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Product Knowledge Network

*Everything you need to know  
about nonstick-coated  
houseware products — FREE.*

## PFOA

### Introduction

There have been a lot of confusing reports in the media regarding "PFOA", an ingredient used in the manufacture of various fluoropolymers, which are ultimately used in many products, including nonstick coatings. The result: confusion, concern, and distortion of the facts. What follows attempts to set the record straight for those who may be called on to respond to questions.

*Top points to remember:*

- PTFE is a fluoropolymer, which is the ingredient in nonstick coatings that makes them "nonstick".
- PFOA is an ingredient used in the manufacture of fluoropolymers, such as PTFE. PFOA is not the same as PTFE.
- The small amounts of PFOA used in the manufacturing process are destroyed in the curing process of the nonstick coating.
- All studies of nonstick coatings for housewares conducted under normal cooking conditions to date have had the same results: there is no detectable PFOA.
- Both fluoropolymers and nonstick coatings are here to stay, and provide numerous benefits to hundreds of industries.
- Nonstick coatings on housewares allow for more healthful cooking and easier cleanup.
- It has been, is, and will always be safe to use nonstick cookware, bakeware and small appliances as intended.

### What is PFOA?

PFOA is an important chemical, crucial to the manufacture of materials used to make products that span the entire U.S. economy, and, in this case, fluoropolymers.

All nonstick-coating manufacturers use water-based fluoropolymer (nonstick) dispersions that contain some level of PFOA — without exception today. PFOA, also known as APFO and C-8, stands for "perfluorooctanoic



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acid". It is a surfactant and is an essential polymerization aid used in very small quantities to help make fluoropolymer dispersions.

For the fluoropolymer (which in most cases is PTFE) to be added as an ingredient in a nonstick coating formulation, small PTFE particles are "dispersed" in water. And to prevent them from massing together, an agent is used (the surfactant), which traditionally has been PFOA. Today, there is a very small amount of PFOA used in fewer and fewer of these dispersions.

## **Why all the noise about PFOA?**

PFOA has been found to be persistent in the environment and has been detected at low levels in blood-bank samples in several locations in the United States. It has also been found in the blood of wildlife, including polar bears in the Arctic.

In 2005, the Environmental Protection Agency (EPA) estimated PFOA levels in the general population to be approximately 5 parts per billion, the equivalent in time of 5 seconds in a span of 32 years. Several carefully controlled studies have been conducted to date, without any findings of any adverse health effects to humans.

In 2005, DuPont and Environ International investigated PFOA, publishing a risk assessment using a margin of exposure (MOE) approach, also referred to as a margin of safety. Under this methodology, higher MOE values represent lower levels of risk. The values in this report, ranging from 30,000 to greater than 9 billion (nonstick cookware), represent substantial protection of the general population.

In addition, no study has ever shown that the trace levels of PFOA, in the blood of Americans (and most people on the planet), has ever resulted in any illness. Extensive studies of workers exposed to much higher levels of PFOA in chemical plants have never found any association between the chemical and illness of any kind.

## **What about PFOA and nonstick cookware?**

What little PFOA may have been in the dispersions used to make a coating is decomposed and incinerated by the curing (baking) process through which all nonstick-coated products pass — to the point at which it is virtually undetectable in the toughest migration tests. PFOA is destroyed in one second at 500° F (260° C), and high-quality nonstick coatings are all cured at very high temperatures, usually around 800°F/425°C for 10 minutes. So the conditions are such that the PFOA is destroyed in the curing process.

In every study of nonstick-coated cookware by every regulatory agency worldwide, conducted under normal cooking conditions, the results have been the same: There is no detectable PFOA.

It has been, is, and will always be safe to use nonstick cookware, bakeware and small appliances as intended.

## What studies have been conducted?

The EPA has been the principal agency leading the charge to study things like PFOA, although some environmental activists have been making noise. In fact, the Environmental Working Group, one of the harshest critics of DuPont and Teflon®, recently released a statement in which its president, Ken Cooke, said: "We've been very harsh in singling out DuPont for criticism for its handling of PFOA, but today we also want to single out the company and commend them because they're exhibiting some real leadership here as we go forward."

