Tokyo Metropolitan Government Guideline for Children on Chemical Substances

Shigeru Ikeda
Director, Toxic Chemical Substance Countermeasures Section
Environmental Improvement Division
Tokyo Metropolitan Bureau of the Environment

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Effects of chemical substances on children

- Chemical substances are useful in providing us with affluent and comfortable life.
- However, they can be the causes for environmental pollution and bad health.
- In general, it is said that the effects of chemical substances are higher in developing children than in adults.

The Miami Declaration
Declaration of the Environment Leaders of the Eight on Children's Environmental Health (1997)

- "We acknowledge that, throughout the world, children face significant threats to health from an array of environmental hazards."
- "Where there is insufficient information, we agree to pursue the precautionary principle or precautionary approaches to protecting children's health."

Characteristics of children

- Children's nervous and immune systems are not yet fully developed.
- Children's inhalation of air and intake of food and water is greater as a proportion of their body weight than adults.
- Children frequently bring their hands to mouths after touching soil, trees and plants in their surrounding environment. This tendency is particularly strong in infants.

Basic frame of mind in setting the guidelines

- In order to reduce health risks to children from exposure to chemical substances, controlling children's exposure to chemical substances is needed.
- To provide business operators, citizens and facility administrators with practical measures so that they can cope with issues on their own.
- Targeted "children" are children under 15 years old.

In planning the guideline

- Identify the chemical substances requiring special attention taking into account children's behavioral patterns and physiology
- Examine, with due regard to children's behavioral patterns, children's exposure to those chemicals by surveying their use in children's homes and facilities frequently used by children, and their presence in food and other products
- Consider measures that would reduce children's exposure to chemicals substances

4 Guidelines for children on chemical substances

- Paint guidelines (July 02):
  Bureau of the Environment
- Indoor air guidelines (Jan 03):
  Bureau of Social Welfare and Public Health
- Plant pesticide spraying guidelines(Mar04) :
  Bureau of the Environment
- Food guidelines (July 04) :
  Bureau of Social Welfare and Public Health

Paint guidelines

Exposure estimates of lead

	Data used for estimation
Food	38 μg/day for adult (National average/1997)
Drinking water	Maximum 2 μg/ℓ (2000)
Ambient air	0.052 μg/m^3 (1999)
Soil	42~141 μg/g (95% confidence interval) (1999) →estimated max. 150 μg/g for general environment

Lead intake per day

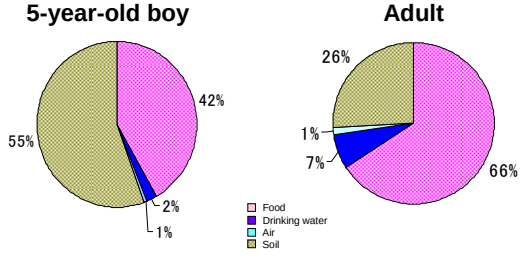
(μg/day)

	5-year-old boy	Adult
Food	22.5	38
Drinking water	1.2	4.0
Air	0.31	0.78
Soil	30	15
Total	54.0	57.8

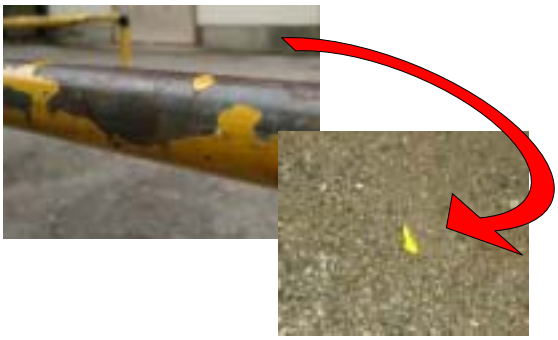
Lead intake per week

	5-year-old boy	Adult
Intake/day	54.0 μg/day	57.8 μg/day
Average weight	19.2 kg	50 kg
Intake/day/kg	2.8 μg/kg/day	1.2 μg/kg/day
Intake/week	19.6 μg/kg	8.4 μg/kg
FAO/WHO Provisional intake/week	25 μg/kg	

