



General Description of Japanese Measures for Soil Contamination, and Plan for Future Measures

Soil Environment Management Division
Environmental Management Bureau
Ministry of the Environment
Government of Japan

Soil Contamination Countermeasures Act

※ Proclamation in May 2002; Enforcement in February 2003

**Investigation of soil
contamination status**

- **Obligation to investigate (Article 3)**
- **Investigation methods (Article 4)**

**Designation and notice of
designated areas**

- **Designated areas (Articles 5 and 6)**

Management of health risk

- **Control measure methods (Article 7)**
- **Obligation to notify upon land character change (Article 9)**

Soil Contamination Countermeasures Act

- (1) Health effects due to direct ingestion of contaminated soil
- (2) Health effects due to water contamination

Investigation

- When specified facilities using hazardous substances are discontinued
- When a regulatory authority encounter the possibility of adverse health effects from soil contamination

Investigation and reports

By landowner, site management

Designated Areas

Designated and announced by regulatory authorities and registered on the list of designated areas for public disclosure



Management of designated areas

Control of land character changes

- Notification to regulatory authority about character change of land in designated areas
- If inappropriate, regulatory authority direct applicants to redraft plans

When regulatory authority encounter the possibility of adverse health effects from soil contamination



Contamination remediation measures

regulatory authority direct the polluter or landowner in the execution of contamination remediation.

- Measures to prevent direct ingestion
- Measures for prevent ingestion of groundwater

Designated areas are de-registered, when remediation is completed

Concentration Standard & Leachate Standard

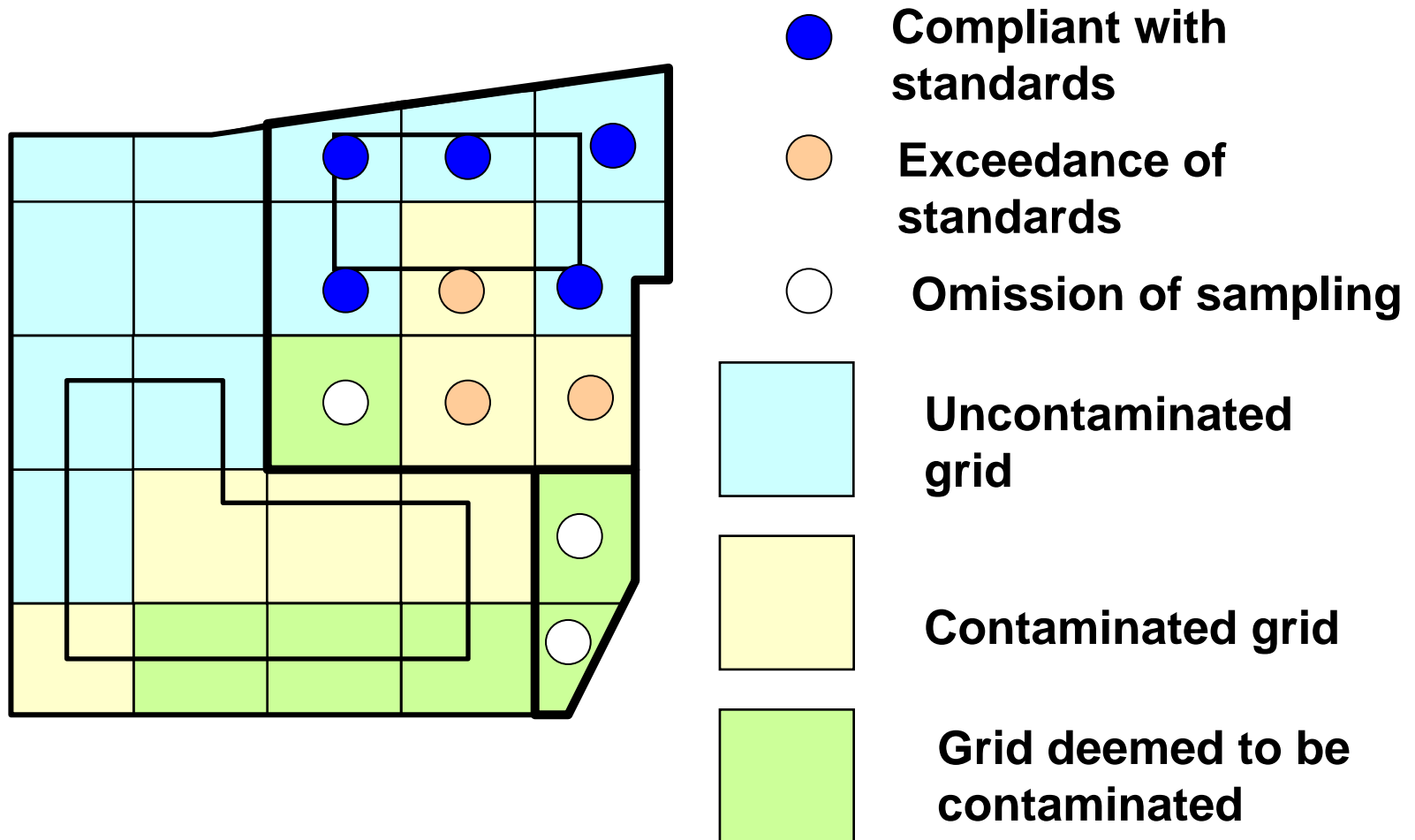
- **Japan sets out two soil standards - Concentration and Leachate Standards** for each hazardous substance
- **Concentration Standard:** Based on the perspective for human's direct ingestion of contaminated soil
- **Leachate Standard:** Based on the perspective for human's ingestion of groundwater contaminated by hazardous substances eluted from contaminated soil

