# *Occupational Safety and Health*

# *and*

# *The role of experts in Japan*

2010.1.28

- Japan Association of Working Environment Measurement

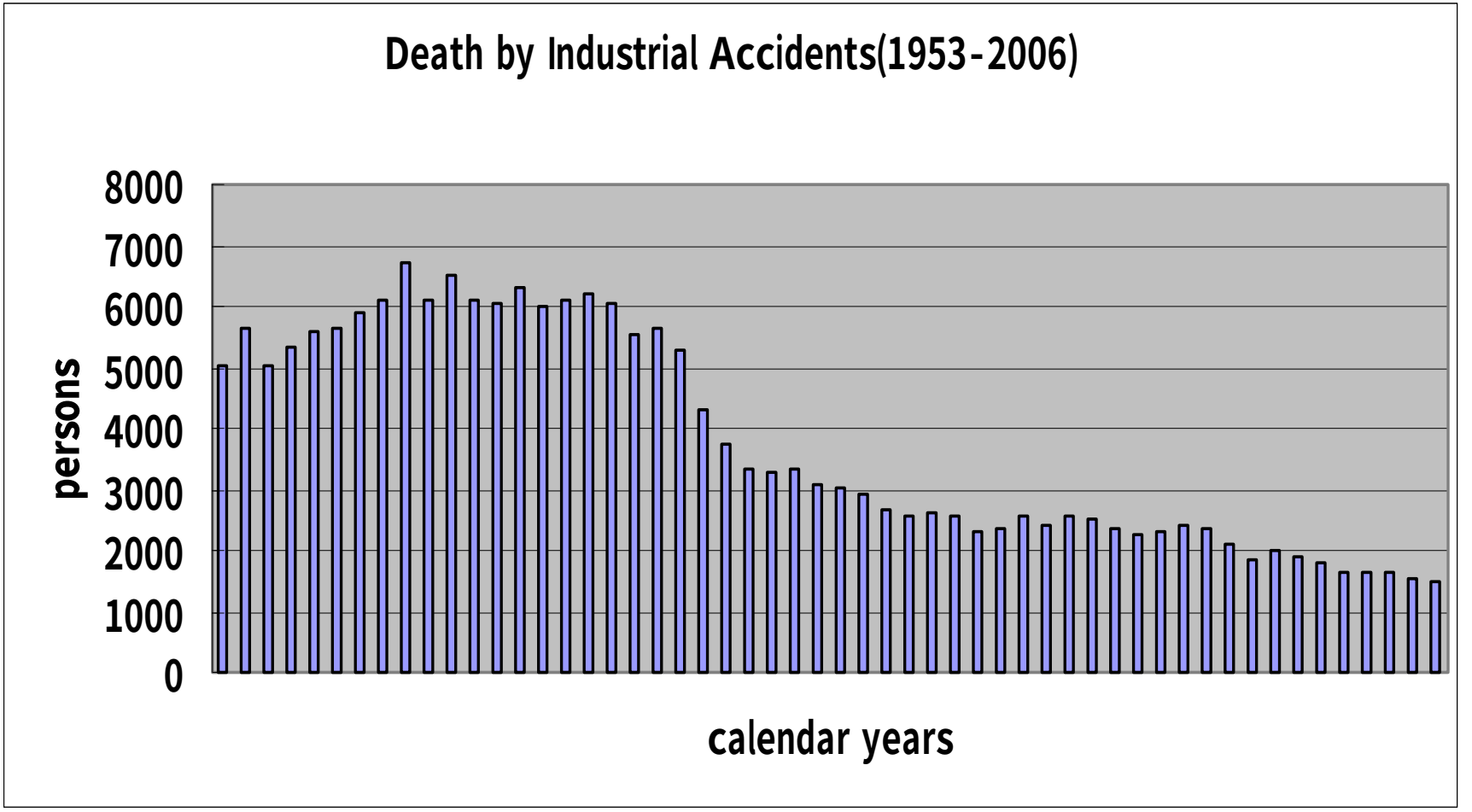
Tokyo,  JAPAN

# Topics

1 Outline of Occupational Safety and Health in Japan

2 Occupational Health and the role of Experts

# Change in Number of Deaths by Industrial Accidents in All Industries (Year 1953~2006)



# 1　Regislation of OSH in Japan

Labor Standards Law of 1947→

Pneumoconiosis prevention Law of 1960→

Industrial Accidents　Prevention Organizations Law of 1964→

**Industrial Safety and Health Law** of 1972→

Working Environment Measurement Law of 1975→

# 2 Regulatory framework of OSH

## Industrial Safety and Health (ISH) Law of 1972

Cabinet order of ISH-Law

Ordinances on safety/health

- Ordinances on ISH
- 3 Ordinances relating to industrial safety
- 10 Ordinances relating to occupational health

<minister's notifications>

Examples;

Construction codes on boiler, crane, etc.
Guidelines on OSHMS
Guidelines on labeling of chemicals
Guidelines on risk assessment

<administrative notifications>

# 2 Regulatory framework of OSH(2)

## 10 Ordinances under ISH-Law relating to Occupational Health

(1) Ordinance of Prevention of **Organic solvent** poisoning
(2) -**Lead** poisoning
(3) -**Tetra-alkyl lead** poisoning
(4) -Hazards due to **Specified chemicals** such as suspected carcinogens
(5) -Hazards due to **Asbestos**
(6) -Hazards due toWork under **High pressure**
(7) -Hazards due to **Dusts**
(8) -Hazards due to **Ionizing radiation**
(9) -Prevention of **Anoxia**
(10) -Health standards in the **offices**

# 3 Implementing system of OSH

**< Central Government > =implementation of laws, inspection, guidance & assistance,etc.,**

- **MHLW (Ministry of Health, Labor and Welfare)**

**<Branch /Local System>**

- **Prefectural Labor Standard Bureau(47)**
- **Labor Standard Inspection Office(343)**

**<Management & Labor>**

- ○ **Japan Business Federation (Nippon Keidanren)**
- ○ **Japan Trade Unions' Confederation(Rengo)**

