

Average Time per Day Children Spend Indoors (Metropolitan area, by Age, fall)

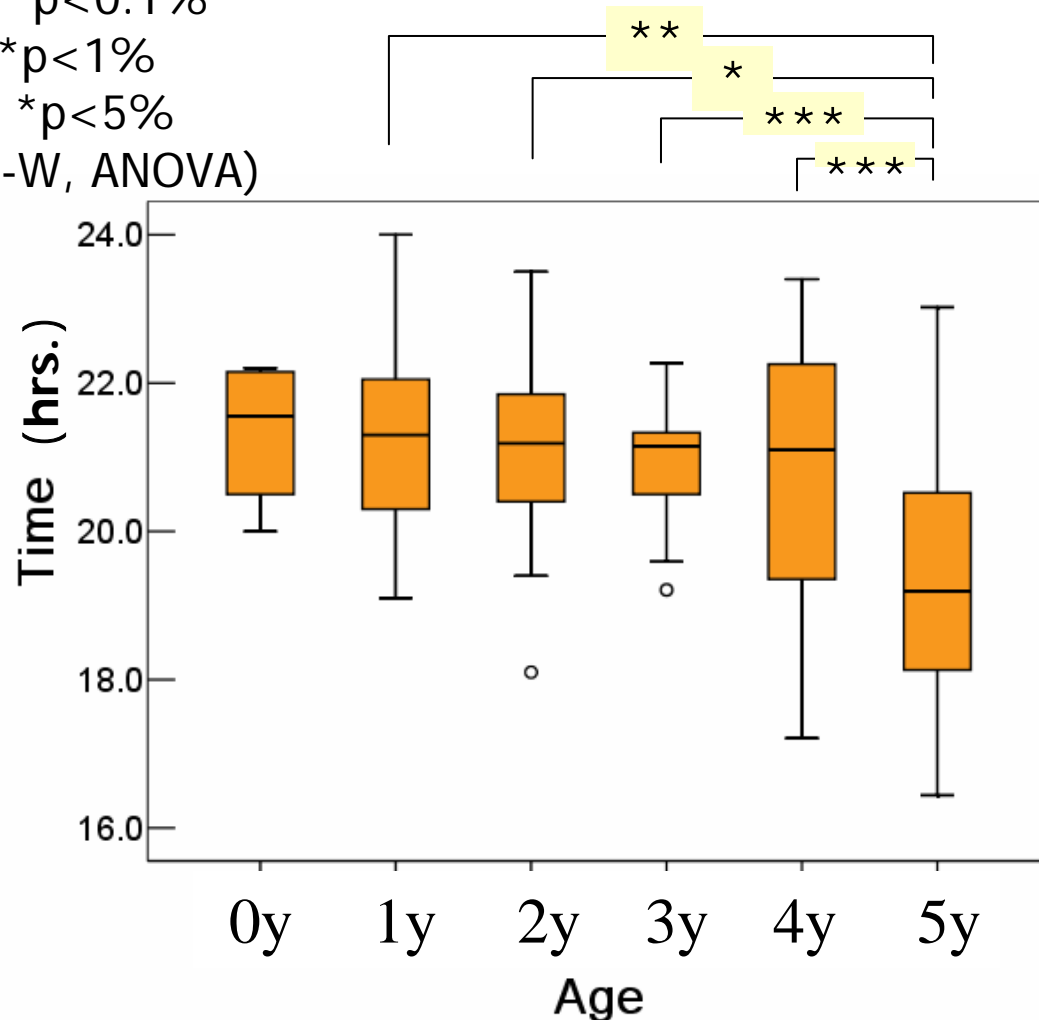
子供の平均室内滞在時間(年令別, 首都圏, 秋期)

***p<0.1%

**p<1%

*p<5%

(K-W, ANOVA)



- Time spent indoors for 5yrs-old children was fewer than those of other age groups

5歳児の室内滞在時間は1, 2, 3, 4歳児に比べて有意に短い

Increase time spent at any other area in this age

室内以外における活動時間の増加

Studies on Dietary intake for Japanese Children by Foods Categories

子どもの食物摂取量について

- **Subjects: 126 preschool children (0-5 yrs-old)**
0~5歳児 計126名
- **Area: Metropolitan area 首都圏**
- **Sampling period: 2 days in March, 2004**
平成16年3月 2日間
- **Data collection: Food diary 食事内容の記録(自記式)による**
 - **Food menu 献立**
 - **Quantity of food/beverages and consumed**
調理した量、摂取量(目分量)
 - **Food items used for meal**
18食品群のうち、使用した食品群を選択し、回答

