

DIOXINS

• What are dioxins ?

■ Dioxins are 210 chlorinated organic molecules belonging to two families (PCDD and PCDF) formed in the course of physical and chemical processes involving chlorine, car-

bon and heat. They are disseminated in the atmosphere by fumes.

■ Slow to biodegrade, they accumulate in the food chain, and more particularly in fats.

■ 17 of these molecules are toxic. Their toxicity is expressed with respect to the toxicity of 2,3,7,8-tetrachlordibenzodioxin, the so-called "Seveso dioxin", which is used as a reference to calculate the overall toxicity of a sample (TEQ : Toxic Equivalent Quantity).

Dioxin emitters in France

	In g TEQ/year	%
Household waste incinerators	400	40,94
Metallurgy	500	51,18
Industrial heating installations	23	2,35
Road traffic	1-5	
Others	49	5,06
Total	977	

Source : ADEME 1995

• Incidence on health

■ Apart from accidental releases as in Seveso, the main vector of exposure is the food chain.

■ The harmfulness of these molecules for humans is assessed on the basis of epidemiological and animal test data.

■ At very high doses reached in industrial accidents, the "Seveso dioxin" has proved carcinogenic. Severe exposure is also accompanied by skin symptoms.

■ At low doses, experimental studies in animals show various toxic effects, particularly on the reproductive functions and the immune system.

Admissible Daily Intake : ADI

This is the maximum tolerable daily intake of PCDD and PCDF in foodstuffs

- WHO : ADI between 1 and 4 pg TEQ /kg of body weight.
- CSHPF : opinion of 17 March 1998 :
 - A daily exposure to <1 pg TEQ/kg excludes a priori any risk for public health
 - A prolonged exposure to >10 pg TEQ/kg is considered to entail the risk of harmful effects
 - A prolonged daily exposure between 1 and 10 pg TEQ/kg does not appear to result in confirmed signs of toxicity in humans, but does not offer a sufficient safety margin to exclude any risk for certain segments of the population

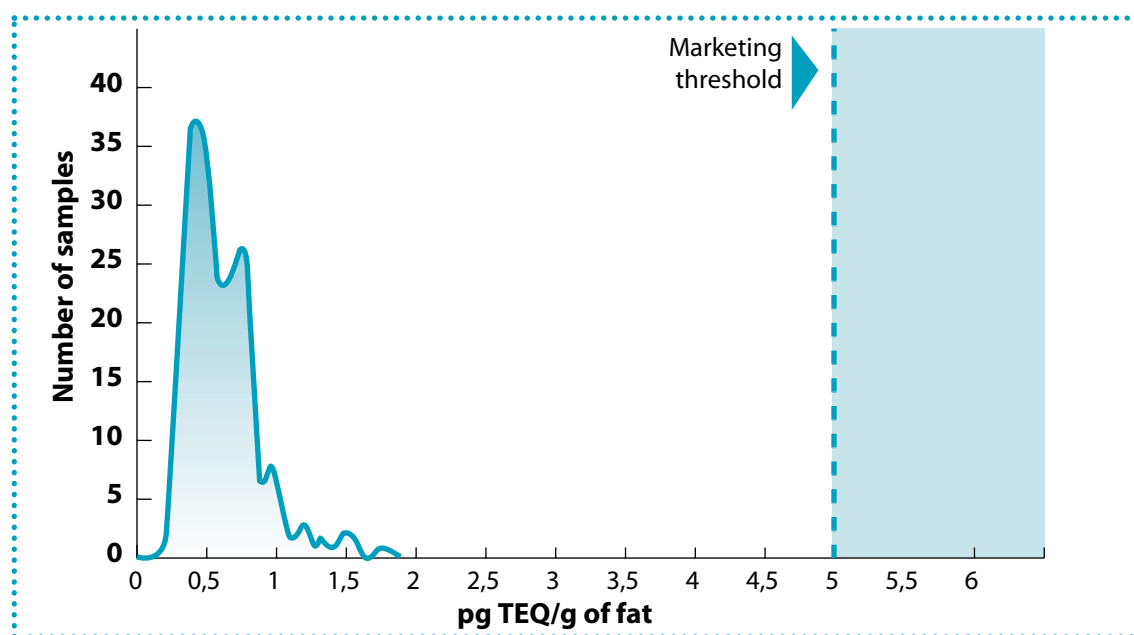
• Threshold values for milk and dairy products

- < 1pg TEQ/g of fat : target value to be reached after reducing dioxin sources in the environment
- >5pg TEQ/g of fat : withdrawal of milk and dairy products from the market

These thresholds are defined at national level by CSHPF (opinion of 17 March 1998).

Facts and figures

Study on semi-skimmed UHT milk in France :
Results on 148 samples amounting to 15 million litres



Source : study by Arilait Research April-June 1998

Comparison

liquid milk in pg TEQ/g of fat

France	Germany	United Kingdom	Canada
0,67	0,71	0,67 to 1,4	0,82
Arilait - 1998	Organohalogen compound 1995	MAFF - 1998	Organohalogen compound 1998

Abbreviations

- ADI** : Admissible Daily Intake
- ATLA** : French Dairy Processors' Association
- CNIEL** : National Interprofessional Centre of the Dairy Economy
- CSHP** : French High Council for Public Hygiene
- DGAL** : General Directorate for Food
- PCDD** : PolyChlorinated DibenzoDioxin
- PCDF** : PolyChlorinated DibenzoFuran
- PG** : picogram = 10⁻¹²g
- TEQ** : Toxic Equivalent Quantity
- WHO** : World Health Organisation

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