E.g.)

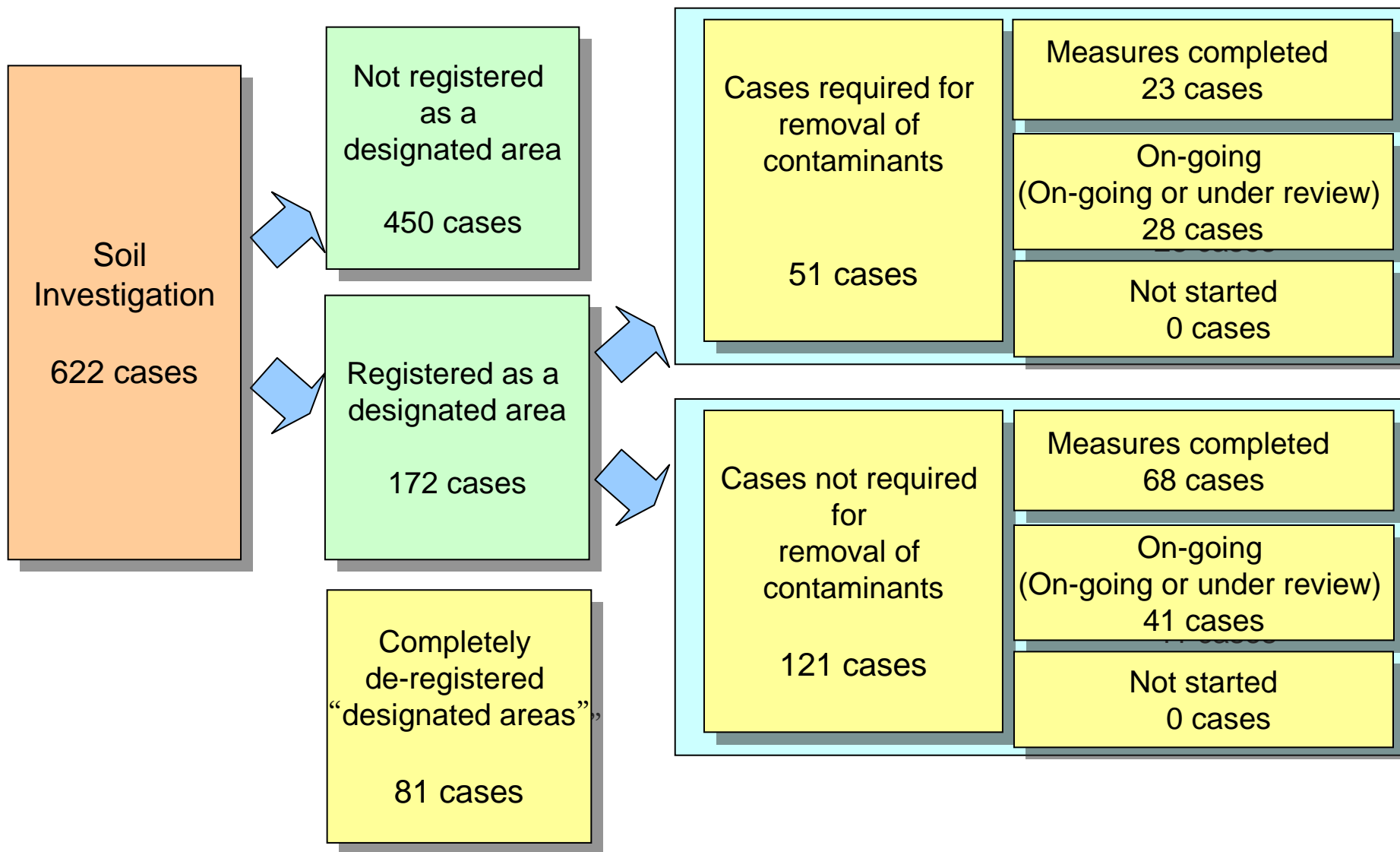
Lead 150mg per 1kg of soil (Concentration Standard)