# 3 Implementing system of OSH (2)

**<Related Organizations>**

**/ Employers' Accidents Prevention Associations**

**-Japan Industrial Safety and Health Association(JISHA)**

**- 5 Associations for Respective Industries**

**①Construction**

**② Land cargo transportation**

**③Marine cargo transportation and stevedore**

**④Timber manufacturing and forestry**

**⑤Mining**

**-Local Branch of above associations(47 each)**

**/ OSH Institutions for**

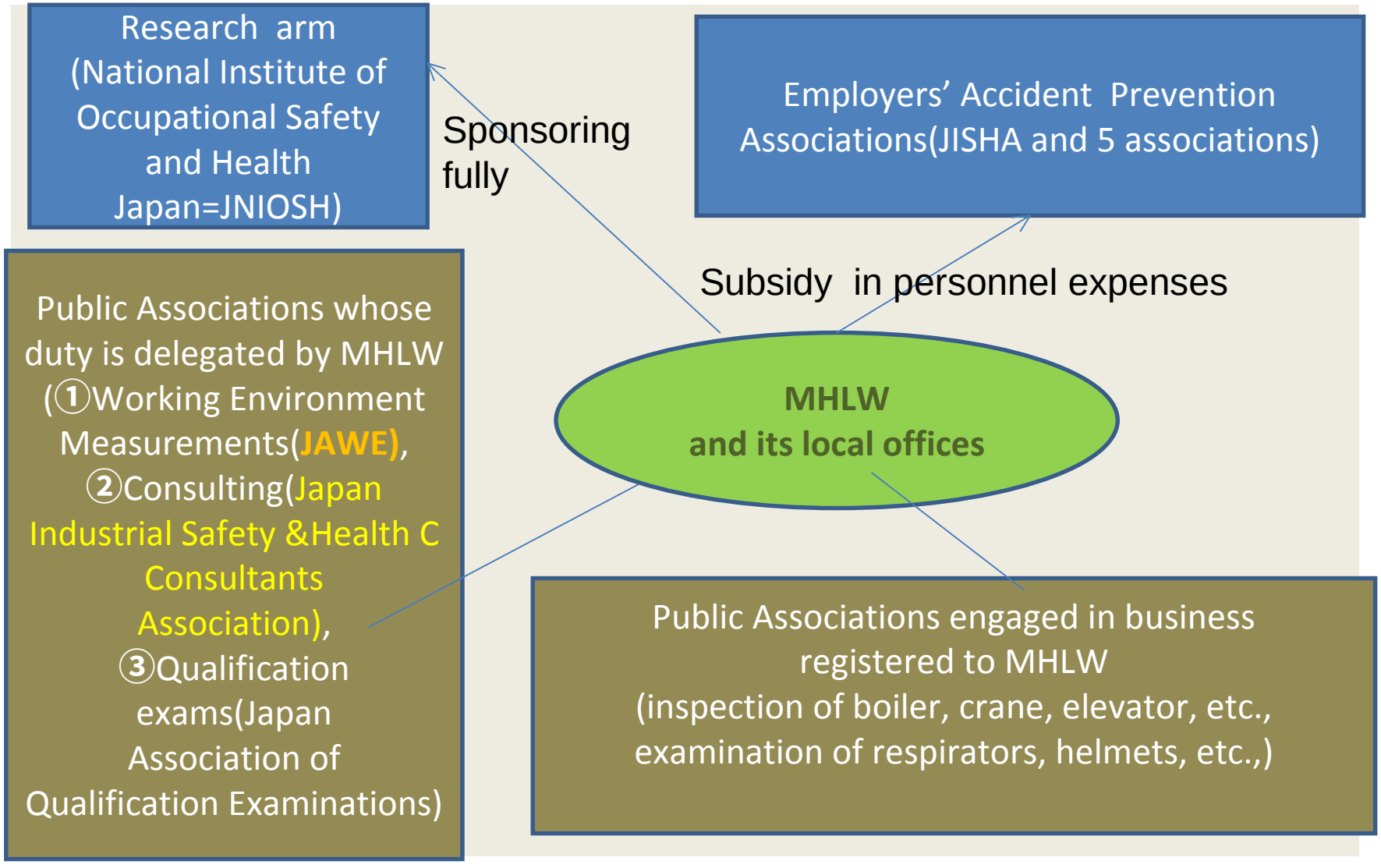
**Safety/Health Qualification Examinations,**

**Safety/Health Educations ,**

**Work-environment Measurements,**

**Medical examination and others**

# 3 Implementing system of OSH (3)



# 4 Present OSH Situation in Japan

## (1)Change in Industry, Work structure and Workplaces

### Change in Industry, Work structure

- ○Increase of Tertiary industry
- ○Increase of peripheral workers
- ○Increase of aged workers due to higher retirement age and lower birth rate
- ○Increasing trend of women workers

# Workplace Changes

○More diversified and complicated industrial processes

→Introducing new machinery , equipment and raw materials, chemicals

→Diversified risks of labor accidents

○Collective retirement of baby boomers from workplaces and Increasing peripheral workers

→Fear of inadequate transfer of know- how of safety and health

# 4 Present OSH Situation in Japan (2)

## (2) Basic Strategy

- to disseminate /promote the method of risk assessment among workplaces and lower the risk through the practice of it
- To specify ,through accidents analysis etc., dangerous jobs, operations , machinery etc., that can be the major cause of accidents or have high risk inherently and establish/take effective measures to prevent accidents due to them

Continued-

## <Especially as for Chemicals>

○**Promotion of Hazard identification of chemicals**

**as well as Risk assessment of chemical processes by the best use of**

- **Materials Safety Data Sheets (MSDS) prepared according to GHS.**
- **Exposure analysis**
- **Indices such as OEL**

# Occupational Health Experts
# under
# Industrial Safety and Health Law

## ●Industrial Safety and Health Consultants(1972)

- **Industrial Safety Consultant**
- **Industrial Health Consultant**

## ●Working Environment Measurement Experts(1975)

- **Working Environment Measurement Expert of 1st kind**
  → entitled to Design, Sampling and Analysis(fully)
- **Working Environment Measurement Expert of 2nd kind**
  → entitled to Design, Sampling and analysis (by simple methods only)