Exposure Pathways of Lead



Preventing contamination of soil from paint containing lead



Use lead-free paint for facilities and play equipment for children

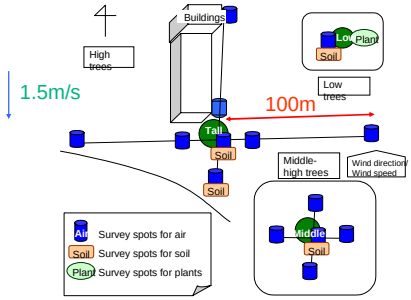
Make sure well maintenance of painted areas

How well-spread the guidelines

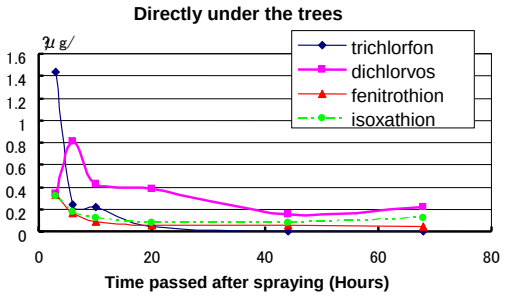
- Designated the use of lead-free paint in their own guidelines
  - Tokyo Metropolitan Govt. Bureau of Finance
  - Municipalities and villages in Tokyo
- Research and development of lead-free paint
  - Japan Paint Manufactures Association and Japan Painting Contractors Association
  - Organize a workshops for architects, interior designers, builders, paint shop owners
- Standardization (JIS) of lead-free paint
- Apply “Eco Label” for lead-free paints

Plant pesticide spraying guidelines

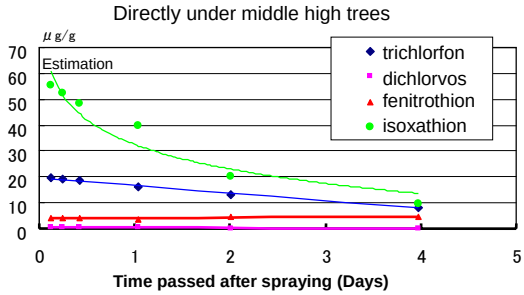
Experiment of plant pesticide spraying



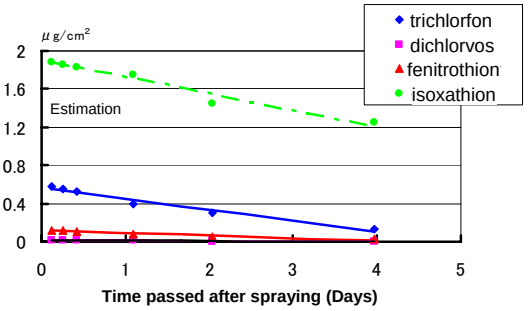
Concentration of pesticide in the air over time



Concentration of pesticide in the soil over time



Concentration of pesticide on the surface of leaves over time



Intake of plant pesticide per day

(μg/kg/day)

		fenitrothion	isoxathion	trichlorfon	dichlorvos
Food		0.19	0.09	0.08	0.06
Air		0.10	0.10	0.45	0.25
Soil	Mouth	0.01	0.29	0.10	0.00
	Dermal	0.01	0.12	0.04	0.00
Plant	Mouth	0.49	7.51	2.32	0.05
	Dermal	0.03	0.45	0.14	0.00
Total		0.83	8.56	3.13	0.36
ADI		5	3	2	3.3

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Try to prevent effecting children's health from spraying pesticides