Lead 0.01mg per 1L of liquid (Leachate Standard)

Identification of contamination (Result of investigation)

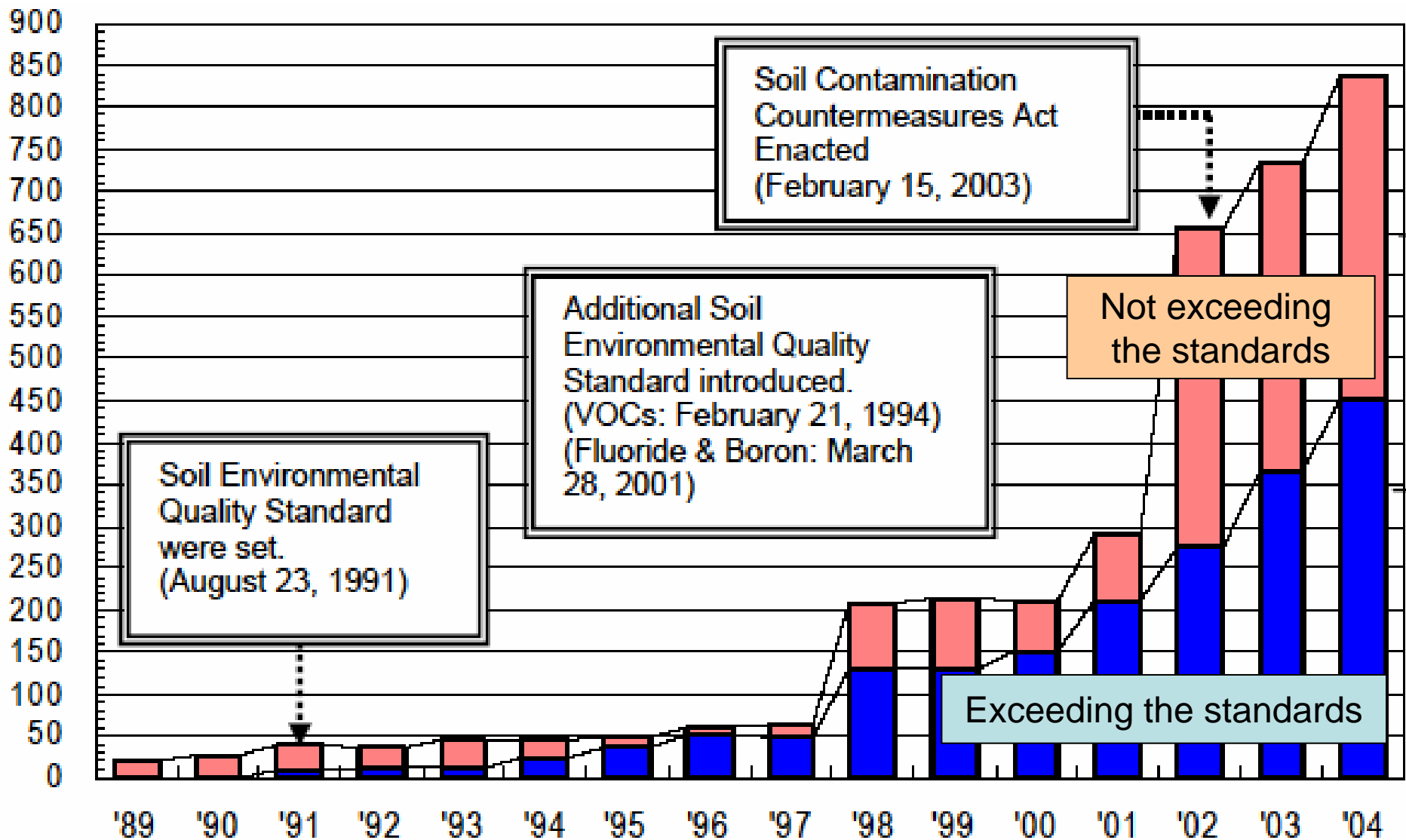


Statistics about designated areas



Data for the period between 15.2.2003 and 14.2.2007

Changes in number of soil investigations and the ratio of exceeding cases in each fiscal year