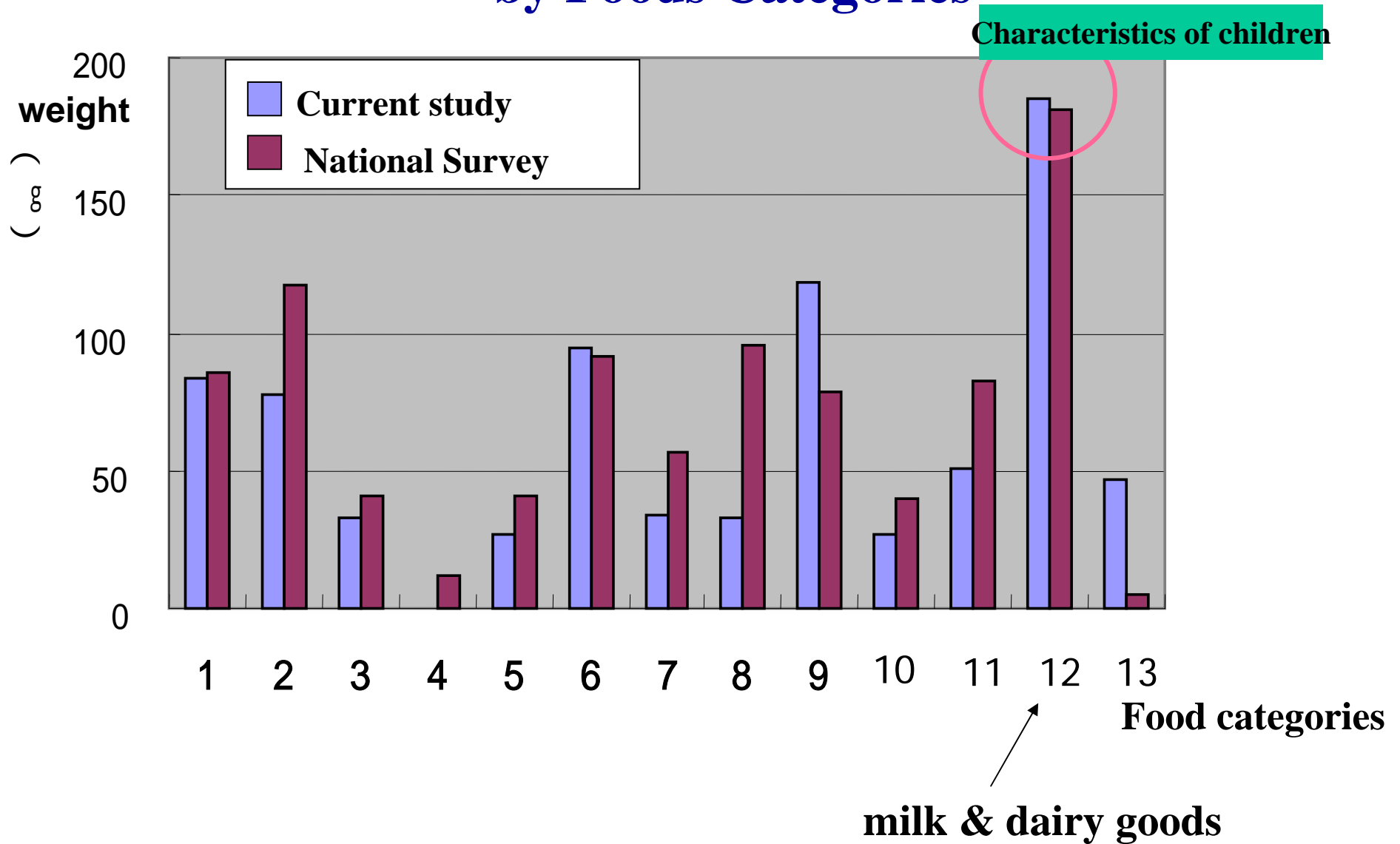


13 Food Categories

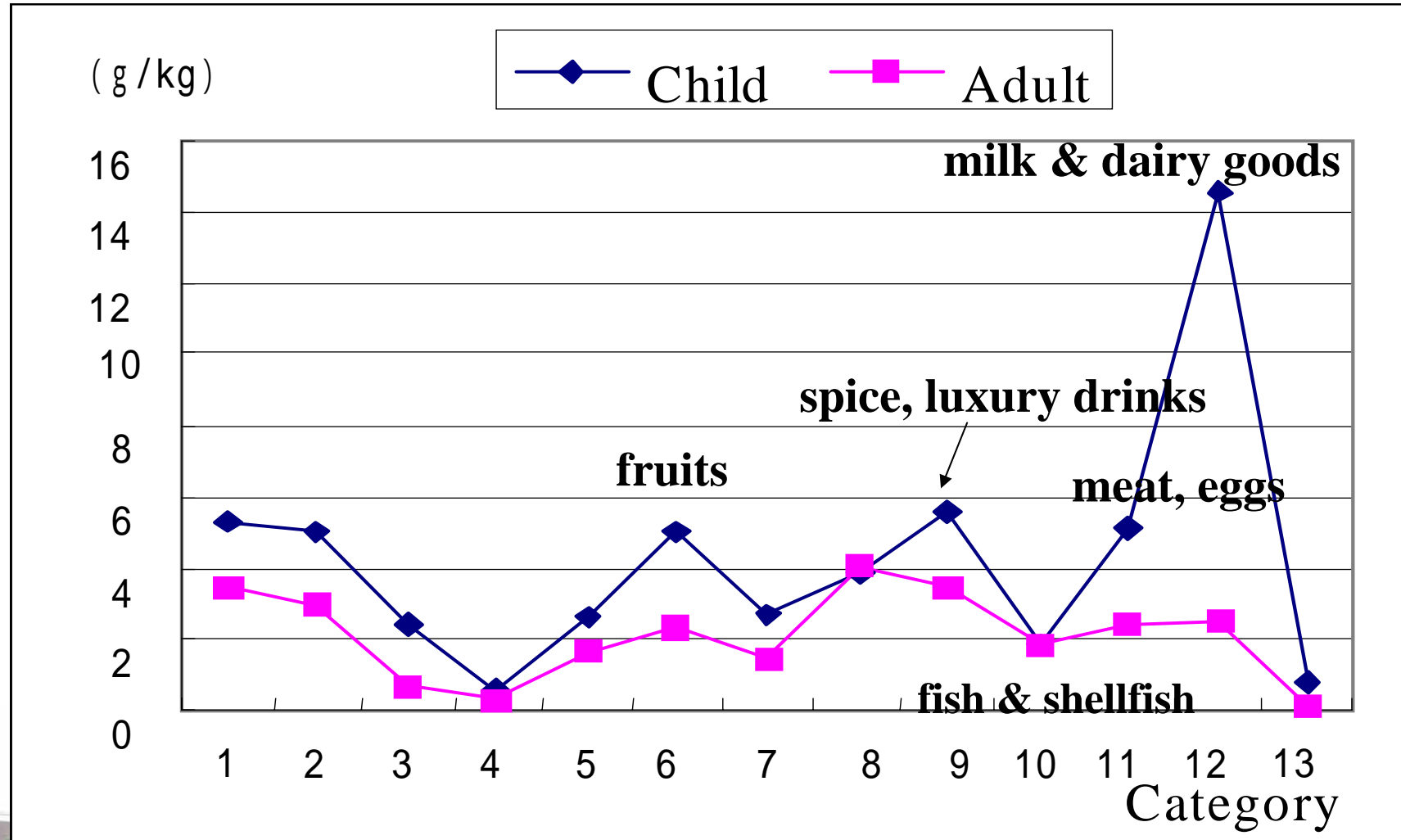
- 1 : rice & rice products**
- 2 : other grain, potato, etc**
- 3 : sugar, confectionary**
- 4 : oil**
- 5 : beans & beans products**
- 6 : fruits**
- 7 : green vegetables**
- 8 : other vegetables, mushroom, seaweed**
- 9 : spice, luxury drinks**
- 10 : fish & shellfish**
- 11 : meat, eggs**
- 12 : milk & dairy goods**
- 13 : other meals**