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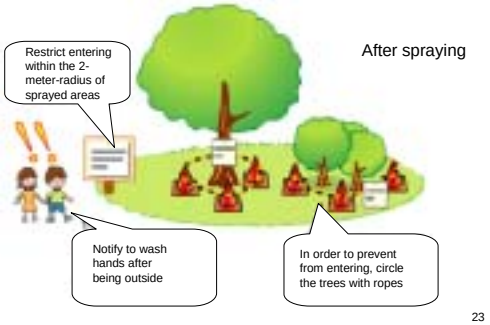
Restrict entering into the vicinity of sprayed areas



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Seek ways for administering pest controls without using pesticides

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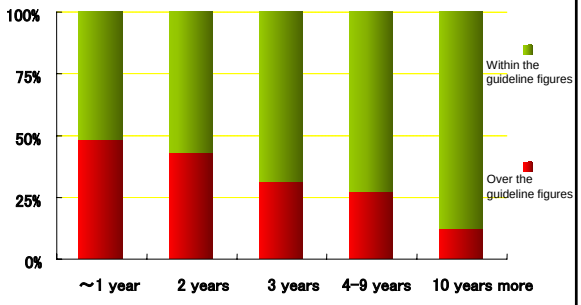
Collecting elm leaf beetles (Pyrralta *luteola*) by using adhesive tapes

Collecting elm leaf beetles (Pyrralta *luteola*) by using adhesive tapes

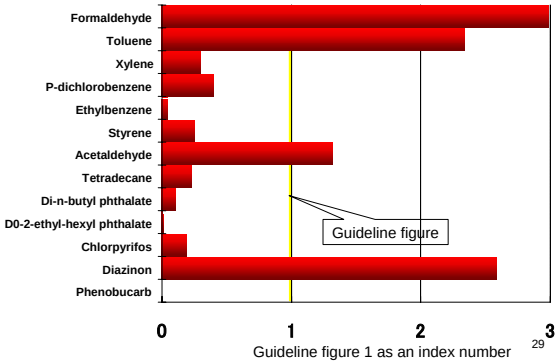
Indoor air guidelines

Concentration of Formaldehyde in houses

（Survey result from public health center in Tokyo）



Maximum indoor chemical concentrations in facilities for children



Objectives for setting the guidelines for indoor air

- Considered child-specific traits
  - Vulnerability & a body weight basis exposure
- Measures for children's facility
- Apply the same measures for nursery as well as for schools
  - Aim to overcome vertically structured system among the responsible bureaus and offices
- Meet the guidelines for concentration of VOC for indoors set by the Ministry of Health, Labor and Welfare
  - Promote to meet the guidelines to prevent any health effects

Implementation of the indoor air guidelines(1)

- Making and distributing promotion materials
  - Making information brochure
  - Providing information on the website
- Organizing briefing sessions、liaison meetings、and workshops
  - Briefing sessions for the municipality officials concerned
  - Organize briefing sessions among the metropolitan govt. bureaus
  - Workshops for concerned organizations and citizens

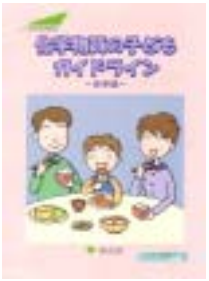
Implementation of the indoor air guidelines (2)

- Improve the facility and maintenance of public facilities
  - Amending the guidelines for construction
- Measures for Metropolitan public schools
  - Set policies for maintenance and control of the facilities
- Instructing authorized nurseries in Tokyo
  - Implementing the measurement of indoor air quality, etc…

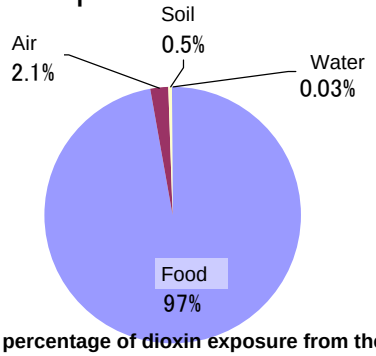
Implementation of the indoor air guidelines(3)