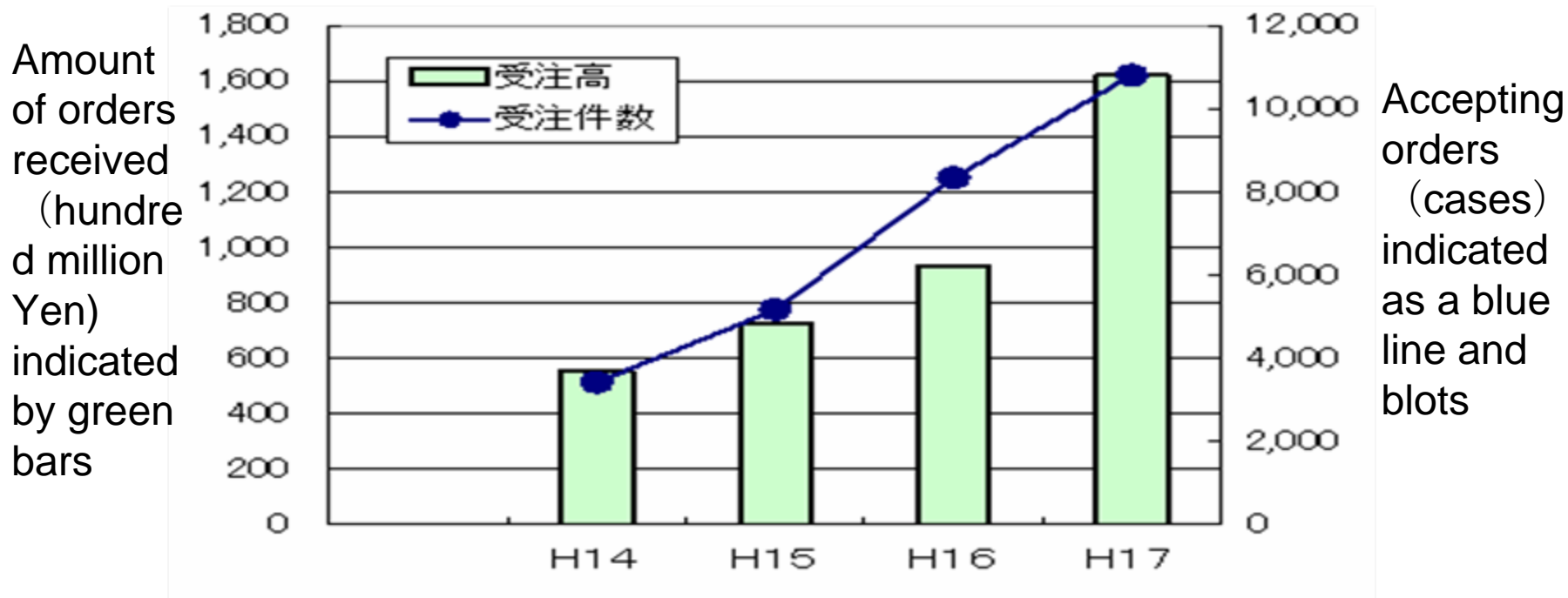


Increase of soil investigation & remediation

1. Annually increasing the number of legally required soil investigation & remediation
 2. Municipal bylaws also promote soil investigation and remediation
 3. Further expansion of soil investigation & remediation markets due to real-estate transaction such as land transaction and re-development
