There are many different polycarbonate and epoxy products, with different use patterns and exposure situations. This is reflected in different migration patterns, which regulators consider in their safety assessment. The typical migration levels and exposure scenarios are correlated with different body weights. Comparing the results with the defined safe limits, expressed as Tolerable Daily Intake (TDI), the message remains the same: products made from materials based on BPA are safe for their intended uses.

Polycarbonate utensils

Typical migration level less than 0,001mg/kg (1ppb)

Required consumption amount to reach the TDI: 600kg/day at 60 kg bw

Polycarbonate beverage containers

Typical migration level less than 0,005mg/kg (5ppb)

Required consumption amount to reach the TDI: 120l/day at 60kg bw

Canned food/beverage

Typical migration level less than TDI 0,02mg/kg (20ppb)

Required consumption amount to reach the TDI: 30kg/day at 60kg bw

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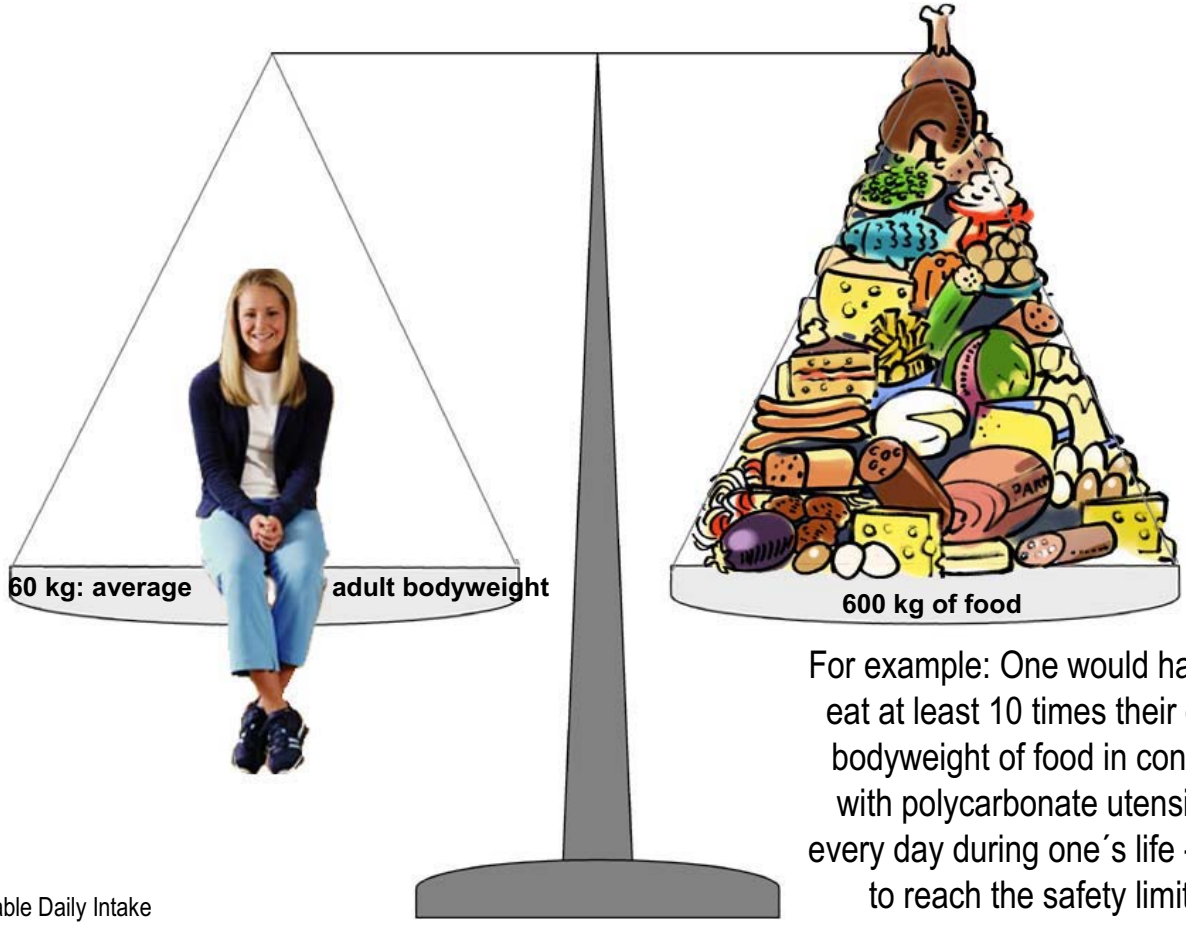
SAFE LIMIT OF EXPOSURE TO BPA INCLUDES LARGE SAFETY MARGIN

Migration of BPA from **polycarbonate utensils** is extremely low, typically less than 1 ppb* (0,001 mg/kg).