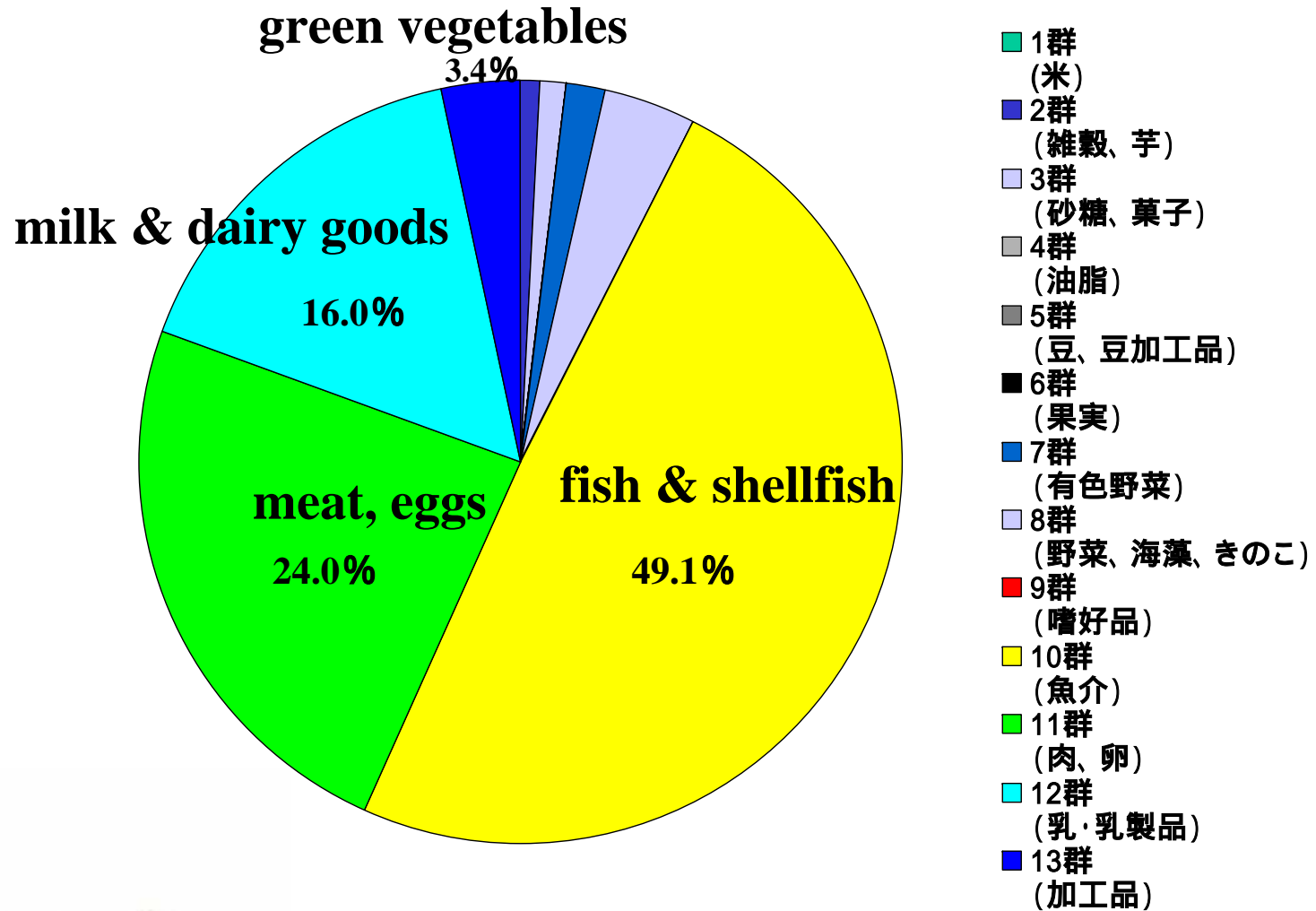
Dietary intake for Japanese Children by Foods Categories



The Amount of Daily Intake per Body Weight of Each Food Categories (Uchiyama, Sato 2001)



Proportion of dioxin intake by 3 year-olds in kanagawa, S city according to food items (Adachi S. et al, 2002)



神奈川県S市および近郊在住3歳児におけるダイオキシン類の食品群別摂取割合(%) (安達修一ら, 2002)

Studies on Ventilation Rate of Japanese Preschool Children 小児の肺換気量研究への取り組み

- **Objective: Providing data to estimate children's respiratory exposure to pollutants according to physical activities level**

