

Waterproofing Spray Poisoning (1993)

Waterproofing agent
fluorocarbon resin

Solvent

~~1,1,1-trichloroethane~~

isopropyl alcohol

n-hexane

n-heptane

Propellant

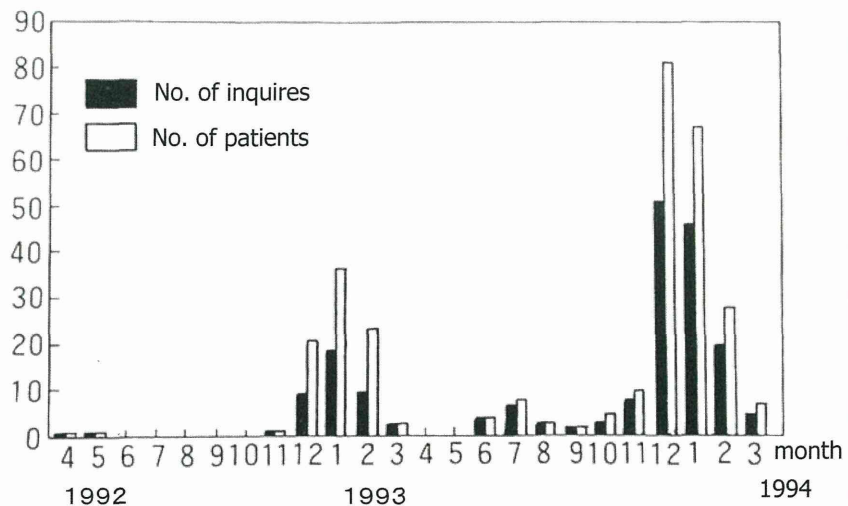
Liquefied Petroleum Gas (LPG)

Carbon dioxide (CO₂)

~~Chlorofluorocarbons~~



1992-1994: Formulation were on the improve



Number of Telephone Inquiries
about a Waterproofing Spray

Summary of Telephone Inquiries about a Waterproofing Spray (1992)

Product	No. of inquiries	
(A)	16	Fluorocarbon resin, Silicon resin, n-heptane
(B)	15	Fluorocarbon resin n-hexane, gasoline
(C)	1	Fluorocarbon resin n-hexane
(D)	1	Fluorocarbon resin, 1.1.1-trichlorethane
(E)	1	Fluorocarbon resin, 1.1.1-trichlorethane
(F)	1	Fluorocarbon resin, 1.1.1-trichlorethane
Others and unknown	6	

Summary of Telephone Inquiries about a Waterproofing Spray (1993)

Product	No. of inquiries	
(1)	52	Fluorocarbon resin A 1,1,1-trichlorethane
(2)	19	Fluorocarbon resin A Isopropyl alcohol
(3)	11	Fluorocarbon resin A Iso-hexane, other chemicals
(4)	6	Fluorocarbon resin B Silicon resin, other chemicals
(5)	2	Fluorocarbon resin B Silicon resin, other chemicals
(6)	3	Fluorocarbon resin B Silicon resin, n-heptane,
Others and unknown	58	

Typical Severe Case of Waterproofing Spray Poisoning

Case 1 17y female

Am 8: used a waterproofing spray in a hotel room

Am 11: tachypnea, headache, nausea

PM 10: PaO₂ 53mmHg, pulmonary edema on chest X-ray
(6 days admission)

Case 2 24y male

AM 7: used a waterproofing spray in his car

AM 8: dyspnea,

AM 11: PaO₂ 59mmHg, pulmonary edema on chest X-ray
(8 days admission)

The MHLW Task Force

- The JPIC noticed that a few specific products caused the poisoning.
- The JPIC immediately informed the event to the Ministry of Health, Labour and Welfare (the MHLW).
- The MHLW established the waterproofing spray poisoning task force with specialists including poison information specialists of the JPIC, clinical toxicologists, risk assessors, industrial manufactures.

The Task Force Report



- The task force report (1994; Japanese version)

- Toxicity of a waterproofing spray is influenced by the mist particle size and the adhesion rate.