Throughout a whole life-time it is impossible to consume sufficient amounts of food or beverage in contact with polycarbonate utensils to even reach the limit of BPA established as safe by European and international authorities.

This safe limit (TDI**) has been defined at 0,01 mg/kg bodyweight/day over a lifetime.



For example: One would have to eat at least 10 times their own bodyweight of food in contact with polycarbonate utensils - every day during one´s life - only to reach the safety limit. **Clearly impossible**.

**Tolerable Daily Intake

*based on PIRA study on migration of Bisphenol A from Polycarbonate Plastics Food Contact Materials and Articles, June 2003

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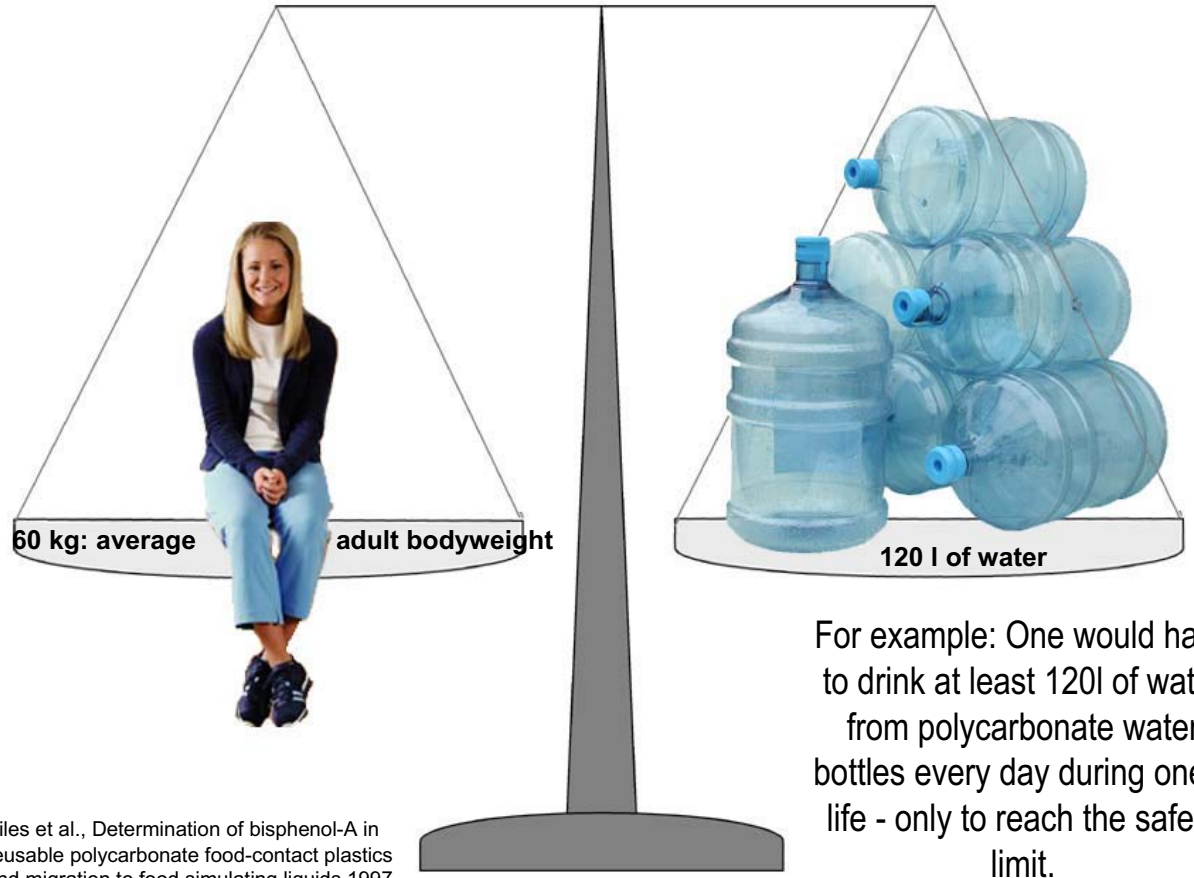
SAFE LIMIT OF EXPOSURE TO BPA INCLUDES LARGE SAFETY MARGIN

Migration of BPA from **polycarbonate beverage containers** is extremely low, typically less than 5 ppb* (0,005 mg/kg).

