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The greening of the eco-villains

How green tech is changing the face of the chemical industry

Tags: Chemical Industries, emissions, Recycling

Of course the chemical industry can only reduce the environmental impact of its manufacturing plants so far. At a certain point, if it truly wants to go green, it has to turn its attention to the damage done by the chemicals it actually sells. To that end, the industry is investing millions to measure the carbon dioxide and energy used to manufacture, recycle and dispose of its products, and it's attempting to phase out the production of some chemicals altogether. For example, Oakville, Ont.-based Virox Technologies produces an environmentally friendly alternative to bleach called accelerated hydrogen peroxide. Chemically similar to regular hydrogen peroxide—the clear disinfectant you can buy at any drugstore—it works more quickly and at lower doses. Essentially it's an oxygenated version of water with a few other inert chemicals added to prevent it from breaking down, which means it is easier on the eyes, nose and lungs than chlorinated bleach. Scentless and clear, the chemical breaks down to become oxygen and water when it goes down the drain. The product was originally invented in 1998, but it has only started to dominate the Canadian commercial disinfectant market over the past couple of years. Demand skyrocketed during the SARS epidemic, says John Van Dyke, vice-president of professional and technical services at Virox. While it has yet to be made available to Canadian consumers—it will likely be sold in supermarkets by the end of 2009—it is already the lead disinfectant in hospitals and dental surgeries, Van Dyke says.

A remarkable invention from Minneapolis, Minn.-based Tennant Co., a commercial coatings and cleaning supply company, takes that approach one step further. Its new floor scrubber allows industrial and home cleaning to be done with the most environmentally friendly detergent you can imagine: plain old tap water. Called the "ec-H2O" (pronounced e-c-water), the scrubber cleans by electrolyzing water and splitting it into positively charged and negatively charged streams. Because dirt and germs are slightly charged, the two streams attract dust and debris, and a vacuum sucks it up. The water briefly becomes a detergent, but once the differently charged streams

reunite, it turns back into normal—if dirty—tap water.

The chemical industry is even starting to make some progress toward replacing one of its most ubiquitous and environmentally problematic products: plastic. The success of this well-known petrochemical product has also been its environmental downfall, as plastics consume huge amounts of natural resources, can take hundreds of years to break down, and use up to 25 per cent of our landfills.

Several companies are trying to replace plastics made from oil with bioplastics, which are made from plant material. Because carbon dioxide is absorbed by the plants used to produce bioplastics, even once you add up the negative environmental impact of fertilizers, pesticides and transport, they still leave a carbon footprint that's about half as large as their petroleum-based equivalent. Bioplastics have already replaced traditional plastics in many uses, such as high-wicking sports socks, clothes that feel like cotton or cashmere (Armani and Versace have produced lines), carpets, car interiors and even disposable cutlery, cups and plates, which are used at the U.S. House of Representatives.

Currently, bioplastics are made from food-stocks, such as corn or sugar cane, so their expansion is limited because agricultural land is required for their manufacture. This problem isn't unsolvable, though: bioplastics made from plants other than food crops are currently being researched, and should come into production within five to 10 years, says Steve Davies, a spokesperson for Minnesota-based NatureWorks, the world's largest producer of bioplastics.

Looking ahead, the chemical industry as a whole is aiming for the holy grail of environmental protection: removing high volumes of carbon dioxide directly from the atmosphere. The industry has invested millions in carbon dioxide capture, and by the year 2050, Alberta hopes to reduce its projected emissions by 50 per cent, with 70 per cent of that r
eduction coming from storing gases underground. "This field is currently in its infancy," Bourque says. "But we can expect the number of uses of carbon to multiply in the next decade because so much research is happening around the world."

Pages: 1 2

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