



On why Nikwax does not use Fluorocarbons (Nick Brown March 2005)

Introduction

There has been a lot of talk about Fluorocarbons in our industry recently, and although it is not usually part of our policy, I thought it would be useful to explain in detail why our lab has rejected them.

Nikwax first developed a fluorocarbon product in 1998, but never introduced it to the market

Nikwax first started looking at Fluorocarbons a long time ago. There were some obvious advantages to the technology, but equally some disadvantages. The advantage lies in oil repellency; the disadvantages were that the products needed heat to activate them (bad news for home care products) and were poor in reducing the water-absorbency of fabrics. Their effect was superficial.

We thought that there would be a real commercial advantage if we could combine the positive benefits of Nikwax products with fluorocarbon characteristics.

Our supplier's product killed rats

We were just about to introduce the FC product when we got some bad news from our supplier. In laboratory tests the product was killing rats at low doses. It came as an unpleasant shock, for we had been assured that the product was inert and harmless. We were also working outside our experience, because up until then we had selected out raw materials for low toxicity, and they didn't need to be tested on rats! We shelved the project temporarily.

Our Water-Based FC did not have a good shelf life

Subsequently we found that our new product has another technical disadvantage; it was degrading in the bottle. At that time competitors' water-based Fluorocarbon products were beginning to come on the market. We decided to test them for shelf-life and found a similar problem. Brand new product worked well with heat, but if it had been stored in the bottle than more than so long, it lost its effect. Our competitors' products were a simple dilution on industrial textile Fluorocarbon, which even undiluted only had a shelf-life of six months, so the problem was understandable. We keep samples of every batch of Nikwax products for 4 years so that we can offer a 4 year shelf-life; here was another hurdle for to overcome in order to approve this kind product. We decided that our competitors were probably building up serious problems for themselves in the future, so there was no great pressure for us to rush the fluorocarbon project.

Bomb-shell with 3M withdrawing their Fluorocarbon product from the market

Then in 2000 a big environmental story broke. 3M were withdrawing all of their Fluorocarbon Scotchguard products because a component had been found to be persistent in human tissue. We had not given up on the FC project, and had continued to work with our potential supplier, but here was another big shock. Could we ever safely use Fluorocarbon?

What does persistent mean and why is it a problem?

The concept and significance of persistence was not entirely clear to me at the time. So I went to our major environmental campaigners, thinking that I would get a better explanation than from my chemical suppliers! The issue is quite simple, a persistent chemical is a chemical that the body is unable to excrete effectively. Therefore if you swallow it, it stays with you for a very long time. That might not be a problem, if it is not toxic, but should you ever find that it were toxic in the long term, it would be too late to do anything about it. 3m's message was that although there was no evidence of toxicity, it was prudent for them to withdraw the products. The 3M product could be found in the blood of the vast majority of humans around

the globe, so if the world decided one day to do a class action against 3M, the company would not have much chance of survival.

What was our potential chemical supplier's story? A different kind of Fluorocarbon

The fact that 3M withdrew their product did not lead to the immediate withdrawal of other suppliers' products. Why not? We were told that non-3M products were 'a different kind of fluorocarbon' and therefore did not have the same problem as 3M's products. My chemical head was very suspicious. And how were we to be sure of that? The answer was that the US EPA was running a project with the major manufacturers of FC's to see if there were real grounds for concern. I decided to keep in touch with the supplier and keep our project open, but not to put any significant resource into it until the EPA had made their pronouncement. The suppliers' position was that until it was proven that there was a problem, they would continue to supply. My position was that, until it is proven that there is not a problem, I would not buy! I waited, and waited. For 4 years.

Dupont runs into trouble in 2004 and settles for hundred of millions of dollars

Dupont is the world's largest supplier of 'the other kind of Fluorocarbon'. All other Fluorocarbon water-repellent suppliers currently use essentially the same technology as Dupont. In 2004 Dupont were facing a class action against them for polluting ground water in West Virginia with perfluorooctanoic acid. Apparently there had been a problem with emissions from their plant.

Dupont were just at the point of being obliged by the EPA to release all of their secret research into the effects of Fluorocarbons on humans into the public domain, when they decided to settle out of court, for an astonishing amount of money. They agreed to pay out, potentially, \$342 million. To read about it, go to this link:

<http://www.ewg.org/issues/PFCs/20040617/index.php> .

Not only are Fluorocarbons persistent, they do have potential health risks!

Having been patiently waiting for the EPA to pronounce, on hearing this news, I decided to look more into the FC issue. I found that there had been extensive testing on rats with 'the other kind of Fluorocarbon' and that rats were affected at frighteningly low levels. To read about it go to this link: <http://www.ewg.org/reports/pfcworld/part4.php> .

In the studies quoted, the reproductive capacity of rats was affected by levels in their blood as low as 50 parts per billion. What does that mean? Well, if you scale it up to a human being, a 110 pound (50kg) individual would only have to have **one milligram** in their body to arrive at these levels – one millionth of a gram, 0.04 of a millionth of an ounce. Now, bear it in mind that this chemical is persistent in your blood, and you can see that there is a massive potential problem.

So what should Nikwax do?

For me the answer is clear. Stay away from this technology. We do not need it. I reject the view that there is no risk until it is categorically proven that there is a risk. In this case, by the time that you prove the risk, it is too late; you have already done damage that you cannot undo. We can provide an excellent product and service whilst minimising risks to our consumers. In a recent communication to one of our US competitors about this issue, they came back to me with the statement that they agreed to disagree with Nikwax, and that probably we would also disagree over the death penalty, and Global Warming too! (Good ol' boys drink fluorocarbon for breakfast!) As a manufacturer I believe that I have a responsibility over and above that as an individual and therefore we will not run fluorocarbons.

Has the Nikwax Fluorocarbon research stopped?

Not entirely, but as new evidence comes out we are seriously questioning whether we should have these materials in our lab at all, however safe our working practice is. And we have currently put a ban on the testing of our competitors' products until we have new and much more rigorous protection for our staff. Of course, consumers do not generally have massive extraction and spray booths Our commitment is to the well-being of our consumers.