Throughout a whole life-time it is impossible to consume sufficient amounts of PC-stored beverage to even reach the limit of BPA established as safe by European and international authorities.

This safe limit (TDI**) has been defined at 0,01 mg/kg bodyweight/day over a lifetime.



For example: One would have to drink at least 120l of water from polycarbonate water bottles every day during one´s life - only to reach the safety limit.
Clearly impossible.

* Biles et al., Determination of bisphenol-A in reusable polycarbonate food-contact plastics and migration to food simulating liquids,1997, J. Agris. Food Chem. 45, 3541-3544
** Tolerable Daily Intake

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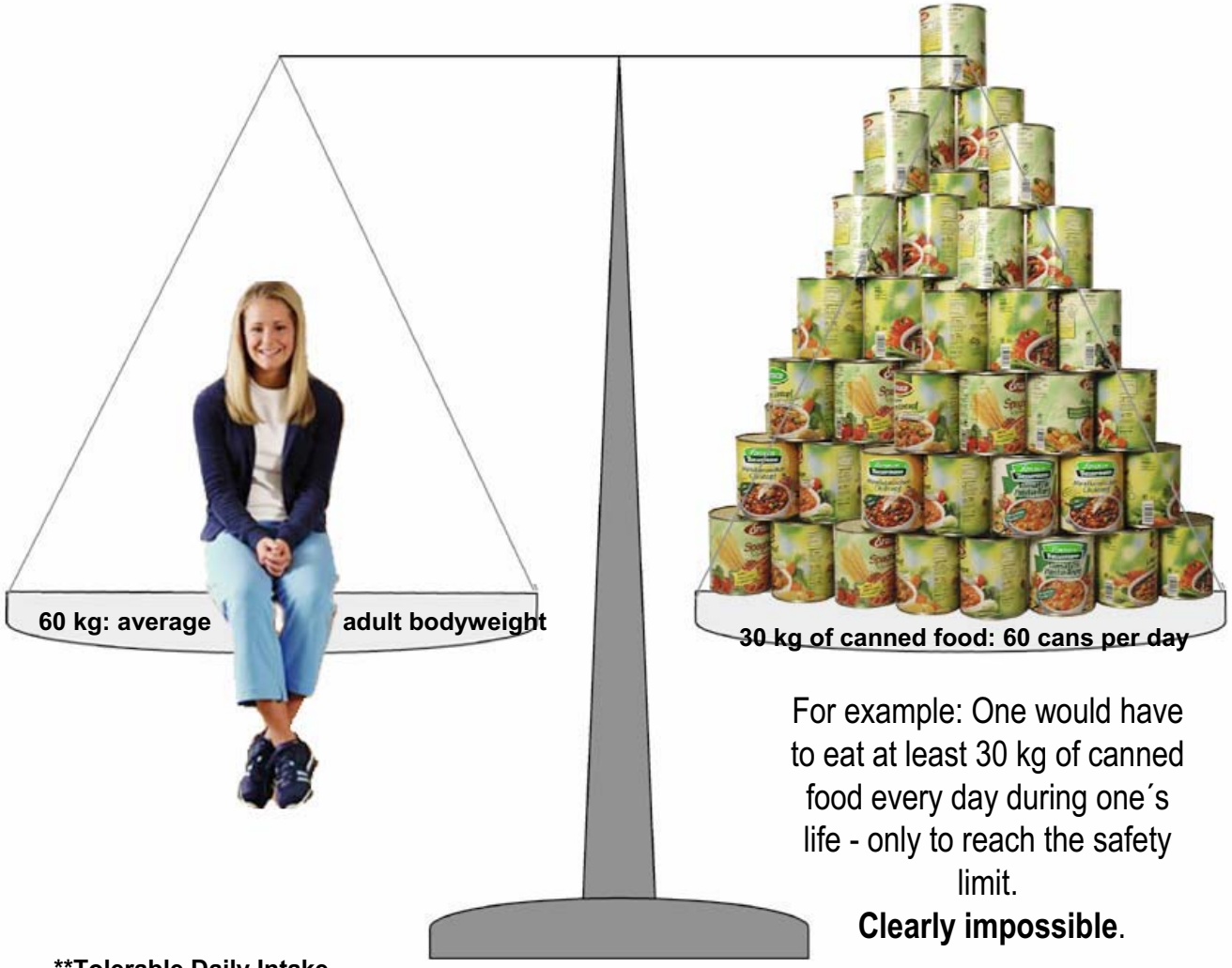
SAFE LIMIT OF EXPOSURE TO BPA INCLUDES LARGE SAFETY MARGIN