日常における活動強度と活動環境を考慮に入れた子供の肺換気量データを収集する

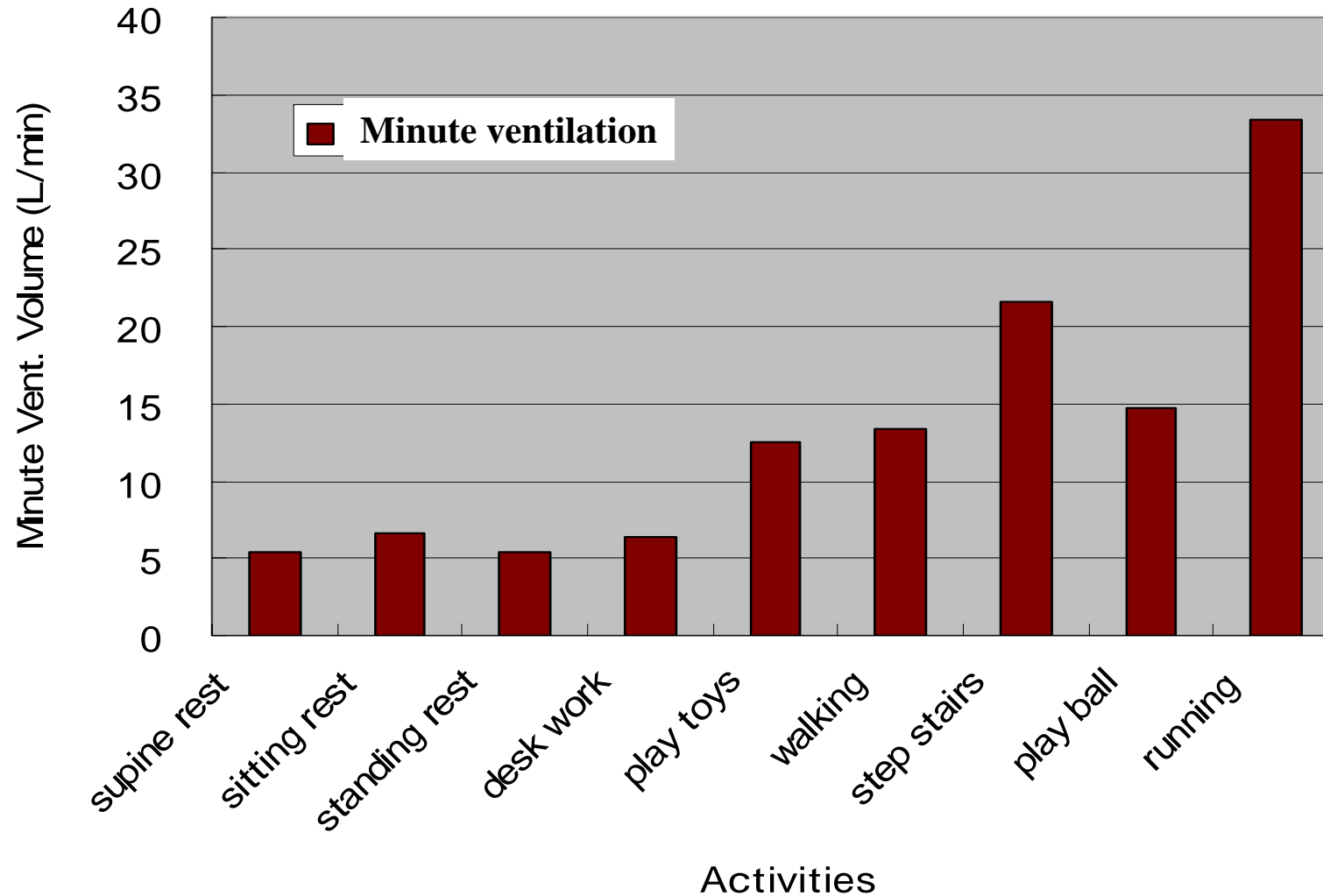
- **Data collection**

- Ventilation rate (daily activities)肺換気量(日常生活)
- Short term: rest, sedentary, low moderate and heavy activities 休息, 安静, 低, 中, 強 強度の活動時の換気量
- Long term: daily total inhalation volume
一日のトータル換気量
- Ventilation rate due to environment環境に応じた換気率



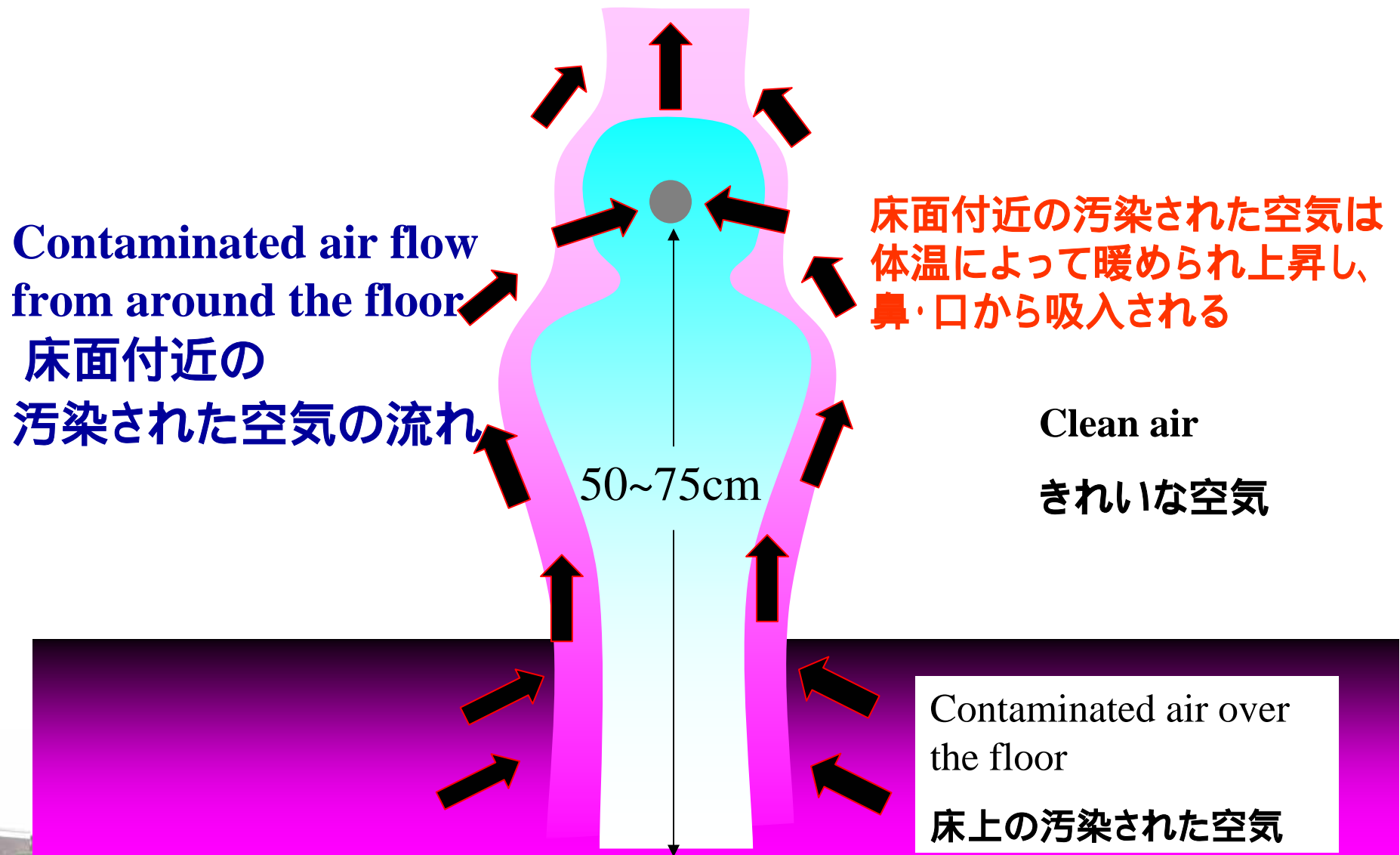
Minute Ventilation Volume by Each Activity Level