- Increasing the number of soil investigation & remediation on annual base

Statistics on soil investigation & remediation undertaken by private sector

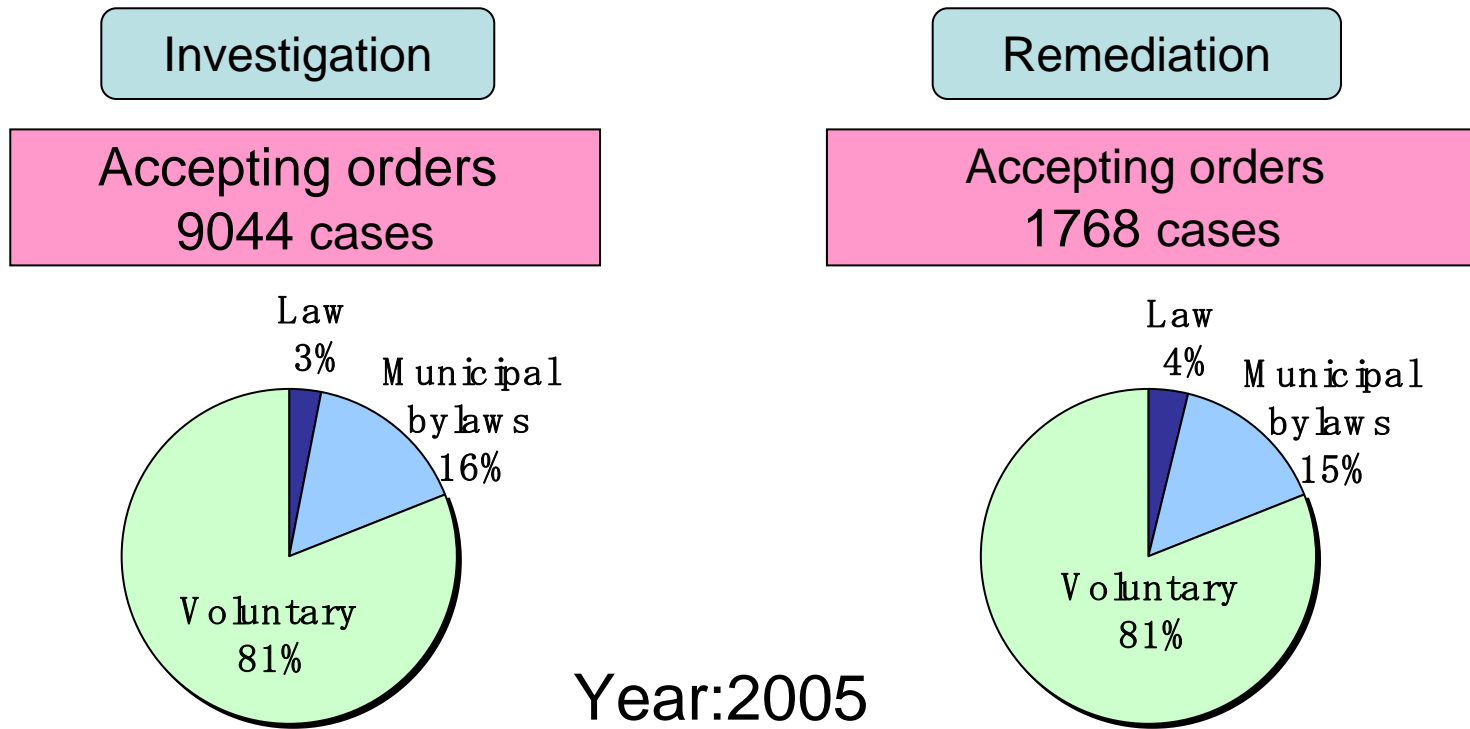
	2002	2003	2004	2005
Accepting orders (cases)	3,424	5,178	8,349	10,812
Amount of orders received (hundred million Yen)	553	729	935	1,624