Migration of BPA from **canned food/beverage** is extremely low, typically less than 20 ppb* (0,02 mg/kg).

Throughout a whole lifetime it is impossible to consume sufficient amounts of canned food or beverage to even reach the limit of BPA established as safe by European and international authorities.

This safe limit (TDI**) has been defined at 0,01 mg/kg bodyweight/day over a lifetime.



For example: One would have to eat at least 30 kg of canned food every day during one´s life - only to reach the safety limit.
Clearly impossible.

**Tolerable Daily Intake

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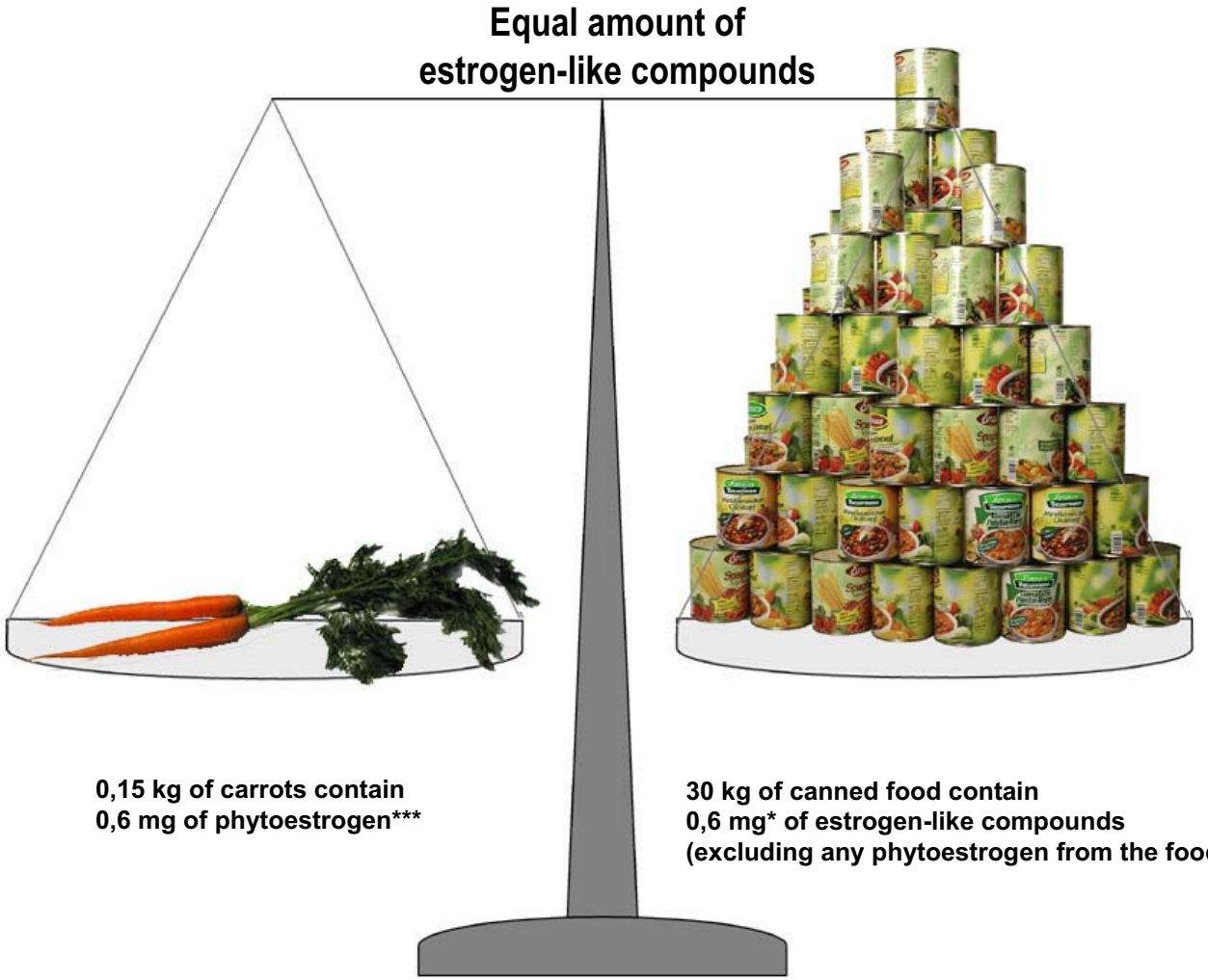
CONSUMING „EXTERNAL“ ESTROGENS IS PART OF THE NORMAL DIET

