



**Safety
Quality
Traceability**

Organic
contaminants
in food

Ester Heath



con·tam·i·nate (kn-tm-nt)*tr.v.* **con tam i nated, con tam i nat ing, con tam i nates**

To make impure or unclean by contact or mixture.

- *n.* (-nt) One that contaminates; a contaminant.

<http://www.thefreedictionary.com/Contaminants>

History...

Accidental

Contamination of cooking oil by PCBs (Japan, 1968 and Taiwan, 1979)

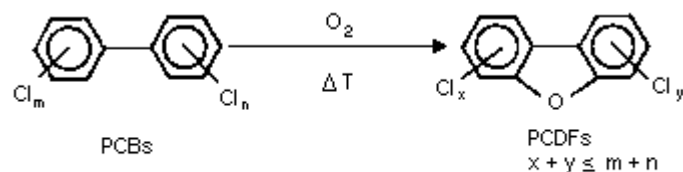
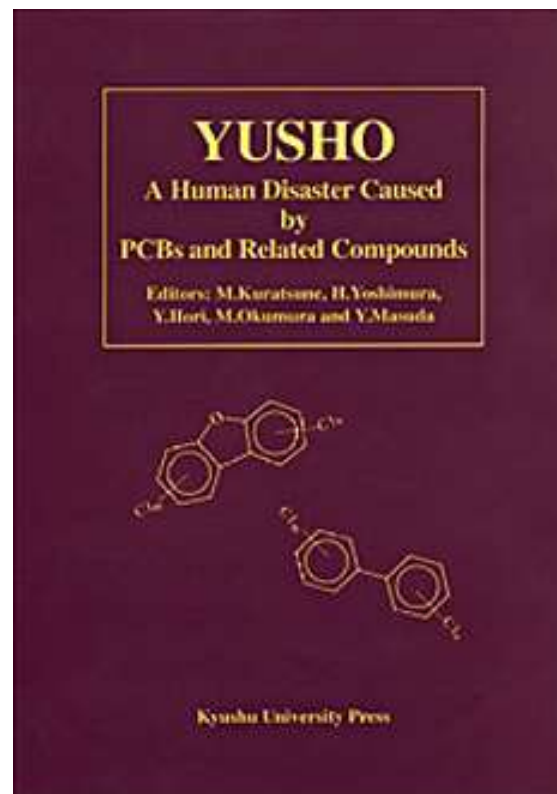


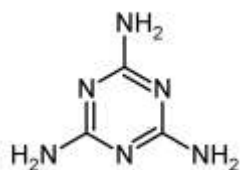
Fig. 1. Formation of PCDFs from PCBs.



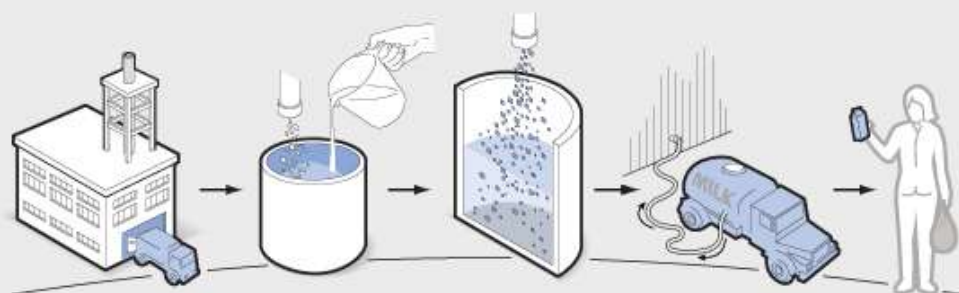
History...

Deliberate adulteration

Melamine to milk
(↑ protein content)



Corrupted milk | How melamine got into China's dairy products:



Chemical factories that produce melamine sell the scrap cheaply to small businesses.

Those operations mix Melamine, which causes kidney damage, with other substances and resell it as 'protein powder'.

'Protein powder' is purchased by dairy farmers and milk collection agents, and added to raw milk to fool quality tests, along with other unauthorized additives, including antibiotics and fat.

Adulterated milk is sold to large dairy manufacturers.

Milk is sold to consumers.

Note: Illustration is schematic
Source: WSJ reporting

History...

Deliberate adulteration

Horsemeat in beef products

Phenylbutazone

Drug

Phenylbutazone, often referred to as "bute", is a nonsteroidal anti-inflammatory drug for the short-term treatment of pain and fever in animals. [Wikipedia](#)

CAS ID: 50-33-9

Drug class: [Non-steroidal anti-inflammatory drug](#)

Other drugs in same class: [Indometacin](#), [Piroxicam](#), [Diclofenac](#), [More](#)



So hungry you could
eat a horse?

Tesco got it covered.

The advertisement features the Tesco logo at the top. Below it, the text reads 'Everyday Value horse 8 beef burgers'. A red banner in the top right corner says '8% more beef'. The central image shows a plate with a burger, fries, and a side of sauce. Below the image, there is a table of nutritional information and a small illustration of horses and burgers.