# Industrial Safety and Health Consultants(1972)

## 1 Industrial Safety Consultant

**<Qualification for examination>**

- **graduates of university/college +5 years' experience of safety**
- **graduates of junior college/technical college +7 years' experience of safety**
- **graduates of high school +10 years' experience of safety ,**

**and others**

# Industrial Safety Consultants(1972)

**<Methods of Examination>**

**written examination and oral examination**

**<Division of Examination>**

- **Machinery Safety**
- **Electricity Safety**
- **Chemical Safety**
- **Civil engineering Safety**
- **Construction Safety**

# Industrial Health Consultants(1972)

**<Methods of Examination>**

**written examination and oral examination**

**<Division of Examination>**

- **Health**
- **Industrial hygiene engineering**

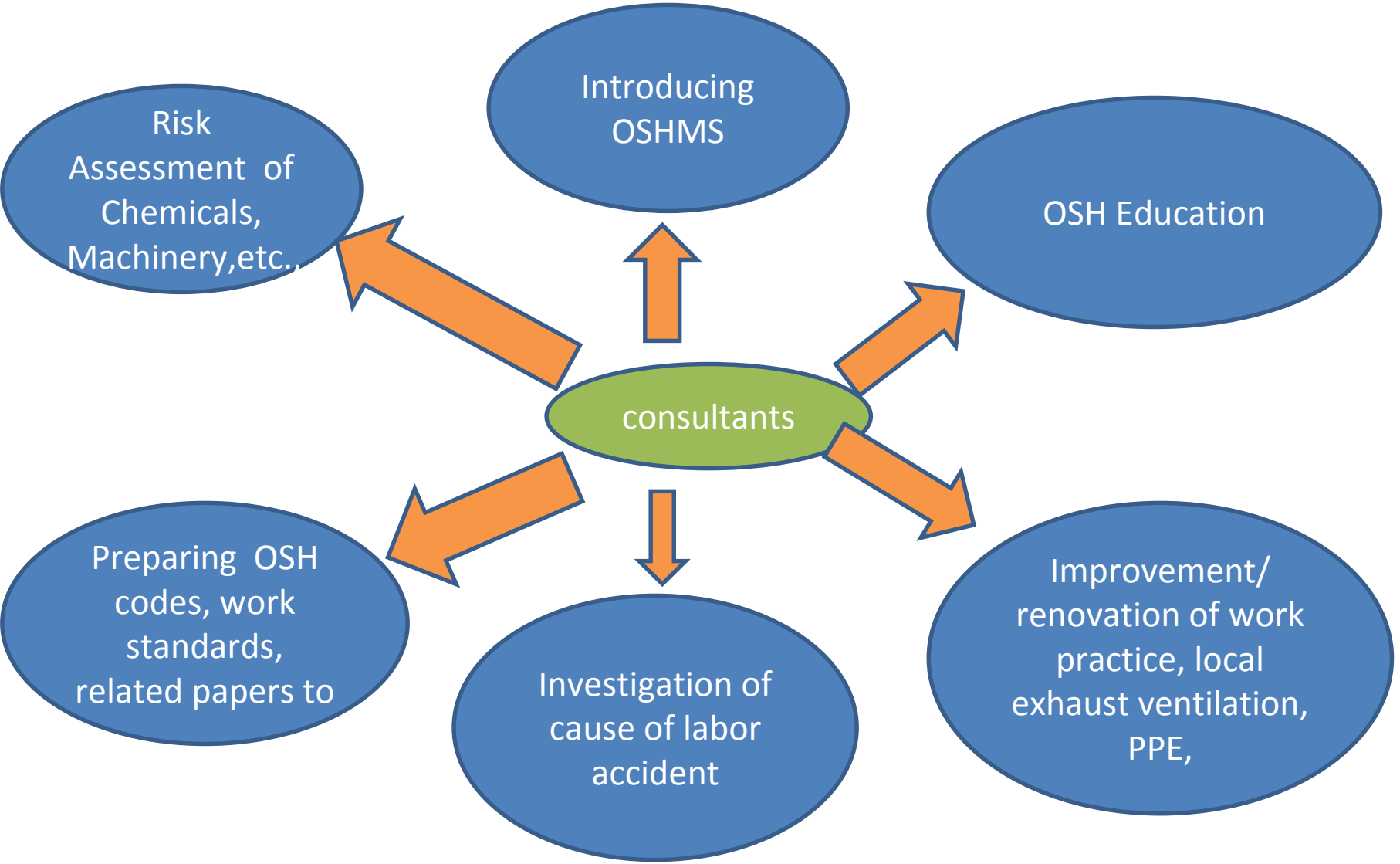
# Industrial Safety and Health Consultants(1972)