幼児の活動時の肺換気量 (6~7y-o, N=4)

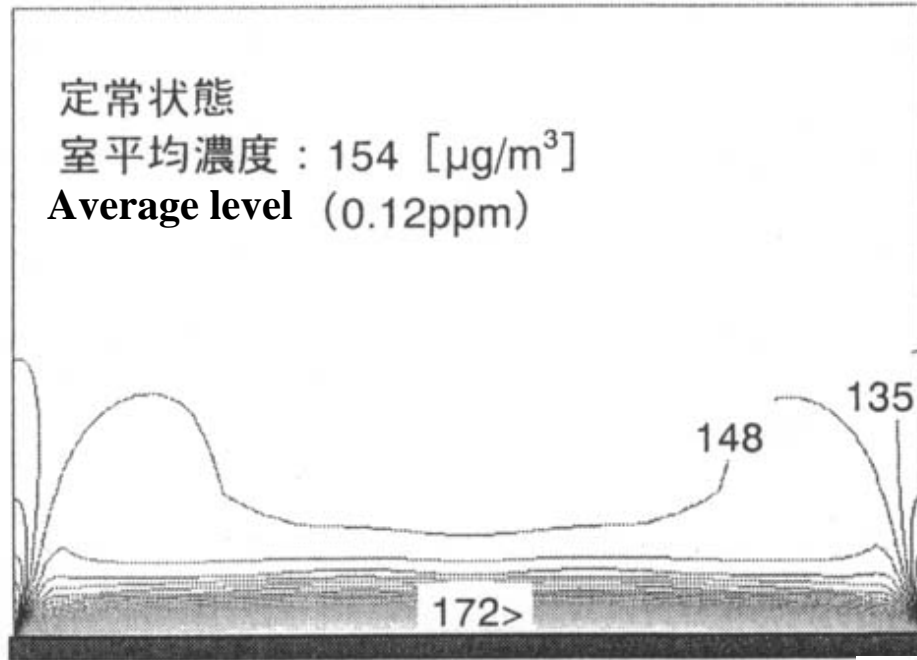


(Kawahara, J. Tanaka C, and Tanaka S) (河原純子、田中千晶、田中茂穂)

Children and Pollutants



村上周三:CFDによる室内化学物質環境の解析とデザイン.化学物質による室内汚染の現状とヘルシーハウス実現のための国際シンポ抄録集:39-44、2001(Murakami S., 2001)より一部改変



Concentration distribution of formaldehyde in a living model room

居室モデル内のホルムアルデヒド濃度分布

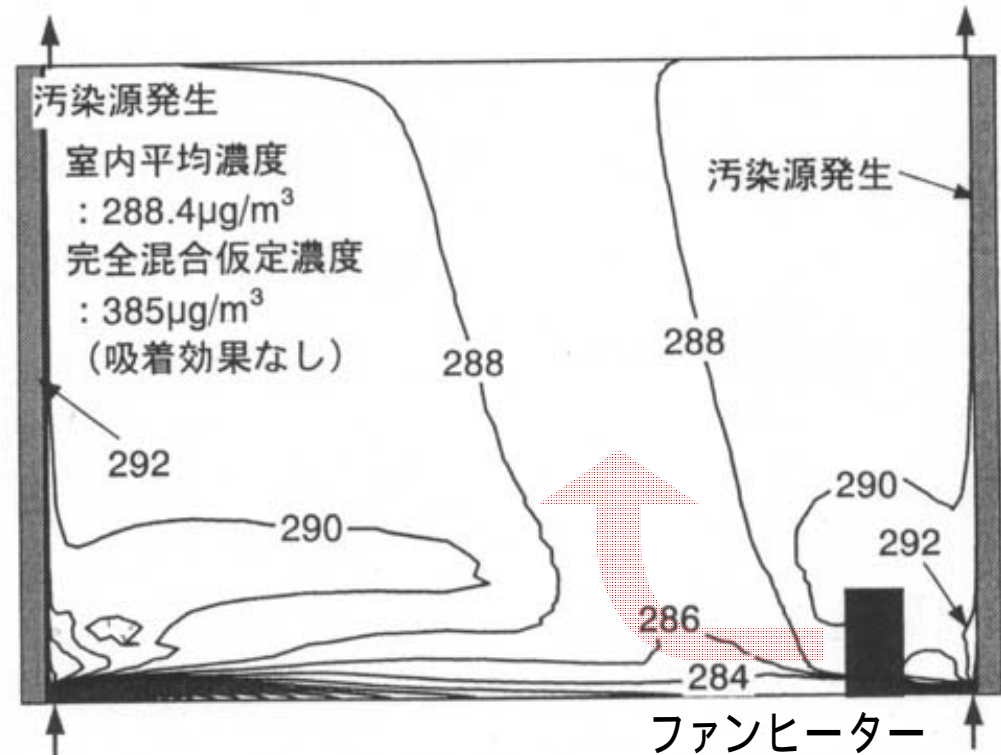
3.52 × 2.40 × 2.61(m)

