather with regular soap (preferably not "antibacterial") and then dry on paper towel. In your own home you can use your cloth towel to dry, but make sure it gets changed more often than annually. You can also use a commercial hand sanitizer as long as your hands are

not visibly soiled. Pick a good disinfectant agent that doesn't leave an active residue on the skin.

You and your kin can dodge many potential diseases by keeping your environment clean. This would include your office desk, phone, keyboard, chair and your car steering wheel. When was the last time you cleaned your keys? Clean your home regularly, particularly the kitchen area, dining areas, and bathrooms. Clean your remote control.

Clean the handrails along your stairs, as well as that place on the wall that you always put your hand when you turn at the bottom of the stairs or when you lean out the office door to chat.

Disinfection isn't always necessary for most surfaces, but for kitchens, bathrooms and many high-touch areas, including commercial common areas, it is preferable. If your doctor has told someone in your household or your office that they have a viral infection (particularly Norwalk virus) or a *Clostridium difficile* infection, then it will be important to step up the disinfection. For electronics and items that can't be soaked with water, use a cloth or a disposable wipe that is only slightly damp with water and detergent or disinfectant, and clean as best you can. After it has dried, use another cloth with isopropyl or ethyl alcohol and keep the surface damp with the alcohol for at least 10 minutes. And if you've ever considered purchasing those air disinfectants that are advertised on TV, save your money.

A well-developed micro-vision can prevent much discomfort, not to mention embarrassing spontaneous vomiting. People who have micro-vision are healthier, don't have to give their hard-earned money to the pharmaceutical industry, and don't have to lose time at work. And, because they are healthier, they also enjoy their vacations more and have a better love life. Micro-vision pays.



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