**○How to become a consultant**

**1st step :to pass examination(written,oral) by Designated Consultant Examination Institution**

**2nd step : to be registered in the industrial safety consultant registry of Designated Consultant Registry Institution**

# The Role of Consultants



# Japan Association of Safety and Health Consultants(JASHCON)

○Founded in 1983 as a public corporation with members of Industrial Safety and Health Consultants and other supporting members

○Headquarter and 47 branches(each prefecture)

○Duty/business

- Various kinds of OSH Education and training
- OSHMS auditor/inspector training
- Lifelong education program (２００４～)

# Number of consultants (8,199)

| Machinery Safety | 649 |
|---|---|
| Electricity Safety | 377 |
| Chemical Safety | 317 |
| Civil engineering Safety | 2,597 |
| Construction Safety | 608 |
| Health | 3,198 |
| Industrial hygiene engineering | 453 |

# Working Environment Measurement Experts(1975)

○**Working Environment Measurement Expert of 1st kind**

→ entitled to Design, Sampling and Analysis(fully)

○**Working Environment Measurement Expert of 2nd kind**

→ entitled to Design, Sampling and Aanalysis(by simple methods only)

# Definition of Working Environment Measurement by Law

○ The “working environment measurement” by the law consists of (1) design, (2) sampling and (3) analysis,

○“Design” is particularly important so that the result of the statistical treatment of figures obtained from each sampling point rightly reflect the actual state of airborne concentration of chemicals.

○ The method of “Design” is stipulated by Minister’s Notice entitled “Working Environment Measurement Standards”