Yamashita M. et al Vet Human Toxicol 1997; 39: 332-334.

Particle size is influenced by following conditions:

- Viscosity of waterproofing agent
- Volatility of solvent
- Solubility and gas pressure of propellant
- Shape of nozzle
- Other

Causative products
diameter: 20-58 μm
adhesion rate: 30%
Non-toxic products
diameter: 60-140 μm
adhesion rate: 60%

Number of Telephone Inquiries about a Waterproofing Spray



After the Event: the JPIC & the MHLW Collaboration

- 1) Annual report of monitoring the health hazardous cases caused by consumer products
- 2) Guidance of preparing the manual of safety management for manufacturing and distributing
- 3) Consumer product label for prevention of health hazard caused by product
(Health and Labour Sciences Research Grants, 2002-2004)
- 4) Multiple-Hospital Research Project for Collection of Human Data in Japan (Acute poisoning, for risk assessment)
(Health and Labour Sciences Research Grants, 2003-2005)
- 5) Multiple-Hospital Research Project for Collection of Human Data in Japan (Acute poisoning of consumer products, for risk management)
(Health and Labour Sciences Research Grants, 2006-2008)

Annul Report of Monitoring the Health Hazardous Cases caused by Consumer Products (by the MHLW)

- 1) Accidental ingestion cases by children (1979~)
reported by pediatrician in 8 monitoring hospitals
859 cases were reported from Apr.2003 to Mar.2004.
•tobacco: 350 cases, •medicines: 99 cases
- 2) Dermal exposure cases (1979~)
reported by dermatologists in 8 monitoring hospitals
194 cases were reported from Apr.2003 to Mar.2004.
•accessories: 48 cases, •detergents: 38 cases
- 3) Inhalation and ocular exposure cases (1996~)
reported by the Japan poison information center
742 cases were reported from Apr.2003 to Mar.2004.

JPIC Response for Chemical Disaster

- Sarin poisoning
- Arsenic poisoning

JPIC Actions to the Sarin Gas Attack on the Tokyo Subway (Mar. 20, 1995)

Casualty: 6,500 victims and 13 deaths

Information service: 143 telephone inquiries

from 56 hospitals treating 3,207 victims

Time table

08:00 The Outbreak of the Sarin tragedy

09:15 The first inquiry : explosion in subway ?

09:29 Possibility of acetonitrile poisoning ? (solvent)

10:00 Main symptoms : headache, miosis etc.

<JPIC sent acetonitrile and organophosphate monograph via FAX to hospitals>

11:00 "Sarin" was announced on radio and TV

<JPIC finally sent sarin monograph via FAX to hospitals >

Problems in JPIC revealed by the Sarin tragedy

1. 6 telephone lines and 3 facsimile machines are not enough to provide information on mass poisonings and chemical disasters.
2. JPIC should collaborate closer with other organizations concerned, to share the information.
(JPIC got information about the causative substance (Sarin) via only radio and TV.)

Solutions for the problems

1. Development of the automated facsimile services
2. Development of the information services via the Internet

JPIC Actions to the Arsenic Mixed Curry Intoxication in Wakayama (Jul. 25, 1998)

Casualty: 67 victims and 4 deaths

Information service: 13 telephone inquiries

Time table

July 25th 18:00 The outbreak of the incident

July 26th 5:30 Police announced "cyanide poisoning"

6:20 The first inquiry to JPIC from a hospital

11:25 The second inquiry to JPIC from
Wakayama-city public health center <FAX>

Aug 2nd 17:00 Police announced "arsenic poisoning"
<JPIC received 13 telephone inquiries>

Problems revealed by intoxication with chemicals mixed-in food and drink in 1998

1. The diagnosis and identification of the causative substance are not made promptly in Wakayama incident.
2. Effective collaboration network among poison specialists has not been established.
3. There is no uniform management manual for mass poisonings and chemical disasters.