The safety of nonstick coatings has been reaffirmed by many responsible sources, including the US Food & Drug Administration (FDA), the EPA, the European Food Safety Authority (EFSA), the People's Republic of China and the government-approved Danish Technological Institute. Following are some of their statements.

## What do the experts say?

- EPA Administrator Stephen L. Johnson: "...to date EPA is not aware of any studies specifically relating current levels of PFOA exposure to human health effects".
- Paul Honigfort, Ph.D., Consumer Safety Officer, Center for Food Safety and Applied Nutrition, U.S. FDA: "At this time, we have no reason to change our position that the use of perfluorocarbon resin and telomer-based coatings are safe for use in contact with food as described in the applicable regulations or notifications".
- Dr. Robert Rickard, DuPont director, Health and Environmental Sciences: "Since there is no significant potential for exposure to PFOA from using these products and no known human health effects, there is no risk to consumers".
- The American Heart Association on the healthful aspects of nonsticks: "A pan made with nonstick metal or coated with a nonstick surface is a terrific investment, because it lets you use little or no oil without having food stick".

## Will PFOA always be in the environment?

The EPA recently asked the eight companies that use PFOA to manufacture fluoropolymers in the United States to join in a program to reduce the emissions of PFOA into the environment. The EPA's stated objective was a reduction of 95% by 2010 (as compared to the base year of 2000), and to achieve the virtual elimination of it by 2015.

DuPont and others have been working diligently at this for some time, and had already achieved a 94% reduction by 2005. DuPont continues working to reduce the use of PFOA even more. Others are doing the same.

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Through improved manufacturing processes and controls, fluoropolymer manufacturers are substantially reducing emissions of PFOA. At the same time, processes have been developed that reduce the amount of PFOA that the fluoropolymer manufacturers ship.

Today, many of the most popular nonstick coatings are made with no PFOA whatsoever.

Given the two-pronged attack on the problem, the EPA's goal of virtually eliminating the release of PFOA into the environment should be achieved long before the 2015 deadline.

## **Any signs of change?**

Yes. Although the sources of the PFOA in the environment are not clearly understood, it is increasingly apparent that other fluorinated chemicals may play a significant role. The objective of the EPA's work is to identify all sources, then reduce or eliminate them. In 2000, because of PFOS (a related chemical), 3M stopped making ScotchGard®. A professor at the University of Toronto has been measuring the levels of these chemicals found in arctic wildlife for years, and he recently reported that the levels found in arctic seals have been dropping ever since.

## **Is there any chance fluoropolymers or nonstick coatings will be banned?**

Absolutely not! Fluoropolymers and nonstick coatings are here to stay. Remember, PFOA is not the same as PTFE. It is not used to make nonstick-coated housewares products, it is just a component in the manufacturing process of fluoropolymers, such as PTFE. In addition, both fluoropolymers and nonstick coatings, for many years, have made significant contributions to human well-being in hundreds of industries, including cookware, bakeware and small appliances, and life would be far less easy, less comfortable, and less worry-free without them.

What is changing are the methods used to manufacture such products, which, as mentioned above, has already reduced the emissions of PFOA significantly, and will virtually eliminate emissions in the near future.

## **What can we expect in the future?**

Overall, you can expect the virtual elimination of emissions of PFOA, with little or no harm done to the industries that manufacture and use fluoropolymers, and no inconvenience to the millions and millions of consumers around the world who depend on and benefit greatly from products that contain fluoropolymers.

## **What's the bottom line?**

Nonstick coatings were introduced into the housewares market about 50 years ago. Since then, billions of

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pieces of cookware, bakeware and small electrics with nonstick coatings have been used around the world – virtually problem-free.

All available information tells us that nonstick-coated housewares are indeed among the safest and most useful items ever introduced into commerce. So you can be confident when talking to your customers or addressing any concerns on this issue.

## Summary

*Key points to remind your customers:*

- PTFE is a fluoropolymer, which is the ingredient in nonstick coatings that makes them "nonstick".
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*This information has been created by the Retail Marketing Team at Whitford. The Product Knowledge Network (PKN) offers you everything you need to know about nonstick-coated housewares products – all for FREE.*

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