# Design and sampling

**○According to the notice, the “design” and “sampling” should follow the below ;**

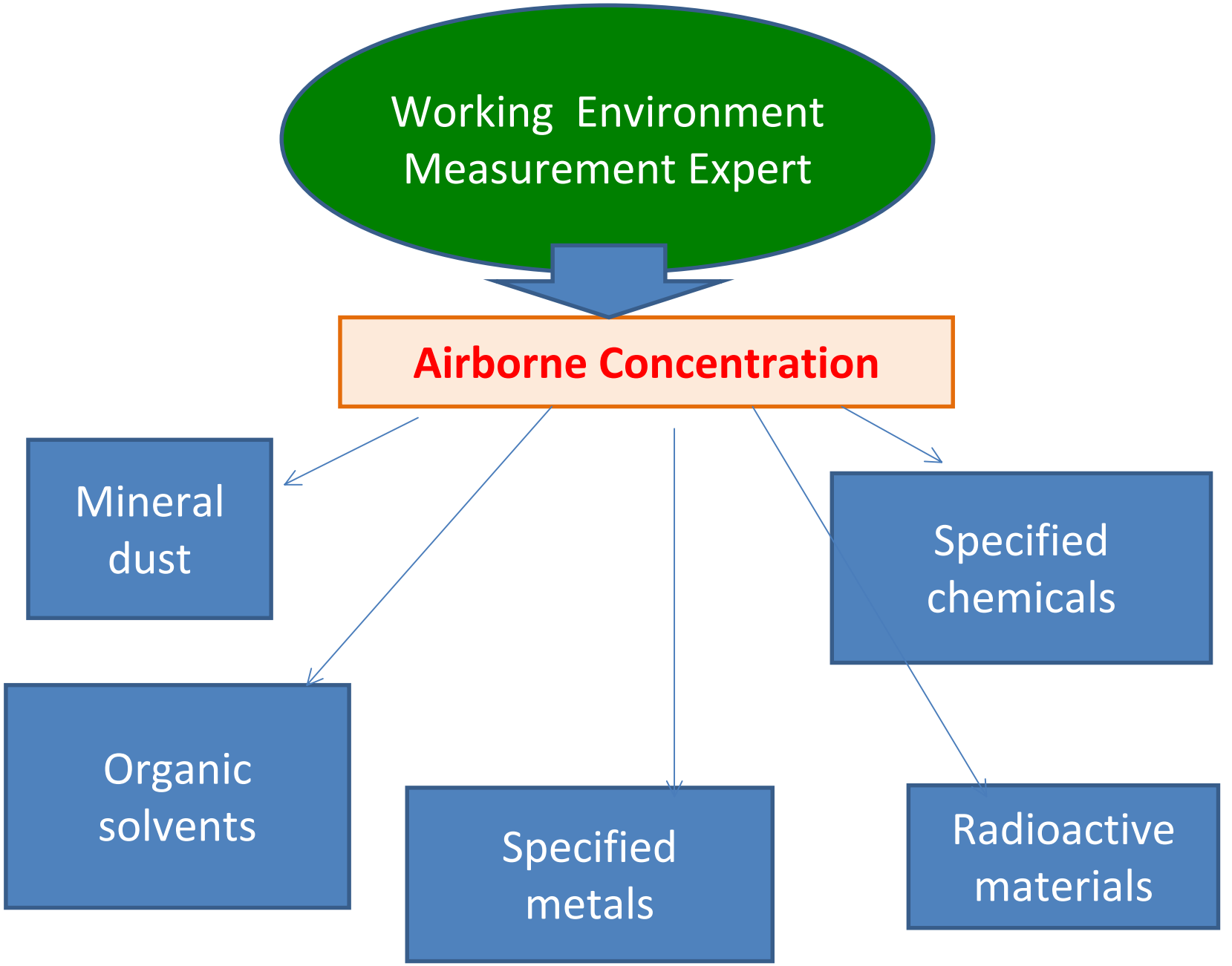
**(1) Vertical and horizontal lines are drawn at equal intervals of not more than 6 m on the floor of a unit work area (refers to such a necessary section that is designated for working environment based on the condition of distribution of harmful substances and range of movement of workers within the area of a workshop concerned, hereinafter the same shall apply) and a sampling point is provided at each intersection of those lines at a position 50 to 150 cm above the floor (except such a point where measurement is very difficult due to equipment etc.). However, when it is obvious that the concentration of chemicals/dusts is substantially uniform, vertical and horizontal lines can be drawn at equal intervals of more than 6 m on the floor of a unit work area and a sampling point provided at each intersection of those lines.**

