

An Exposure Assessment for Furan from the Consumption of Adult and Baby Foods

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Exposure Model

- ✍ The total exposure to furan is the sum of the exposures from each food over all foods containing furan.
- ✍ Exposure from each food is the product of the intake of that food and the concentration of furan in that food.
- ✍ Adult foods, baby foods and infant formula considered separately



Sources of Data

- ✍ Food Intakes are derived from the 1994-6,8 USDA Continuing Survey of Food Intakes by Individuals (CSFII)
 - ✍ 2-Day survey of >5000 individuals/year
- ✍ Furan concentrations from FDA Laboratory as published (28 April 2004) on CFSAN website



Foods Containing Furan

✍ Infant Foods

- ✍ Juices
- ✍ Fruit purees
- ✍ Vegetables
- ✍ Mixed Chicken Meals

✍ Infant Formula



Foods Containing Furan (con't)

✍ Adult Foods

- ✍ Brewed Coffee
- ✍ Instant Coffee
- ✍ Broths
- ✍ Soups containing meat
- ✍ Spaghetti Sauces
- ✍ Chili
- ✍ Pasta
- ✍ Ravioli
- ✍ Juices
- ✍ Pork and beans
- ✍ Canned string beans
- ✍ Canned tuna
- ✍ Canned corn



Furan Levels

- ✍ Little variability within tested food types
- ✍ Ranges from <LOD to 125 μ g /kg
- ✍ Infant foods
 - ✍ Sweet potatoes and garden vegetables highest
 - ✍ Juices uniformly low, <10 μ g /kg
 - ✍ Fruits and mixed meals, <30 μ g /kg
 - ✍ Other vegetables, 30-60 μ g /kg
 - ✍ Formula, 50% <LOD, 7 μ g /kg (mean)



Furan Levels (cont'd)

✍ Adult Foods

- ✍ Coffee, <LOD - 80 ? g /kg, greatest variability
- ✍ Juices, tuna, broths, sauces, uniformly low, <15 ? g /kg
- ✍ soup containing meat, pork and beans, 50 – 125 ? g /kg
- ✍ Chili, beef ravioli, spaghetti dishes, 30-100 ? g /kg



Assumptions

- ✍ Conservative, typical for Agency assessments
- ✍ The concentration of furan in all furan-containing foods is the mean for the specific food type (chronic exposure to varying levels).
- ✍ All foods in a food type that has been shown to contain furan do contain furan, i.e., all chili whether canned or not (consumer preference for specific form or brand).
- ✍ 2-day intake data reflect lifetime usual intake



Furan Exposure

✍ Based on April 28th concentration data

✍ Adults Foods (2+ year olds)

✍ Mean 0.3 ? g/kg-bw/day

✍ 90th percentile 0.6 ? g/kg-bw/day

✍ Infant foods (0-1 year olds)

✍ Mean 0.4 ? g/kg-bw/day

✍ 90th percentile 1.0 ? g/kg-bw/day



Exposure from Adult Food Types

Brewed coffee	0.15 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Instant coffee	0.001 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Chili	0.04 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Soups containing meat	0.01 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Pork and beans	0.004 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Canned pasta	0.004 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Canned string beans	0.004 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Spaghetti sauces	0.001 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Juices	0.001 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Canned corn	0.0003 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Canned tuna (water packed)	0.00008 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$
Broths	0.000006 $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$



Furan Exposure (con't)

✍ Infant Formula

- ✍ 100-120 Kcal/kg-bw/day needed for growth
- ✍ Formula contains 0.8 Kcal/g
- ✍ Mean furan concentration of 7 ? g /kg

✍ Exposure

- ✍ 0.9 ? g/kg-bw/day



Conclusions

- ✍ Variability of furan levels within a food type is small; additional measurements will not affect exposure greatly.
- ✍ Number of food types tested is limited; additional measurements in new food types will affect overall exposure and help define variability while reducing uncertainty.