Solutions for the problems

1. Development of the diagnosis database system based on clinical signs and symptoms
2. Operation of the poisoning specialists registration system for each toxic substance
3. Compilation of emergency management manuals for mass poisonings and chemical disasters

Diagnostic System Based on Clinical Signs/Symptoms

Select the presence or absence of clinical symptoms on the diagnosis database

Major category of Clinical Symptoms

1. General and Indefinite complaints on ingestion
2. Respiratory
3. Cardiovascular
4. Gastrointestinal
5. Neurological, psychiatric and musculoskeletal
6. Hepatic
7. Renal
8. Eye
9. Ear and Nose
10. Dermatologic
11. Abnormality of Laboratory data

The top 10 chemical substance groups are automatically displayed on the screen

Poisonous substances included in the diagnostic systems

- Designated by Poisonous Material Control Law
- Effective antidotes available
- Used in the past incidences

Industrial chemicals

1. Cyanides
2. Toluene / Xylene
3. Ethylene glycol
4. Methyl alcohol
5. Aniline / Nitrites
6. Phosphorus and phosphorus compounds
7. Arsenic and arsenic compounds
8. Cadmium and cadmium compounds

Agrochemicals

1. Organophosphates
2. Carbamate insecticides
3. Chlorinated hydrocarbon insecticides
4. Cartap
5. Nicotine (insecticides)
6. Paraquat / diquat
7. Glyphosate
8. Fluoroacetate (rodenticides)

..... → 75 groups (488 substances)

Actual Screen of Diagnostic System Based on Clinical Signs/Symptoms, named "Chudoku-kun"

Estimated Chemical Compounds

1. Arsenic & arsenic compounds	30
2. Chlorates	23
3. Antimony	22
4. Oxalate	19
5. Nicotine	19
6. Sodium Silicate	18
7. Mercury	17
8. Organophosphates	17
9. Carbamate insecticides	17
10. Paraquat	16

Retrieval Screen

検索(1) 呼吸器・循環器系

検索(2) 消化器系

Gastrointestinal

不明	口臭 Halitosis	不明	消化管穿孔
不明	口渇 Dry mouth	あり	腹痛
不明	味覚異常 Dysgeusia	不明	腸運動亢進
不明	嚥下困難 Dysphagia	不明	腸運動低下
不明	Abnormality of oral mucosa	不明	肝臓の異常
不明	Abnormality of sialorrhea	不明	脾臓の異常
YES	嘔吐 Vomiting	不明	脾腫
YES	下痢 Diarrhea		
NO	便秘 Obstipation		
unknown	Gastrointestinal hemorrhage		

Item Navigator

服用時刺激症状・不定燃病	2/22
呼吸器・精神系	0/21
眼科・耳鼻科系	0/24
呼吸器・循環器系	0/22
消化器系	4/27
腎泌尿器系・皮膚系他	0/2
検査(1)	0/28
検査(2)	0/28
回答項目数計:	6 / 222

Confirmation Screen

YES	NO	Miosis ?	Q1 Abnormality of Hb ?	あり	なし
あり	なし	Stimulation of nervous system ?	Q2 ECG changes ?	あり	なし
あり	なし	Cyanosis ?	Q3 Abnormality of total blood cell ?	あり	なし
あり	なし	Hypotension ?	Q4 Anemia ?	あり	なし
あり	なし	Cardiac failure ?	Q5 Leukocytopenia ?	あり	なし

Poisoning Specialists Registration System by Each Toxic Substance

The fields of specialists

- Pharmacology
- Industrial medicine
- Pathology
- Legal medicine
- Analytical chemistry
- Clinical medicine

Registered specialists

- Basic researcher : 75 persons
- Clinical researcher : 35 persons

Registered Contents of Poisoning Specialists Registration System

Affiliation

Address

Communication method

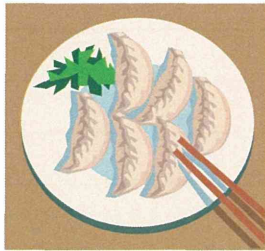
Research field

Poison or poisoning research subject

Representative relevant articles

Case report of chemical events by food contamination

Lesson to learned from Japanese Incident by **Imported Frozen Dumplings (Methamidophos poisoning)**

