

### **Melamine scandal: are we at risk?**

Melamine warnings have been in the headlines for months, and it seems that every few weeks another food item is added to the growing list of contaminated foodstuffs.

Understandably, South Africans — particularly those with babies and young children, who are the most susceptible to this industrial chemical — are getting worried.

There are many unanswered questions surrounding the present melamine scandal. Is the South African food supply safe? Are South African baby foods contaminated? Why does it take so long for the Chinese authorities to publish warnings?

In this article, Health24's DietDoc investigates this dangerous chemical and its effects.

### **What is melamine?**

Melamine is a chemical compound that has been around for a long time and which is used extensively for many different applications.

Melamine is used for:

- making plastics that are fire-resistant and heat-tolerant
- kitchen counter-tops
- fabrics
- glues
- flame-retarders
- dishes and cooking utensils

### **How does melamine get into the food supply?**

The problem with melamine is that it's a so-called “nitrogen-rich” compound and unscrupulous animal feed and food manufacturers have cottoned on to the idea that by adding melamine to feeds and foods, they can push up the nitrogen values.

When an animal feed or a food destined for humans is evaluated, one of the criteria is the protein content, which is traditionally determined by doing an assay called a Kjeldahl test. The Kjeldahl test measures the nitrogen content of a feed or food. So, by adding melamine, which is rich in nitrogen, but has never been permitted as a food component in any country in the world, the nitrogen content of the tested food or feed will be high and the testers are led to believe that it contains high-quality protein.

Exactly the opposite is true, of course. Part of the nitrogen in the feed or food that was “spiked” with melamine isn't food nitrogen. Worst of all, this added compound can make any person or animal eating the food or feed ill.

Melamine spiking is not new. Rogue feed producers in China started adding melamine to animal feeds in 2007, which led to the withdrawal of tons of cat and dog food. This year, these villains added melamine to milk and milk powder that had been diluted with water (a process called “adulteration”) to make the protein content of the milk look normal (when it was actually much lower than it should be).

### **What does melamine do if you eat it?**

Melamine that has been added to animal feeds or human foods can cause urinary problems,

and may block the tiny tubes in the kidneys and cause kidney stones. A combination of melamine and an acid called “cyanuric acid”, which can be present in poor-quality melamine powder, renders crystals that can cause kidney stones.

In adults this problem, though serious, is usually not life-threatening, because most adults have a varied diet, and have a large body area and efficiently working kidneys. But melamine-contaminated milk has led to 54 000 Chinese infants and young children falling ill with urinary problems. So far, four deaths have been linked to the intake of melamine in infant formulas.

Infants and young children who are not exclusively breastfed are so susceptible to melamine because they're totally dependent on milk or infant formulas for nourishment. They also have a small body area and their kidneys often aren't yet as efficient as those of an adult.

Animals who are fed melamine-spiked feed also develop renal complications, as was the case last year when melamine contamination led to what has been dubbed “The largest pet food recall in US history”. The same happened in South Africa where many batches of one of the leading brands of pet food had to be recalled. Many animals eat only a specific brand of pellets, and if it's contaminated, they get it with every meal.

Feed used for farm animals has also been contaminated, as was evident this week when tests showed that eggs produced in China contained high levels of melamine. The melamine in the eggs is believed to originate from melamine added to chicken feed.

According to news reports, eggs produced by a company called Dalian Hanwei Enterprise Group, who also export to Hong Kong, Macau, Japan, Southeast Asia and the US, had to be recalled. Ironically, the Chinese authorities were already alerted to this new outbreak of melamine contamination in late September, but only reacted when the Hong Kong authorities exposed this new scam last weekend.

### **Infants at risk**

According to the US Food and Drug Administration (FDA), they're “currently unable to establish any level of melamine and melamine-related compounds in infant formula that doesn't raise public health concerns”. This means that any product intended for the use of infants should be free of any trace of melamine.

For adults, the FDA has specified a safe melamine level of 2.5 parts per million (ppm).

### **What to do**

While searching "melamine" on the website of the South African Department of Health, the only report found mentions melamine in pesticide residues. American internet sources, such as the International Food Information Council (IFIC) website, provide sensible advice to the public on how to react to this food crisis:

- Chinese members of the US population have been warned not to use infant formulas produced in China (this population group may have access to non-mainstream infant formulas).
- The public has been reassured that the FDA is conducting nationwide investigations to check that no US manufacturers are importing infant formula or milk products from China.
- The FDA has issued warnings to the American public not to buy infant formulas from China via the internet or any other sources and not to buy sweets, instant coffee, milk,

tea products or other food products recently identified as contaminated with melamine (eggs and egg products imported from China have probably just been added to this ever-growing list).

In the absence of government advice on what we in SA should do about this threat, it's probably prudent to check the labels of all foodstuffs you purchase. Avoid it if the label states that the product, or any one of its ingredients, has been made in China or Taiwan.

### **Infant formulas**

So what can South African mothers do if they fear that the infant formulas they're giving their babies are contaminated with melamine?

At the moment there's actually nothing we can do except phone the manufacturer (there should be a contact number on the label) and ask if any of the ingredients are imported from China. Hopefully, the person answering the query will be informed about the origins of the raw ingredients used in these infant formulas.

### **A call to infant-formula manufacturers**

I would also expect all South African manufacturers or importers of infant formulas and foods to issue statements in the media clarifying if their products are free of melamine and whether any of the basic ingredients in these products are imported from China. This would go a long way to allay the anxiety of parents about the safety of their children.

If you have any diet queries, post a question or message on the DietDoc Forum.

Dr I.V. van Heerden, aka DietDoc, November 2008

### *References:*

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