150 g of carrots contain at least the same amount of estrogen-like compounds as 30 kg of canned food*.

Throughout a lifetime it is normal to consume phyto-estrogens with the regular diet at amounts that largely exceed the amount of estrogen-like compounds one could ever realistically consume via canned food or beverage. Migration of BPA from food or beverage packaging materials is extremely low, typically less than 20 ppb** (0,02 mg/kg).



* calculation based on typically measured BPA migration

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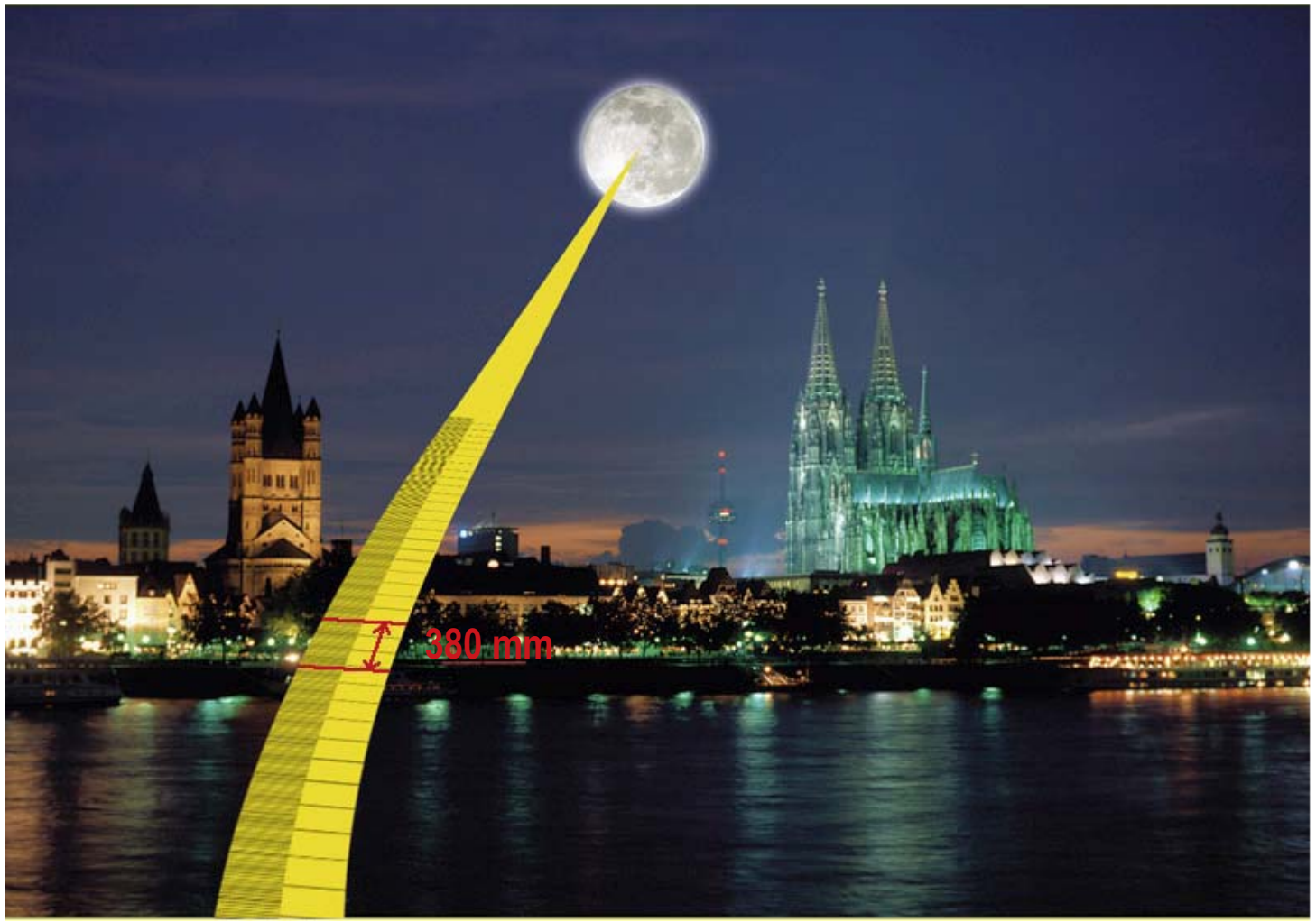
PUTTING PPB INTO PERSPECTIVE: EXPOSURE TO BPA IS CLOSE TO ZERO

