

# The Dangers of Teflon/PTFE for Birds

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*“My mother was cooking stir-fry on the stove for less than five minutes when we noticed our two parakeets were gasping for breath on the bottom of the cage. Although we rushed them to the vet, they were both dead before we could get there. An autopsy confirmed they died of Teflon poisoning. Every bird owner should know about this!”*

This scenario represents a very common but completely preventable cause of death in pet birds. It's hard to believe that the development of non-stick surfaces that allow us to more easily clean our pans after cooking can also prove deadly to our beloved feathered companions. The respiratory system of birds is extremely efficient and is why they are very sensitive to airborne pollutants. This means that aerosolized chemicals will affect birds more rapidly and severely than mammals. *Teflon*<sup>®</sup> (DuPont™) is one of several brands of a synthetic polymer with anti-stick properties, known as Polytetrafluoroethylene (PTFE). Used in cookware, domestic boilers, self-cleaning ovens, irons, cookie sheets, ironing board covers, solid fuel burners and heat lamps, the polymer releases an odorless, toxic gas when heated to high temperatures.

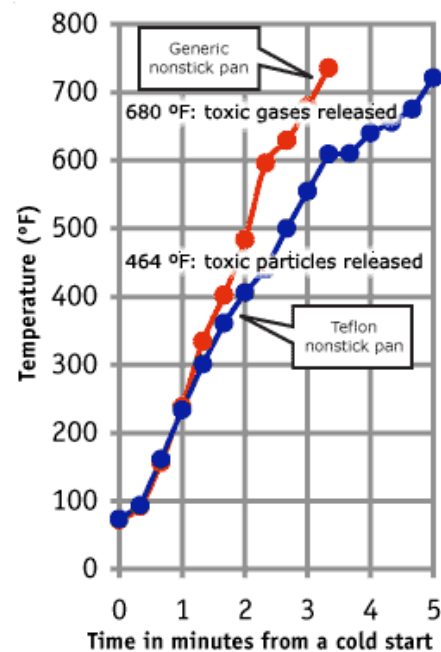
## How it Happens

Household cookware is the most common source of PTFE exposure for pet birds and problems arise when pans boil dry or unfilled saucepans are heated. This is especially a concern when the non-stick coating is damaged or aged. Frying temperatures normally range between 212-392°F; cooking oils and butter will flame and foods will smoke and burn around 500°F. Above 530°F, the coating undergoes chemical decomposition and PTFE is released. Budgerigars are the most sensitive of the bird species studied and birds have died from exposure to toxins with temperatures as low as 396°F.<sup>1,2</sup>

## Why a Few Minutes is all it Takes

For over fifty years, DuPont™ had claimed that their Teflon<sup>®</sup> coatings did not emit hazardous chemicals through normal use. The company claimed that significant decomposition of the coating will occur only when temperatures exceed about 660° F.\*\* However, recent testing of a generic, non-stick frying pan preheated on a conventional, electric stovetop burner reached 736°F in only three minutes and 20 seconds, with temperatures still rising when the tests were terminated. A Teflon<sup>®</sup> pan reached 721°F in just five minutes under the same test conditions. These temperatures alone are well above the normal cooking range. These new tests show that cookware exceeds these temperatures and turns toxic through the common act of preheating a pan, on a burner set on high (Figure 1).<sup>3</sup>

**Figure 1: Teflon pans on stovetop burners easily reach temperatures that produce toxic particles and gases**



Source: University Food Safety scientist and Environmental Working Group. Tests conducted on May 12 and 13, 2003.

\*\*DuPont™ studies show that the Teflon<sup>®</sup> releases toxic particulates at 446°F. At 680°F, Teflon<sup>®</sup> pans release at least six additional toxic gases, including two carcinogens, two global pollutants, and MFA, a chemical lethal to humans at low doses. At temperatures that DuPont™ scientists claim are reached on stovetop drip pans (1000°F), non-stick coatings break down to a chemical warfare agent known as PFIB, and a chemical analog of the second world war nerve gas, phosgene.<sup>3</sup>

Fortunately, as a result of the new data showing that non-stick surfaces reach toxic temperatures in a matter of minutes, the Environmental Working Group (EWG) has petitioned the Consumer Product Safety Commission (CPSC) to require that all cookware and heated appliances bearing non-stick coatings must carry a label warning of the acute hazard the coating poses to pet birds.<sup>4</sup>

### **Clinical Signs**

Extreme levels of toxin cause acute death of all birds exposed, while low levels can cause intermittent deaths over a period of time (weeks to months). Signs can start with eye-blinking, followed by panting, vomiting, gasping, anxiety and cage-wire biting (range of responses to respiratory difficulties) then progress to incoordination (rocking and bobbing movements) and inability to stand and possibly end in terminal convulsions in cases of extreme exposures. In humans, exposure to fumes can lead to a transient, febrile, flu-like syndrome called polymer-fume fever.

### **Diagnosis**

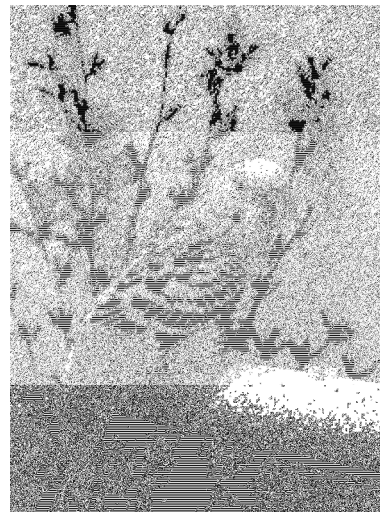
There are no specific diagnostic tests for PTFE. Autopsy findings are non-specific and can be missed in mild cases. The lung is the primary target organ, with lung congestion and hemorrhage being the only consistent findings. Occasionally PTFE particles may be visualized within the lungs on microscopic exam. Damage to the heart is possible.

### **Treatment**

Unfortunately, the prognosis of PTFE toxicosis is guarded to poor. In most cases, birds experience sudden death or die within 12 hours of exposure. Recovery is infrequent but possible with immediate and aggressive medical therapy, including administration of oxygen, anti-inflammatory medication, fluids, antibiotics and nebulized medications. Birds are often hospitalized for several days. Chronic respiratory problems are possible in survivors.<sup>5</sup>

### **Recommendations**

Because of dangers of toxic gases and aerosolized cooking oils and the risk of serious burns, birds should not be allowed in the kitchen when cooking. We advise bird owners to *completely* avoid all cookware and appliances that contain non-stick coatings. If you are in doubt, read the packaging or call the manufacturer. Safe alternative cookware includes stainless steel and cast iron. If you must use products with non-stick surfaces, please make sure no birds are in the same room and that the room can be completely closed off and well-ventilated.



This article is dedicated to Charlie Lipiarz, a wonderful feathered companion.

### **References**

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