# Design and Sampling(conti-)

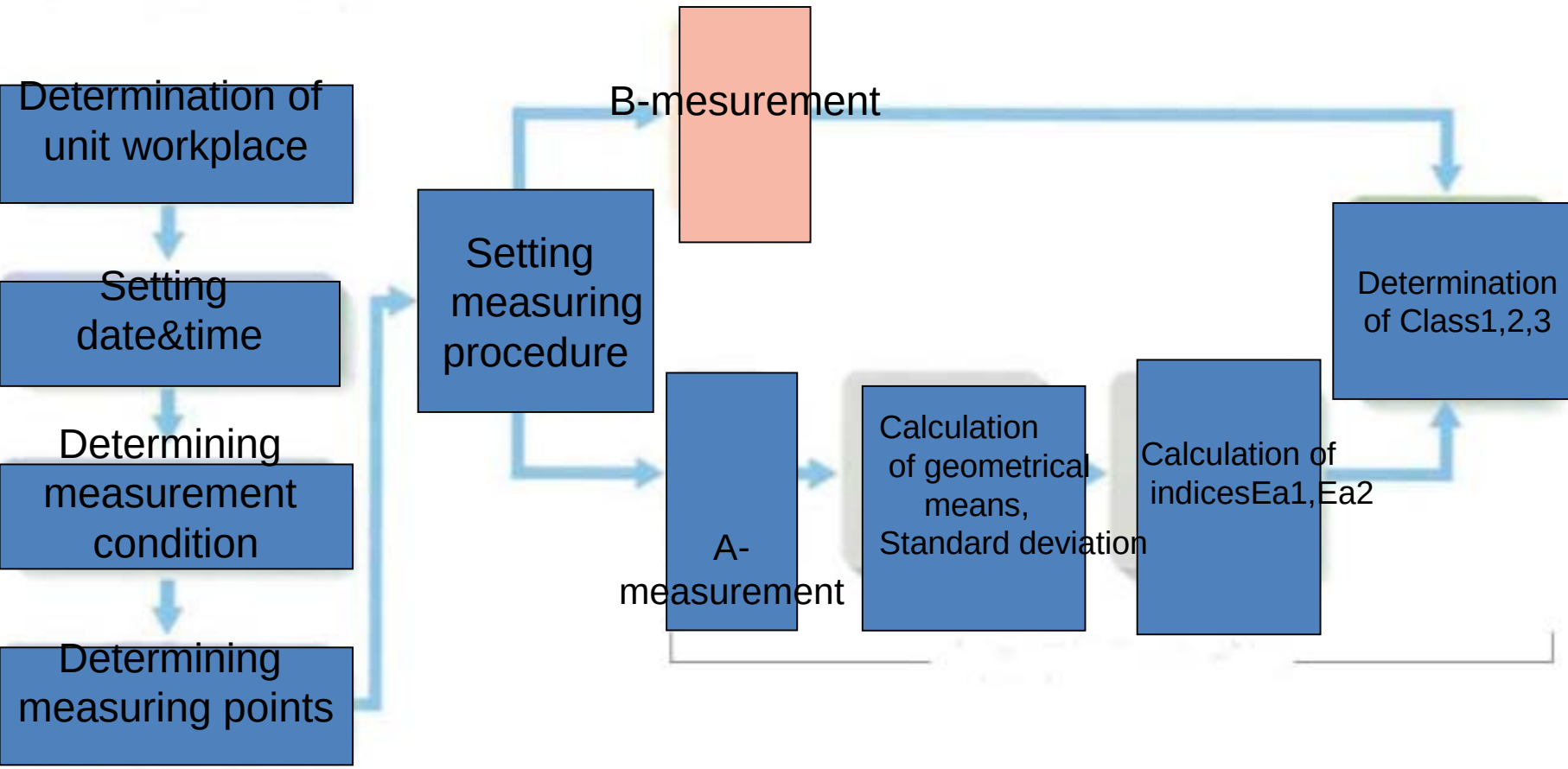
(2) Sampling points shall be provided at not less than 5 points though when they become less than 5 points then the above rule is applied regardless of the provisions of the preceding item. However, when the unit work area is very narrow and it is obvious that the concentration of chemicals/dust is substantially uniform, the number of sampling points may be less than 5.

(3) The measurement prescribed in the preceding section shall be made at such

time when work is regularly performed.


Working Environment Measurement Expert
Airborne Concentration
Mineral dust
Organic solvents
Specified metals
Specified chemicals
Radioactive materials

# Steps of Working Environment Measurement




Design

Sampling /analysis

Statistical treatment

# definition

1st. Evaluation Value (Ea1)

Estimated value suited to 5% from the highest level among the actual value of airborne toxic substances at working hours at all possible points in a unit work area.

2nd. Evaluation Value (Ea2)

Estimated value of the arithmetic mean concentration of airborne toxic substances in a unit work area.

# Control Class Ⅰ

＜condition of working area＞

Concentration of airborne hazardous chemical does not exceed the administrative control level at almost (more than 95%)points.

＜measures to be taken＞

Nothing to be taken. To continue the current working environment control to keep the present condition

# Control Class II

＜condition of working area＞

Mean concentration of airborne hazardous chemical does not exceed the administrative control level .