Sophisticated scientific analytical methods are able to detect BPA at extremely low levels - down to low ppb (parts per billion):

- one part in a billion parts, i.e. 0.000 000 001

That is equivalent to

- 380 mm on the way to the moon, or
- one drop of water in an Olympic-size swimming pool, or
- 1 second in 32 years



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CONSUMING „EXTERNAL“ ESTROGENS IS PART OF THE NORMAL DIET

It is impossible for consumers to be exposed to the BPA limit established as safe by European and international authorities.

In studies with laboratory animals which were exposed to extremely high levels of BPA (impossible to achieve outside a laboratory), very weak estrogen-like effects were seen. The potency of these effects is similar to the effects of naturally occurring estrogen-like substances in some vegetables and food stuffs like soy beans, carrots, garlic or coffee.

BPA ingestion from trace migration of packaging into food or beverages:
0,002 mg* in a meal of 200 g

10 ppb

1 ppb = 0,001 mg/kg

ingestion of estrogen-like compounds from natural ingredients:
0,8 mg** in a meal of 200 g

4000 ppb

this value does not constitute a health risk for children as shown in the assessment of the SCF*

*reference via web-sourcing:
SCF/CS/PM/3936 Final

Carrots contain 400 times more estrogen-like compounds

**IFST, October 2001, www.ifst.org/hottop34.htm, based on figure 1, Cassidy 1999

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CONSUMING „EXTERNAL“ ESTROGENS IS PART OF THE NORMAL DIET

It is impossible for consumers to be exposed to the BPA limit established as safe by European and international authorities.

BPA ingestion from trace migration of utensils into food or beverages:
0,0002 mg* in a meal of 200 g

1 ppb

1 ppb = 0,001 mg/kg

ingestion of estrogen-like compounds from natural ingredients:
0,8 mg*** in a meal of 200 g

4000 ppb

this value does not constitute a health risk as shown in the assessment of the SCF**

Carrots contain 400 times more estrogen-like compounds

*based on PIRA study on migration of Bisphenol A from Polycarbonate Plastics Food Contact Materials and Articles, June 2003

**reference via web-sourcing: SCF/CS/PM/3936 Final

***IFST, October 2001, www.ifst.org/hottop34.htm, based on figure 1, Cassidy 1999

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CONSUMING „EXTERNAL“ ESTROGENS IS PART OF THE NORMAL DIET

It is impossible for consumers to be exposed to the BPA limit established as safe by European and international authorities.

BPA ingestion from trace migration of can coating into the food or beverage:
0,004 mg* in a meal of 200 g

20 ppb

1 ppb = 0,001 mg/kg

ingestion of estrogen-like compounds from natural ingredients:
0,8 mg*** in a meal of 200 g

4000 ppb

this value does not constitute a health risk as shown in the assessment of the SCF**

*based on PIRA study on migration of Bisphenol A from Can Coatings; Goodson, Summerfield, Cooper; Food Additives and Contaminants, 2002, Vol. No. 8, 794-802