Data on soil investigation & remediation market

Enforcement of Soil Contamination Countermeasures Law triggered increase of soil investigation & remediation

1. Promoted by Municipal bylaws, but also
2. Lead by real-estate transactions



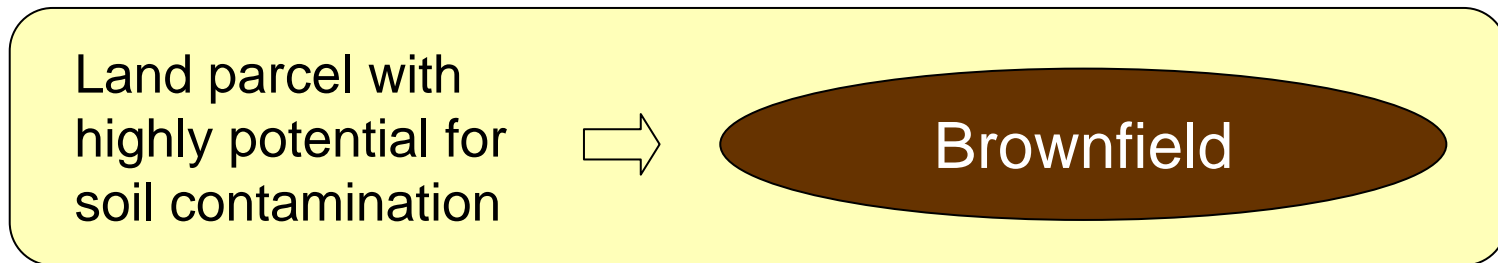
Current trends of remediation measures

- **Trends:** Complete removal of contaminated soil as the most frequent remediation measures as opposed to measures to block the pathway to receptor such as capping, filling, or containment of contaminated soil
- **Reason:** Real-estate transaction
- **Result:** Removal of contaminated soil increases costs for remediation of contaminated land
- **Consequent:** This trend accounts for a part of Brownfield problem.

Brownfield problem in Japan

Definition of Brownfield: A land parcel which became to be used as significantly lower application than potential value of the original land or became abandoned due to presence of soil contamination or concerns over potential presence of contamination

- Currently, Brownfield is not yet so important social issue. But Brownfield problem may get more strained in future dependent on social/economic circumstances. To prepare for the future problem, some action is needed.



Brownfield sites abandonment without preferable land use



Considerable consequences if no action is undertaken:

- Environmental problems
- Obstacles to re-development
- Devitalization of the region

Estimated Brownfield problem in Japan (provisional estimation)

Category	Type	Size (ha)	Asset value of land	Remediation cost
Contaminated sites	High risk for soil contamination	113,000	43 trillion Yen (360 billion USD)	17 trillion Yen (140 billion USD)
Potential Brownfield	Land-selling difficult due to the remediation cost	28,000	11 trillion Yen (90 billion USD)	4 trillion Yen (35 billion USD)

Reference:

The total area of 23 wards of Tokyo:

