Japan Environment and Children's Study (JECS)

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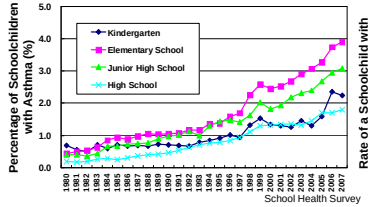
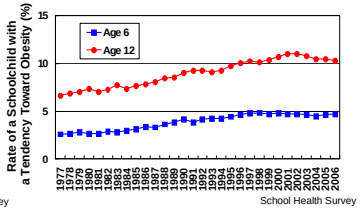
Increase of asthma and obesity among children

Asthma



Obesity



Childhood asthma has tripled over a 20-year period

Obesity in children has increased by 150% over a 30-year period

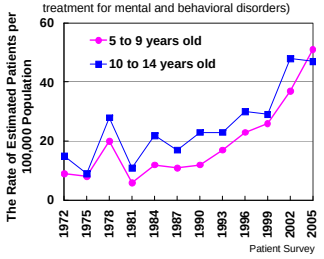
"Shoulder Breathing" Breathing that makes the shoulders rise and fall

Orthopnea Shortness of breath that makes it hard to lay down

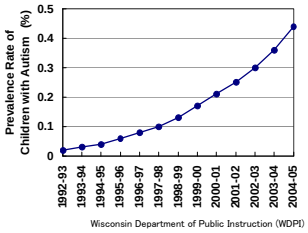
赤司博久監修・勝沼俊雄編集
小児アレルギーシリーズ 「喘息」
（診断と治療社）より

Increase in Psycho-neurodevelopment Abnormalities

Japan (percentage of children receiving medical treatment for mental and behavioral disorders)



Wisconsin, USA (percentage of Autism cases)



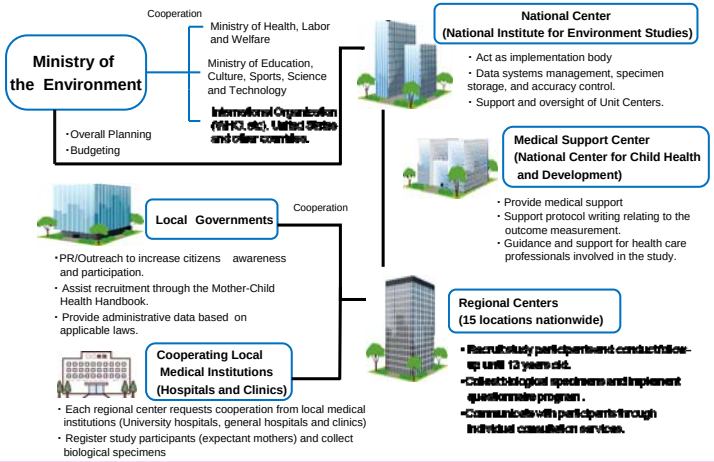
Examples of chemical exposure effects on humans

- Impact on childhood development from exposure to low levels of methyl-mercury (Seychelles and Faeroe Islands [Denmark] among others)
- Mental deterioration / Decreased intelligence from exposure to low levels of lead (United States)
- Impact on childhood development from exposure to low levels of PCB (United States, Taiwan)
- Health impacts seen in children with exposure to organoarsenic compounds (decreased intelligence and autonomic nerve disorders in Japan)

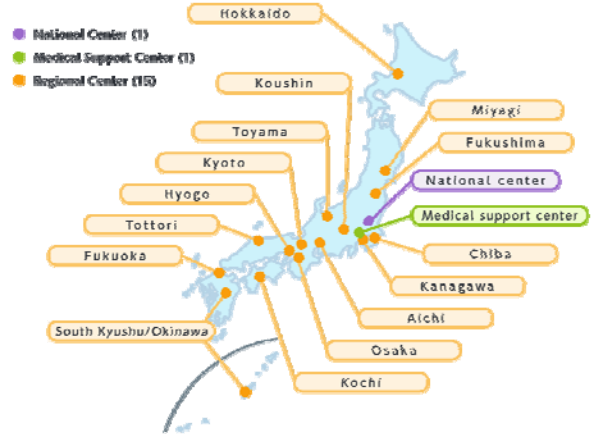
Overview of the Japan Environment & Children's Study (JECS)

- Core Hypothesis: Chemical exposure during the fetal and infant stages adversely effects children's health
- Method: Birth cohort study
- Scope: 100,000 participants nationwide
- Term: recruitment 3 years, follow up 13 years
- Anticipated Results
  - (1) Identify environmental factors impacting children's health
  - (2) Develop risk management systems that address vulnerabilities in children
  - (3) Ensure a sound environment where future generations are able to grow up in good health
  - (4) Establishment of infrastructures for children's study

Organization



Study Locations



What JECS will bring about

(1) Scientific Significance

A large scale cohort study involving 100,000 participants and following up for 13 years.

Elucidate the relationship between children's health and the environment.