Grilled each burger contains					
Calories	Sugar	Sat.	Saturates	Salt	Weight
90	0.5g	3.8g	1.7g	0.5g	397g
5%	1%	5%	9%	8%	e

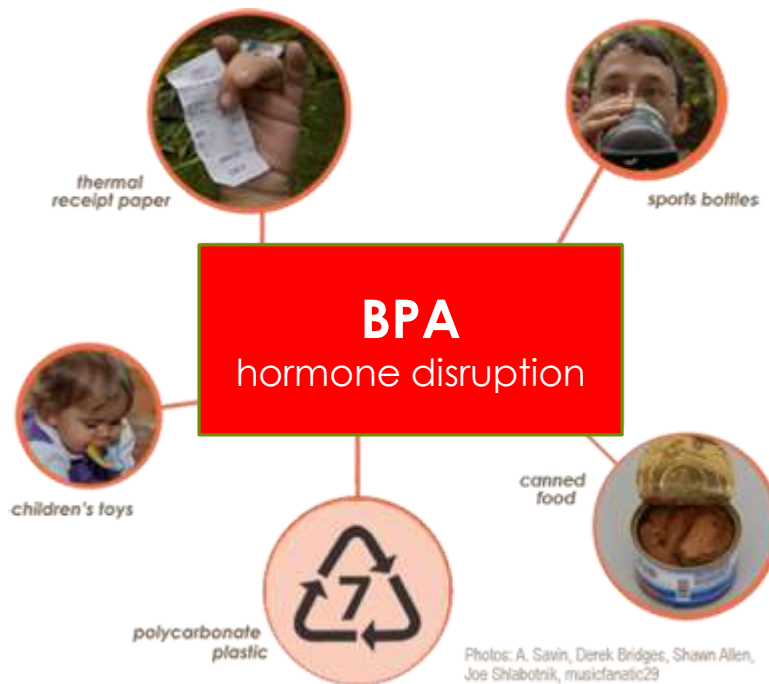
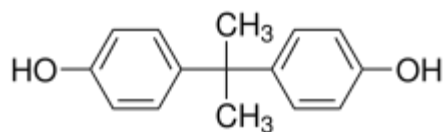
of your guideline daily amount

www.funnychipsplus.com

History...

Packaging

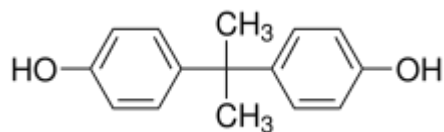
Bisphenol A
(BPA)



History...

Packaging

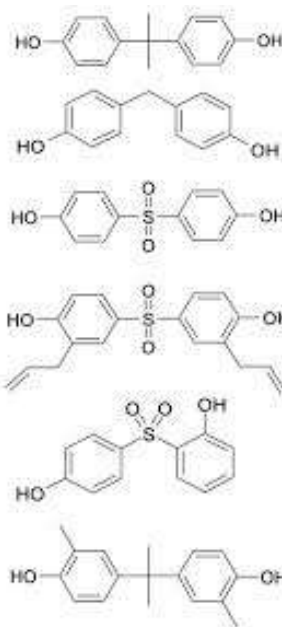
Bisphenol A
(BPA)



Now...

Packaging

BPA alternatives



Is BPS the New
 Mystery Chemical in
 BPA-free Plastic
 Food Containers
 and Cans?

**BPA-FREE
 IS A LOAD OF
 B(P)S
 LITERALLY.**

Bisphenol-A has been replaced by its nasty cousin, Bisphenol-S. Sound similar right? Well so do their associated health hazards.

www.bodyunburdened.com

ISO-FOOD

Determination of organic contaminants posing health in foodstuffs

Current research

1. Determination of BPA in WW

Application in foodstuffs: BPA (alternatives, TP) leakage from food packaging

2. Pharmaceutical residues (parent/metabolites/TP) in WW

Application in foodstuffs: determination of pharmaceutical residues in foodstuffs (phenylbutazone)

3. Determination of steroidal hormones and estrogenic compounds in WW and biological material

Application in foodstuffs

4. Improved wastewater treatment of (biological/AOP)

Application: drinking water (BPA and alternatives, TP)

Analytical instrumentation: GC-MSD, GC(IT)MS/MS, LC(QToF)MS/MS, LC-QTrap? (wide range of contaminants)

Sub ng/kg levels (complex matrix)



„Pharmaceuticals, steroids, pesticides that are yet to be regulated“

2 year post doc to be recruited in 2015

- Literature search to identify list of compounds matching above mentioned criteria and availability of analytical instrumentation
- Develop, optimize and validate analytical methods for their determination
- Reliable measurement with an aid of stable isotope labelled compounds / radiolabelled compounds
- Collaboration with ISO-FOOD partners