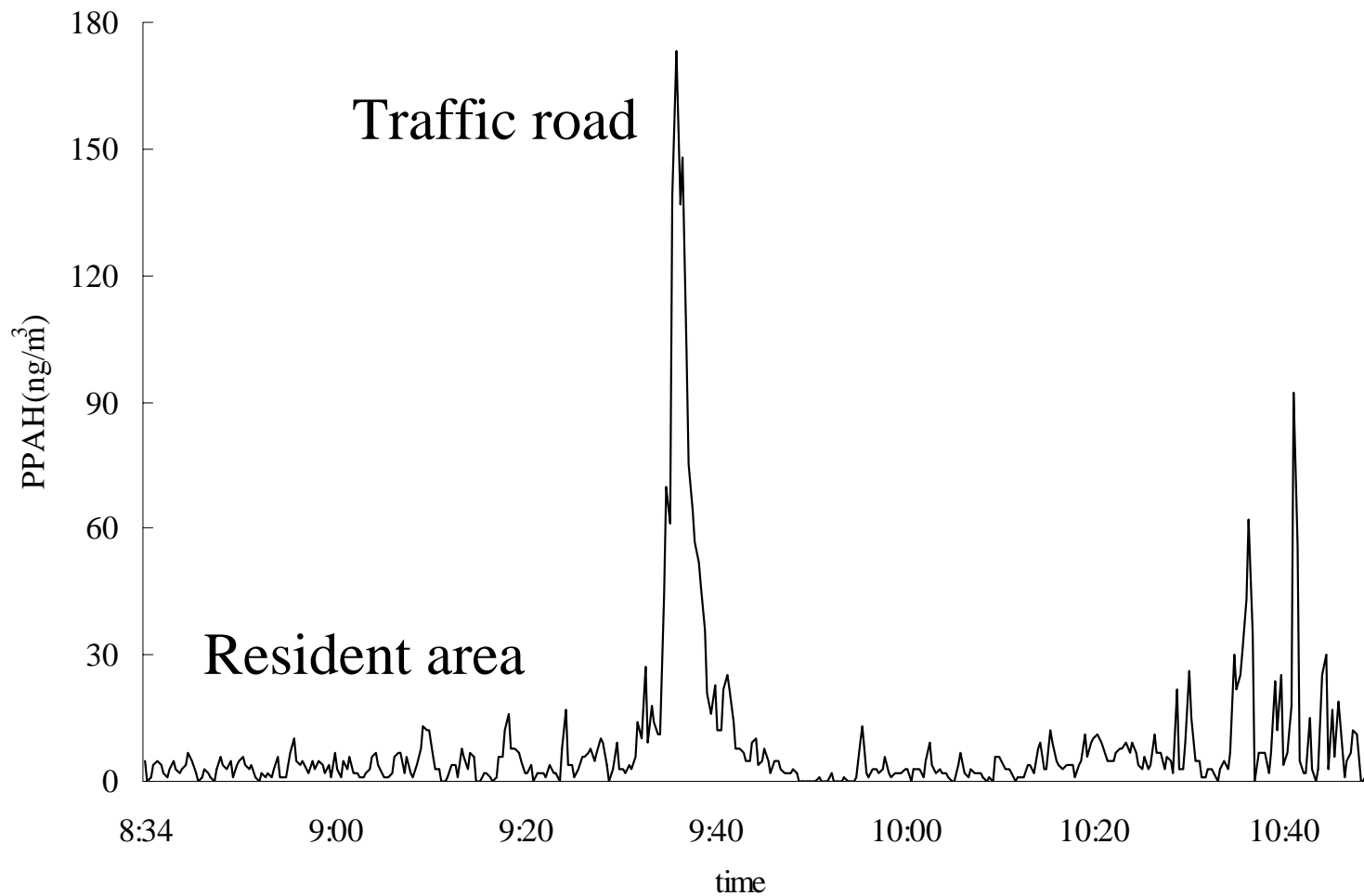
VOC is heavier than air

VOCは空気より重い

参考資料

室内環境の評価法及び健康影響の予測法の開発に関する研究 (H13-15): 田辺新一 (Tanabe S.) より





**Particle bounded polycyclic aromatic hydrocarbon
exposed to children in the preschool bus**

(Uchiyama, Matsui, 2006)

Estimated trend of body burden of dioxins in Japanese Children

- **Tolerable Daily Intake (TDI) of Dioxins and related compound was estimated by effects on fetal and new born baby**
- **ダイオキシン類のTDIは胎児，新生児への影響がエンドポイント**



Potential intake dioxins level of each stages to estimate the trend of body burden of dioxins

生涯のダイオキシン類体内負荷量を推計するための各時期の摂取量

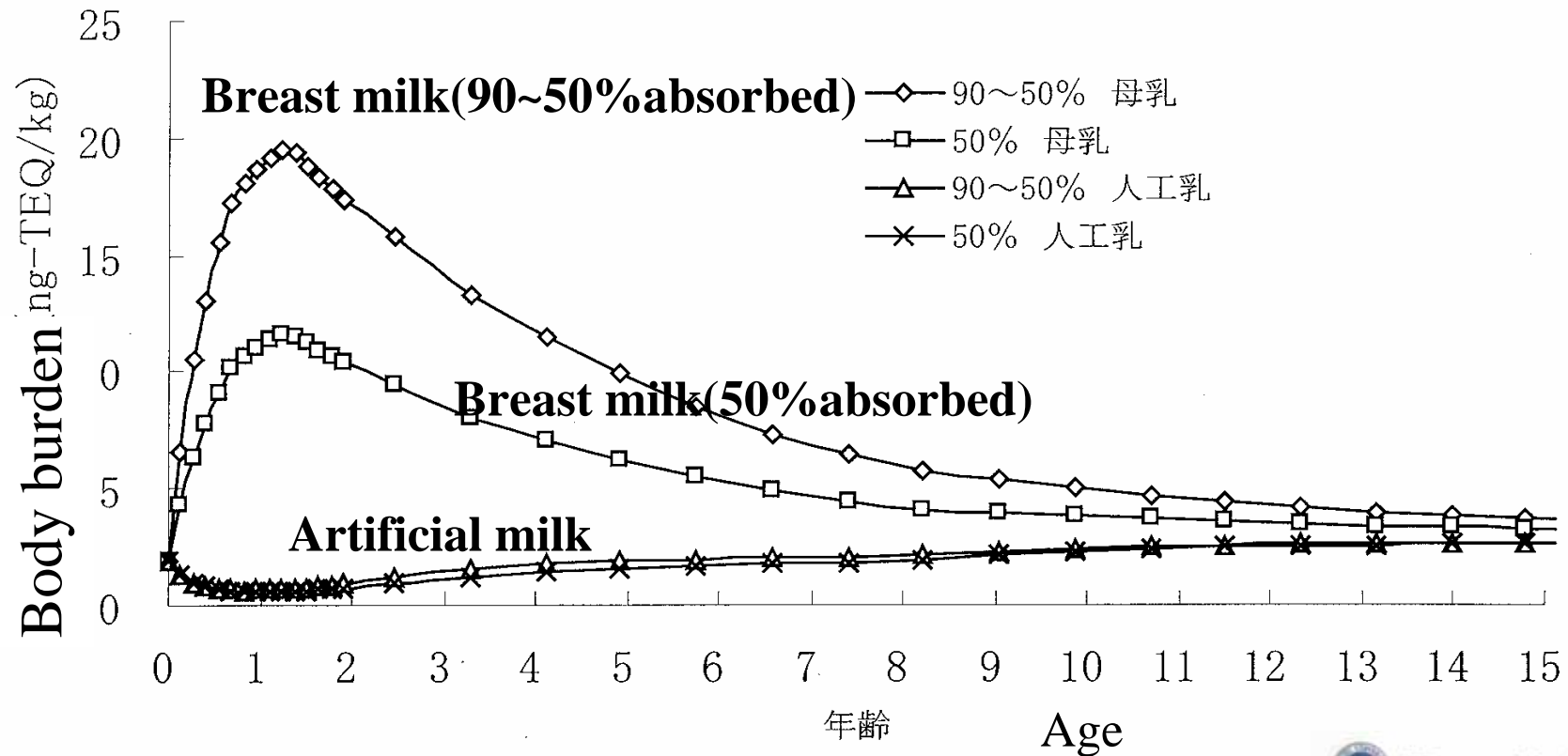
(Uchiyama I., Matsui Y. 内山,松井, 2003)