(2) Capacity building for "bridging"

1. Trans-disciplinary research bridging scientific areas
2. Research coordinator bridging clinical practice and epidemiology
3. Science communicators bridging science and society

(3) Contribution to society

The outcome from research will contribute to the proper management of environmental risk, as well as to the international society

(1) Scientific Significance

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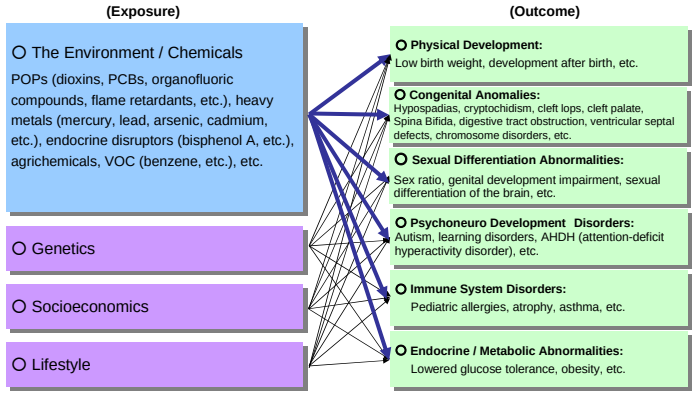
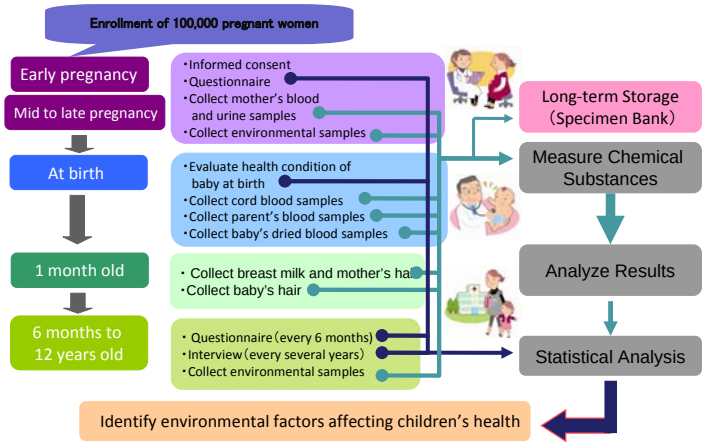
JECS Core Hypothesis

Chemical exposure during the fetal and infant stages adversely effects children's health



JECS Research Components



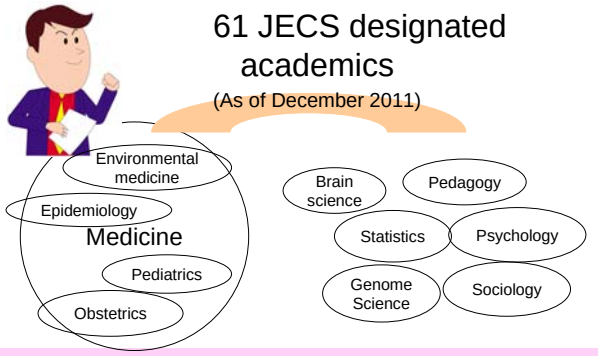
(2) Capacity building for "bridging"

Trans-disciplinary research bridging scientific areas

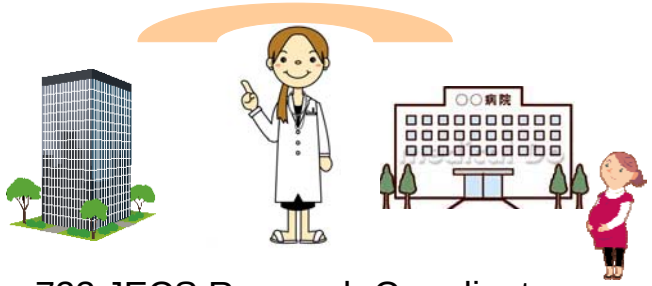
Research coordinator bridging clinical practice and epidemiology

Science communicators bridging science and society

Trans-disciplinary research bridging scientific areas



Research coordinator bridging clinical practice and epidemiology



723 JECS Research Coordinators

(As of December 2011)

Science communicators bridging science and society

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JECS Expected Output

Direct Results

Identify environmental factors impacting children's health
⇒*Reduce hazardous substances*
- Promote regulatory measures covering the manufacture, import and use of chemical substances as well as self-led compliance initiatives
- Amend and establish new environmental standards

Identify genes relating to chemical substance sensitivity, diseases, and disorders ⇒ *Prevention*
- Genetic diagnosis at birth
- Specialized countermeasures for at-risk children

Reduce childhood diseases
Ensure safe and sound environment for children's development

Address Japan's declining birthrate

Indirect Results

Provide broad-scoped and shared research foundation for children's health not limited to environmental factors

Provide function as a biological specimen bank
- Respond to the broad research needs of industry, government and academia after a scientific and ethical review

Provide function as a data archive

Cultivate / strengthen competencies of the nation's environmental epidemiologic researchers

International Outreach

Overseas Cohort Studies
National Children's Study (USA)
European large scale cohorts etc

Cooperation

JECS

Collaboration

International Organizations

Foreign governments

Development of a large consortium consisting of hundreds of thousands of people

- Able to narrow down problem chemicals from among a wide variety of chemicals and heavy metals
- Able to analyze causal factors for diseases with low incidence rates, or impact of low-level exposure

Risk assessment of children's vulnerabilities in Japan will link to the development of risk management systems

Apply results of research and analysis achieved through advanced epidemiological studies to developing countries

- Address children's health issues that will emerge in the process of economic development.

JECS will contribute to children's environmental health in the world

JECS website:

http://www.env.go.jp/en/chemi/hs/jecs/

Contact:

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