＜measures to be taken＞

Try to take necessary measures ,based on the result of inspection of facilities,equipment,operation or work procedure

# Control Class III

＜condition of working area＞

Mean concentration of airborne hazardous chemical exceeds the administrative control level .

＜measures to be taken＞

①Take necessary measures, as soon as possible, based on the result of inspection of facilities, equipment,operation or work procedure

②Use effective respirator, if necessary.

③carry out medical examination or other measures, if necessary.

# Classification of control class(1)
# “A-sampling only” case

| Ea<E | Ea1≧E≧Ea2 | Ea2>E |
|---|---|---|
| Class Ⅰ | Class Ⅱ | Class Ⅲ |

# Classification of control class(2)

Both “A-sampling “and “B-sampling” case

| | Ea1＜E | Ea1≧E≧Ea2 | Ea2＞E |
|---|---|---|---|
| CB＜E | Class Ⅰ | Class Ⅱ | Class Ⅲ |
| E1≧CB≧1．5×E | Class Ⅱ | Class Ⅱ | Class Ⅲ |
| CB＞1．5×E | Class Ⅲ | Class Ⅲ | Class Ⅲ |

# Characteristics of Japanese Working environment measurement

○ **measurement of the airborne concentration of chemicals/mineral dusts/asbestos fibers, etc ., in the workplace atmosphere**

**→statistical treatment of the measurements results to calculate geometrical mean value and geometrical standard deviation**

**→to calculate indices to be compared with "control levels" that are values stipulated for each hazardous chemicals by the government**

**→comparison between "indices" and "control levels"**

**→determination of "which Class Ⅰ , Ⅱ orⅢ the workplace falls"**

- **if Class Ⅰ →the workplace condition is good and no action is needed**
- **if Class Ⅲ→the workplace condition needs improvement to realize Class Ⅰ**
- **If Class Ⅱ → the workplace condition is between Class Ⅰ and Ⅱ it is encouraged to realize Class Ⅰ by checking the workplace condition and taking necessary action**

# Comparison of Japanese method with those of US/European method

○ **Japanese methods**

→**measuring airborne concentration without regards ,principally, to workers exposure concentration**

→**the result is used for evaluation of workplace conditions as to whether any action for improvement is needed or not .**

✳**main purpose→to lead to working environment improvement**

○ **US and most European countries' method**

→**measuring workers' exposure to chemicals**

→**in terms of 8 hours' time weighted average**

→ **compare results with "Occupational Exposure Limits (OEL) for respective chemicals**

**OELs are recommended from some of the institutions such as TLVs from ACGIH.**

✳**main purpose→to evaluate workers' exposure rather as a means of health control than that of working environment control**

# ○The merit of Japanese measurement system

① better practicality/feasibility for employers to make measurements
→measuring airborne concentration is easier than measuring exposure of each worker

② closer connections between results of measurement and the identification of the facility/equipment that needs improvement

# Japan Working Environment Measurement Association (JAWE)

- **Founded in 1954 as a public corporation with members of Working Environment Measurement (WEM)Experts as well as organizations and other supporting members**
- **Headquarter and 13 branches covering all Japan**
- **Duty/business**
  - **Skill training course stipulated by law for candidate of WEM Experts who have passed authorised qualification examination**
  - **Various kinds of Education and training for WEM Experts**
  - **Special courses for WEM Experts to become possible Occupational Hygienists accredited by JAWE**

# Number of WEM Experts (plural counts. )

| | number |
|---|---|
| 1st kind (design ,sampling and analysis for Mineral Dust) | 9,581 |
| 1st kind (design, sampling and analysis for radioactive material) | 4,205 |
| 1st kind (design, sampling and analysis for specified chemicals) | 9,703 |
| 1st kind (design, sampling and analysis for specified Metal) | 6,145 |
| 1st kind (design, sampling and analysis for Organic Solvents | 13,258 |
| 2nd kind | 5,771 |

# Thanks for your attention!

From presentation in Pusan, Korea by S.Asuka

Executive director,JAWE