Stages 時期	Dioxins Level 摂取量
Umbilical cord blood 臍帯血(出生時)	13 pgTEQ/g.fat (Mori, et al.)
Breast Milk母乳 (生後30日)	22 pgTEQ/g.fat (Tokyo M.G.)
Artificial Milk(市販ミルク)	0.00015 pgTEQ/g
Baby food 離乳食(初期～完了期)	0.03 ~ 1.2pgTEQ/kg/day
Preschool 幼児期(1,2,3,4～6歳)	2.1 ~ 2.7pgTEQ/kg/day
Adult 成人期(7歳～)	1.99 ~ 3.5pgTEQ/kg/day

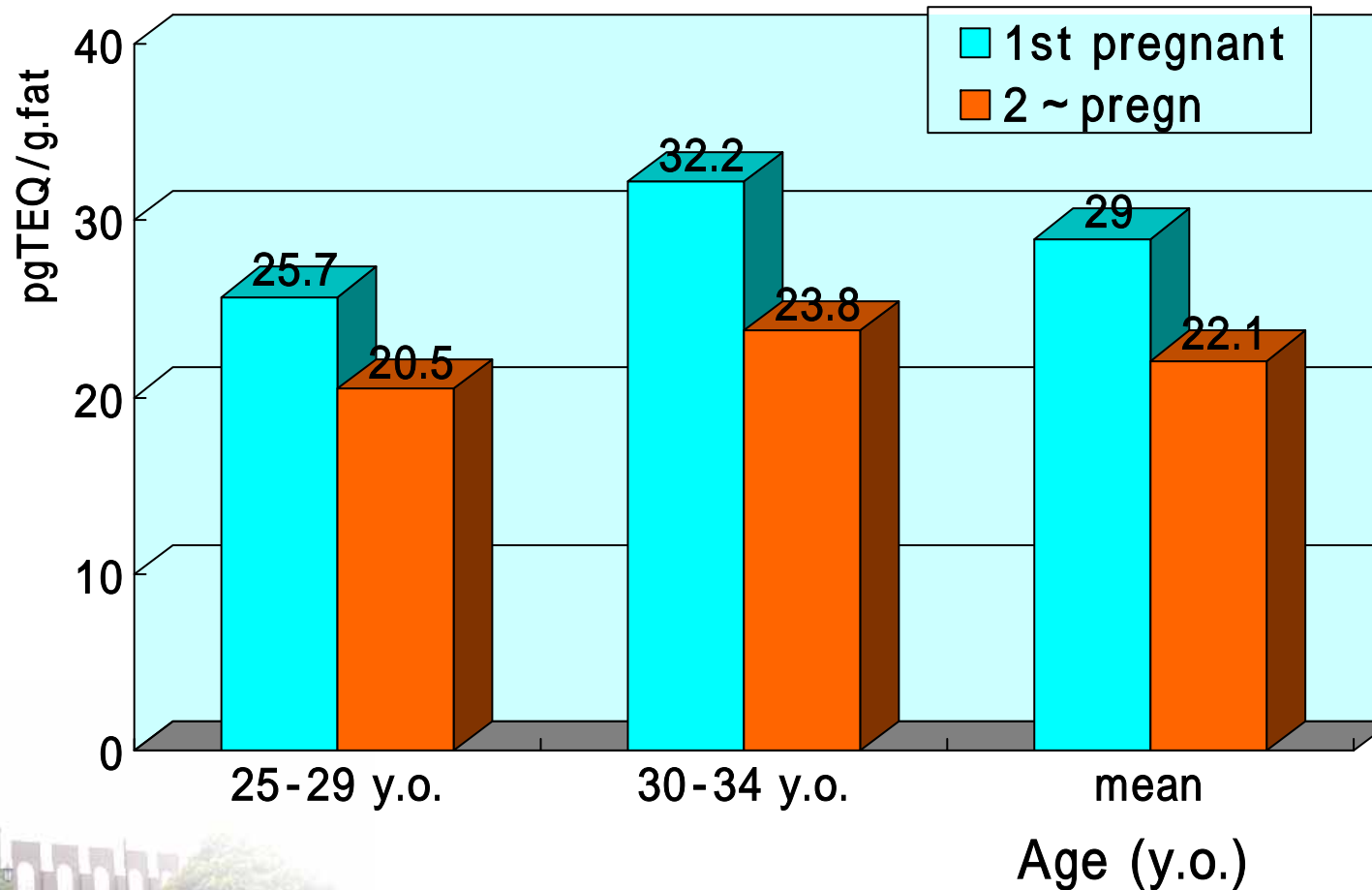
Trend of Potential Dioxins Body Burden of Children by different absorption rate (Breast milk, Artificial milk)