Approximately 62,000 ha

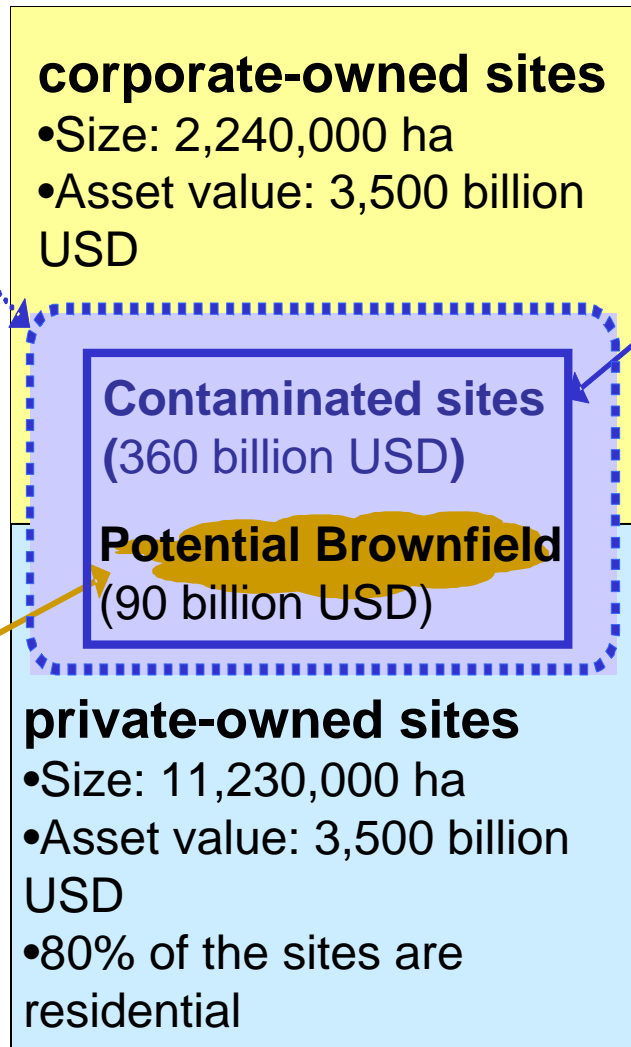
Estimated Brownfield problems in Japan (provisional estimation)

Potentially contaminated sites:

- Size: 272,000 ha
- Asset value: 800 billion USD
- Potentially contaminated soil based on the land use

Potential Brownfield

- Size: 280,000 ha
- Asset value: 90 billion USD
- Land-selling difficult due to the remediation cost



Contaminated sites

- Size: 113,000 ha
- Asset value: 360 billion USD
- Highly potential for soil contamination

Statistics as of 2003

Economic trends on soil contamination

Soil contamination issues affect economy/society, and may trigger Brownfield problems.

Soil contamination is:

- Considered in real-estate appraisal
- Expected to be reflected in mortgage collateral appraisal for financial dealing
- To be recognized as liability and evaluated by accounting standard in corporate accounting
- as potential source to increase abandonment sites or sites without preferable land use dependent on balance in the supply and demand of land

Strategy to solve Brownfield problems

Current Japanese trend for “**Removal of contamination** (removal of the soil or on-site remediation)” **in ANY case** is undesirable

- not only due to Brownfield issues,
- but also from the view point of economically reasonable environmental measures

Necessity of measures to enhance the effective land use by

- understanding the impact and circumstances of soil contamination properly,
- dealing with soil contamination wisely, and
- Effectively managing limited soil resources

Comprehensive (environment, social and economic) approach is needed

Future deployment of soil policy

- Five years passed by since the enforcement of Soil Contamination Countermeasures Act
- Need for review of policy enforcement for soil environment
- Committee meeting on the revision of measures for soil environment held in June 2007
- Currently, measures for soil environment are under review: Not only environment, but also social/economic issues are recognized
- The results is expected to be compiled by the end of 2007

Major Issues

- 1 . **Need to expand the coverage of the law**
as soil investigation and remediation are often conducted for real-estate transaction and re-development purposes
- 2 . **Need to strengthen rules on treatment of excavated contaminated soil**
as removal of contaminated soil is most frequently undertaken because of the influence of property deal
- 3 . **Need an action for Brownfield issues**

Future Actions

A law revision or concretization of measures

- Depend on the report of committee meeting on the revision of measures for soil environment, further consultation with the Central Environment Committee may be necessary to discuss the revision of the law

Crucial references to consider measures for soil environment of Japan are:

- Regulations and countermeasures of foreign countries (e.g. USA, Germany, Holland, France, UK etc.), the EU's thematic strategy for soil protection from last year, and soil-contamination-related EU Directives