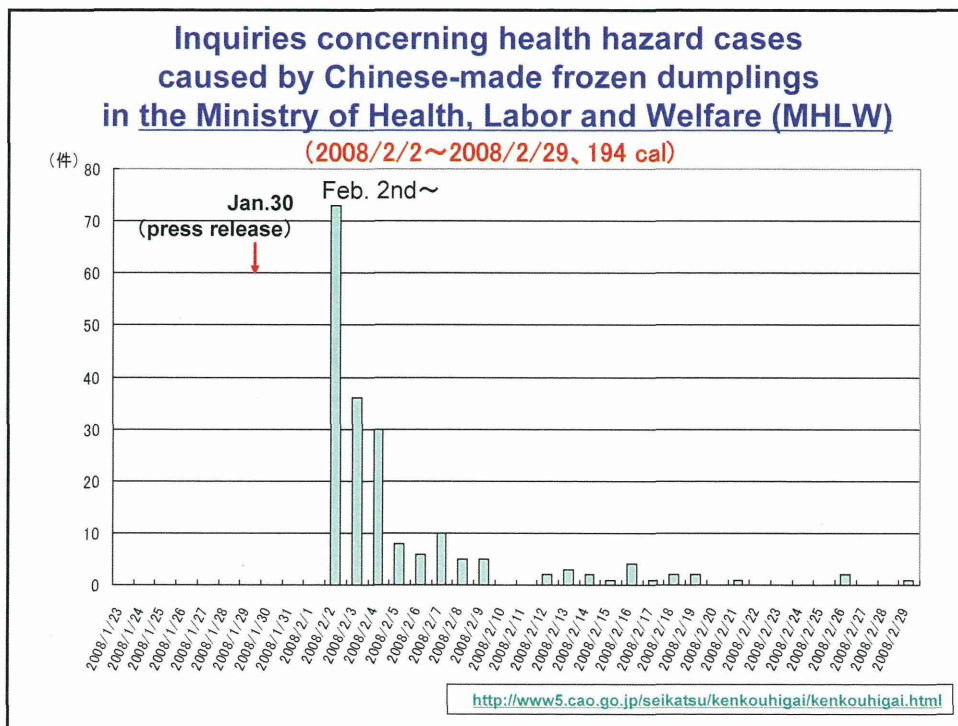


Methamidophos food contamination poisoning

An outbreak of food poisoning that affected **at least ten people** in various regions of Japan was traced to exposure to **Chinese-made frozen dumplings** contaminated with the organophosphate insecticide "**Methamidophos**" in January 2008.



On **January 29 2008**, the Tokyo metropolitan government reported to the Ministry of Health, Labor and Welfare (MHLW) that there had been suspected cases of organophosphate poisoning in Hyogo and Chiba prefectures. And that just before the onset of illness all of the patients had eaten frozen dumplings made by the same manufacturer and imported around the same time (November in the previous year) from China by the same company in Japan. The police investigation revealed that **methamidophos** was detected in the patients' vomit.



Number of reports and inquiries of prefectural and city governments after the announcement of health hazard caused by the Chinese-made frozen dumplings (January 30)

(from the material published by the MHLW, as of 15:00, March 31, 2008)

Prefecture	Number of patients confirmed to have organophosphate poisoning	Number of cases suspected of having organophosphate poisoning and currently under investigation ²		Number of cases whose suspicion of organophosphate poisoning was cleared		
		Hospitalized	Not hospitalized	Visited a medical institution ³	Did not visit a medical institution ³	Other ⁴
Chiba	7	0	0	63	148	41
Hyogo	3	0	0	45	95	47
Other	0	0	0	936	1,957	2,583
Subtotal	10	0	0	1,044	2,200	2,671
				Total 5,915		

Note 1: Cases to which all of the following apply:
 1) The patient has manifestations of organophosphate poisoning, such as neurological symptoms
 2) Decreased cholinesterase activity in the blood is observed
 3) Methamidophos is detected in the patients' vomit or from food
 * Although no test for 2) above was performed in two of the cases reported from Chiba, the people were treated as confirmed cases because the causal relationship between 1) and 3) seemed evident.