- Request for organizations of making study materials and furniture
  - Development of products with small diffusion of chemical substances
  - Labeling of chemical substances used in products
- Request for organizations responsible for cleaning and plant pesticide
  - Explain to facility administrators about reducing the use of chemical substances
  - Provide MSDS(Material Safety Data Sheet)

Food guidelines



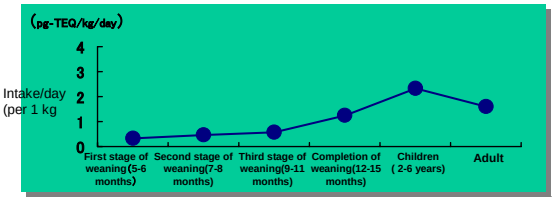
Intake pathwavs of dioxins



Estimated percentage of dioxin exposure from the normal living environment

From the result of the estimated exposure of dioxins in the normal living environment conducted in 2002 for citizens in Tokyo

Intake of dioxins per day from food



The survey revealed that the intake for all ages was under the tolerable daily intake of 4 pg-TEQ/kg/day set by the Law Concerning Special Measures against Dioxins (2002-2003 Survey result of the Tokyo Metropolitan Govt.)

Chemical substances in food

Bisphenol-A

No bisphenol found in weaning food
Detected 4.75ng/kg/day from children's food

→ 1/10000th compared to Rfd.(0.05mg/kg/day) by US EPA

Nonylphenol

No bisphenol found in weaning food
Detected 140.9ng/kg/day from children's food

→ 1/10000th compared to NOAEL (1.0mg/kg/day) set in the Vol. 2 of the environmental risk assessment book of the Ministry of the Environment

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Intake of these substances is very little and no acute significant effect on children's health

but

Long-term effect from taking these substances from food is still in many areas unknown.

Therefore,

①Knowing the facts about chemicals in food and,
②Proposing practical ways to reduce the intake of chemicals are necessary.

Try to provide well-balanced meals to children daily

Not possible to know the amount of dioxin contained in each food sold at stores in advance

Disperse the risk of ingesting dioxin from food

- Avoid eating the same kind of food continuously
- Advisable to eat variety of food

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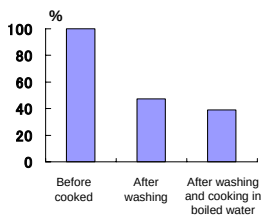
Before start cooking, do a preparation, such as washing vegetables



Change in the amount of dioxins in *Komatsuna* (green spinach-like leaves)

Change in the amount of dioxins in a sliced mackerel

"Survey on daily intake of dioxins and other substances from food conducted in 1999" (Environmental Health Bureau of Ministry of Heath and Welfare, Nov. 28, 2000)

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Learn an appropriate use of various kinds of plastic containers

Check the kinds of containers

Various kinds of plastic exist and it is difficult to distinguish them just from looking. For most of the plastic containers sold in stores, marks explaining the materials are usually available. Look for these marks.

Keep the proper use

Kinds of plastics	hormone-disrupting chemical substances which might be contained in plastics	Inappropriate use
polycarbonate	bisphenol-A (raw material)	Pouring boiled water
polystyrene	nonylphenol (resolvent of stabilizers)	Place oily food (fried food)
polyvinyl chloride		

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Conclusions: Measures outlined in the guidelines

- Reduce the amount of potentially hazardous chemical substances and switch to alternative substances
- Find a way not to be exposed to potentially hazardous substances
- Appropriate use of chemicals and products containing chemicals which are potentially hazardous

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Conclusions:
Utilizing the Guidelines

- Tokyo Metropolitan Government has formed the guidelines for chemical substances by focusing on prevention measures, which are relatively easy to implement. We will keep promoting the business operators, facility administrators and citizens to implement in the following ways:
- For producers of products, promote to develop alternative products or to put a proper labeling for consumers.
- For citizens, promote to gain a proper knowledge about chemical substances and to use products with chemicals properly
- For facility administrators, promote to pay attention in selecting products for maintenance of facilities and to reduce the use of chemicals and switch to alternatives.