吸収率を変えた時のダイオキシン類の体内負荷量の 経年変化(母乳:人工乳)

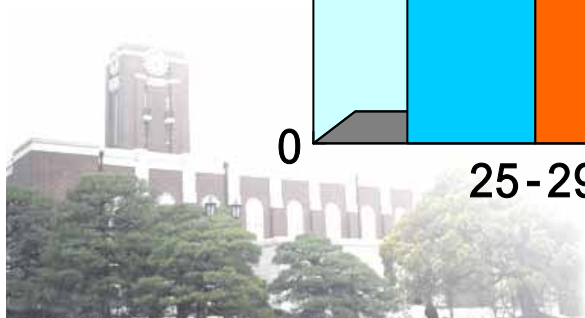
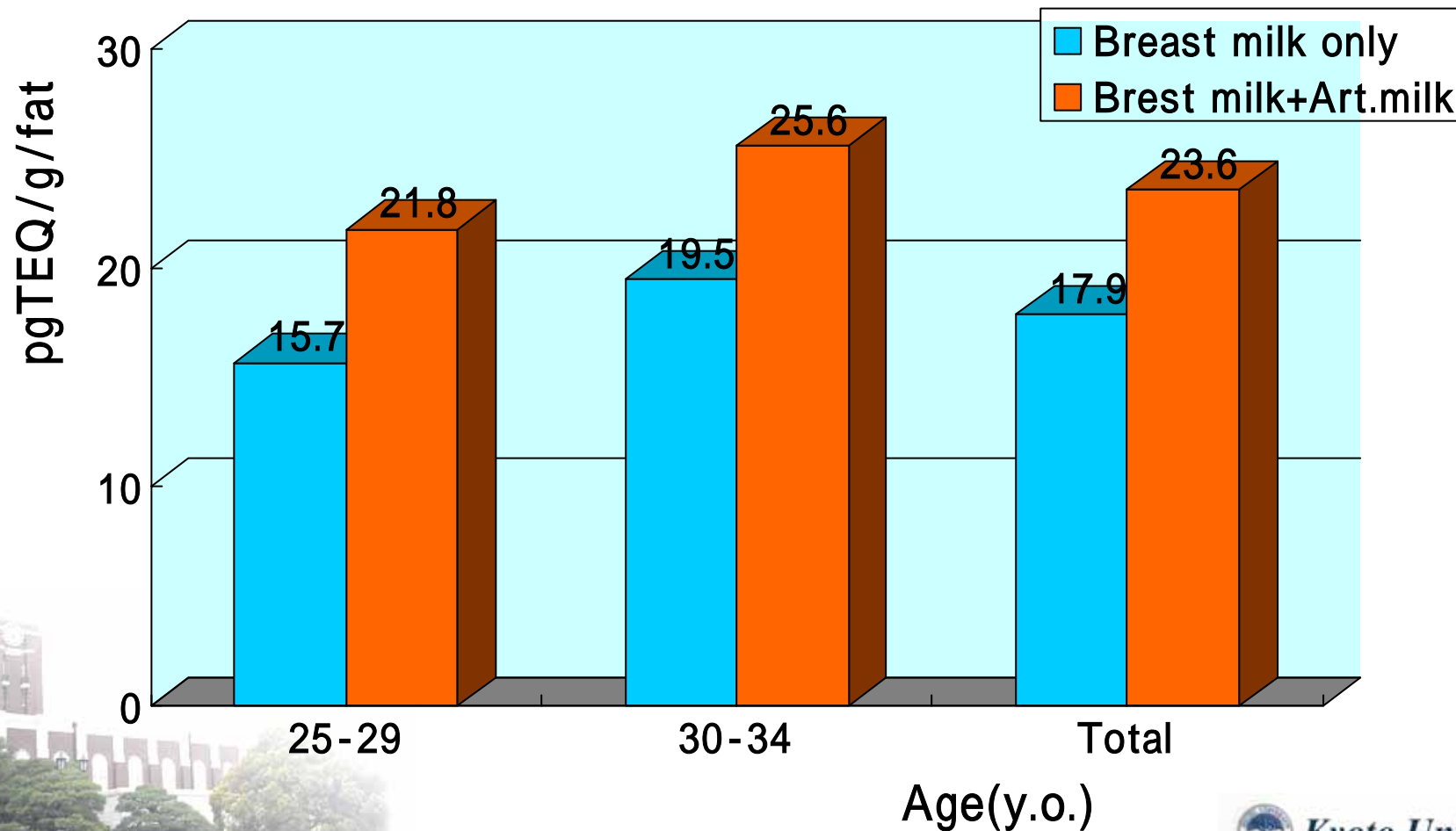
(Uchiyama, Matsui, 内山,松井, 2003)



Dioxins Level in Breast Milk in 1st and 2nd or more Pregnant Women (N=240) (1999,2000, T.M.G)



Dioxin Level in Breast Milk in Breast Fed and Both Breast Milk and Artificial Milk for 1st Baby (N=120) (1999,2000, T.M.G.)



Future measures and the direction of research promotion (MOE,2006)

- (1) The need to extract problems from the viewpoint of protecting children's health**
- (2) Approach for the establishment of research infrastructure**
 - (a) Substantiation of research funds and the introduction of competitive funds,**
 - (b) Formation of the group of research sites,**
 - (c) Collection of scientific findings and the grasping of international research trends,**
 - (d) Human resource development**



Future measures and the direction of research promotion (Cont'd)

(3) Promotion of priority research projects

(a) Reliable data collection for the exposure assessment of children to hazardous chemicals

(b) Development of health effect evaluation methods on environmental chemicals with focus on the hypersensitivity of children,

(c) Promotion of epidemiological studies on the relevance between the environment and children's health,

(d) Development of biomarkers for exposure assessment and health risk assessment and promotion of the establish of a sample banking system,

(e) Research on how medical and welfare services should be provided in relation to children's environmental health



Future measures and the direction of research promotion (Cont'd)

- (4) Promotion of environmental risk assessment for hazardous chemicals, etc. with focus on exposure modes and vulnerability of children**
- (5) Promotion of risk communication**
- (6) Promotion of cooperation among ministries and international cooperation**