Note 2: Cases in which symptoms suggestive of organophosphate poisoning, such as neurological symptoms, were observed.

Note 3: Cases in which the patient complained of symptoms, but the suspicion was cleared by clinical diagnosis and/or test results.

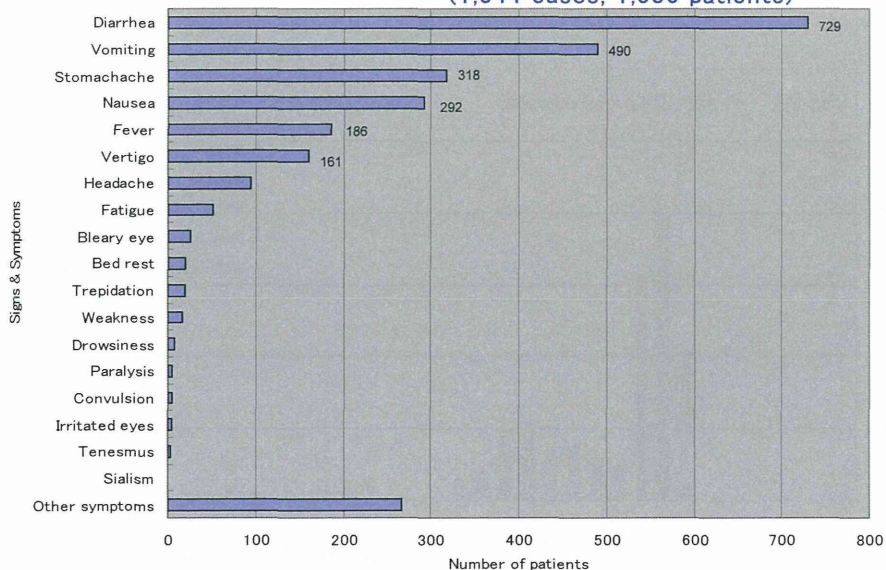
Note 4: Inquiry related to Chinese-made frozen gyoza and others

Patients confirmed to organophosphate poisoning

Prefecture	Number of patients confirmed to have organophosphate poisoning	
Chiba 1 (2007 Dec. 28)	2	<ul style="list-style-type: none"> • The patient has mild manifestations of organophosphate poisoning, such as vomiting, diarrhea, diaphoresis etc. • Methamidophos is detected from the food (19,290ppm) (36-year-old woman, 3-year-old girl)
Hyogo (2008 Jan. 6)	3	<ul style="list-style-type: none"> • The patient has manifestations of organophosphate poisoning, such as neurological symptoms • Decreased cholinesterase activity in the blood is observed • Methamidophos is detected in the patients' vomit or from food (13,200ppm) (18 year-old boy, 47 year-old woman, 51 year-old man)
Chiba 2 (2008 Jan. 22)	5	<ul style="list-style-type: none"> • The patient has manifestations of organophosphate poisoning, such as neurological symptoms • Decreased cholinesterase activity in the blood is observed • Methamidophos is detected in the patients' vomit or from food (31,130ppm) (5 year-old girl, 7 year-old boy, 10 year-old boy, 18 year-old girl, 47 year-old woman)
Total	10	

Signs & Symptoms of patients who visited a medical institution

(1,044 cases, 1,086 patients)