**reference via web-sourcing: SCF/CS/PM/3936 Final

***IFST, October 2001, www.ifst.org/hottop34.htm, based on figure 1, Cassidy 1999

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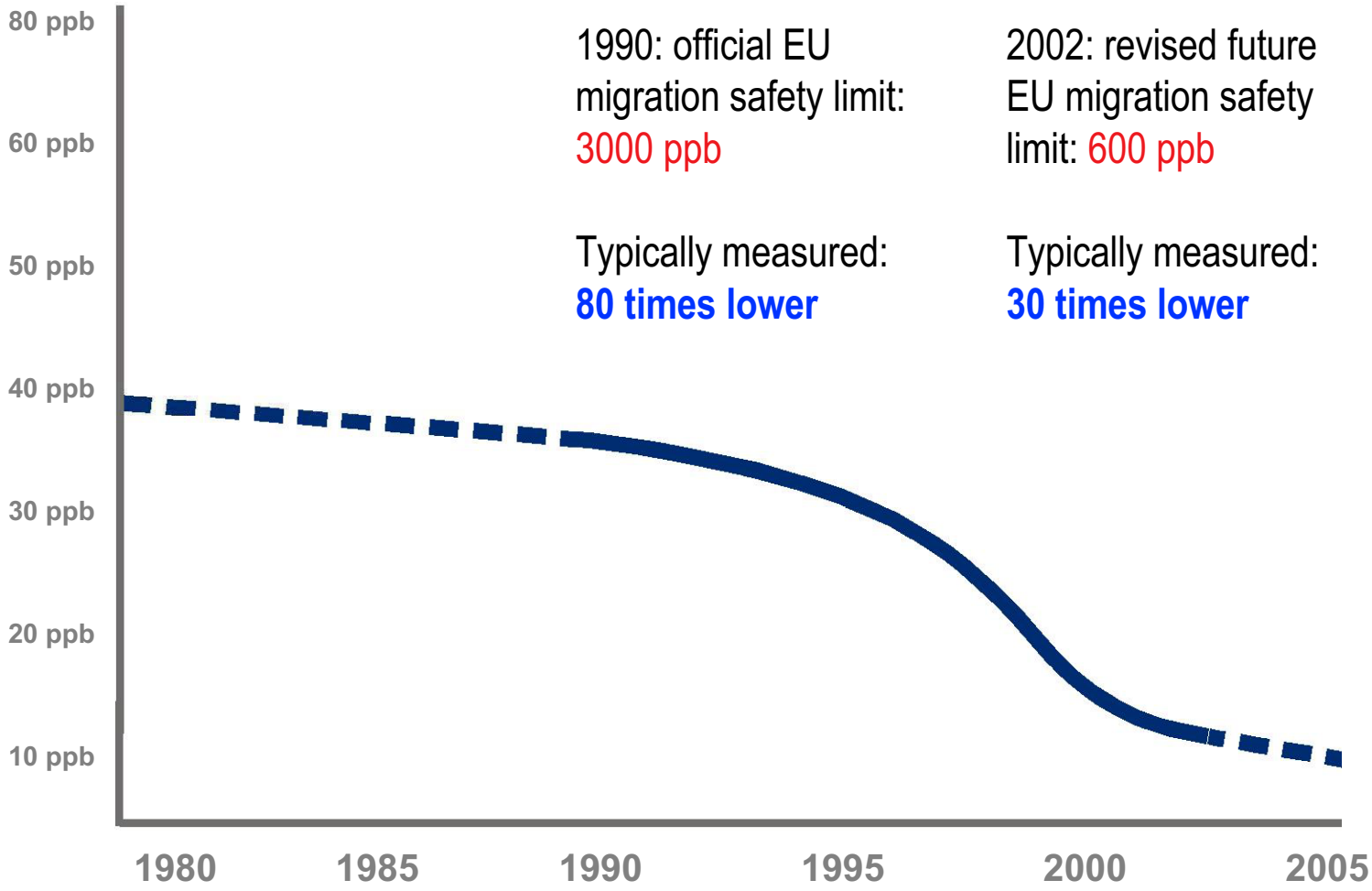
BPA MIGRATION RATES FROM CANS HAVE BEEN MINIMIZED

Over the past 10-15 years, industry has continuously worked to reduce migration, incl. BPA: With advanced technology and innovative processing, BPA migration rates have been reduced by more than 90%. However, they always fully complied with the regulatory limits. Today, the measured levels are far below the safety limits, typically less than 20 ppb.



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