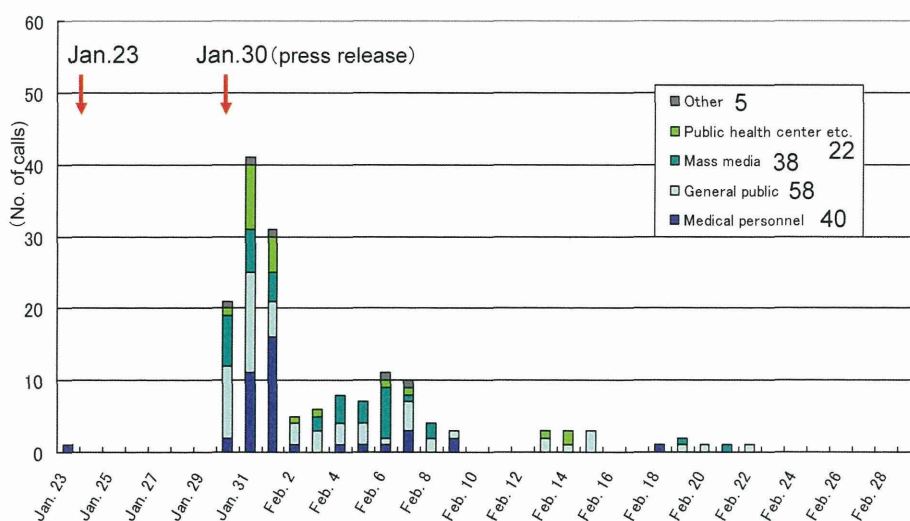
These cases in which the patient complained of symptoms, but the suspicion was cleared by clinical diagnosis and/or test results.

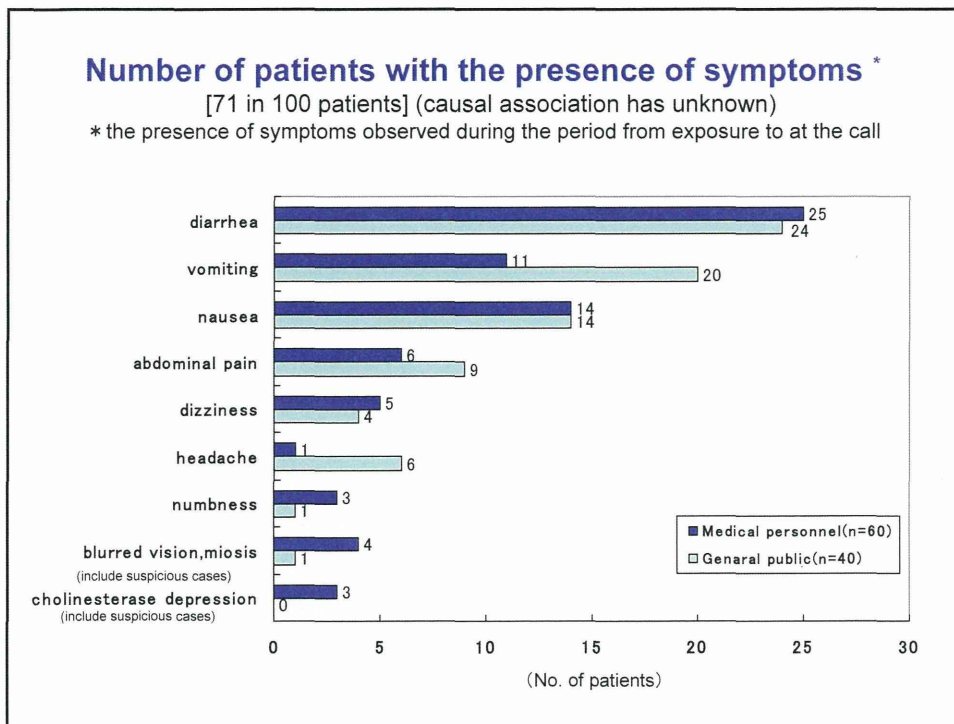
Methamidophos food contamination poisoning

- **JPIC** received a inquiry of organophosphate poisoning at **23rd Jan.** from a medical doctor before her patients arrived at the hospital.
- That case was turned out the most serious case (5 year-old-girl) caused by food contamination of methamidophos after a week at the time of press release.

Inquiries concerning health hazard cases caused by Chinese-made frozen dumplings in JPIC

(2008/Jan./23~2008/Feb./29, 163 calls)





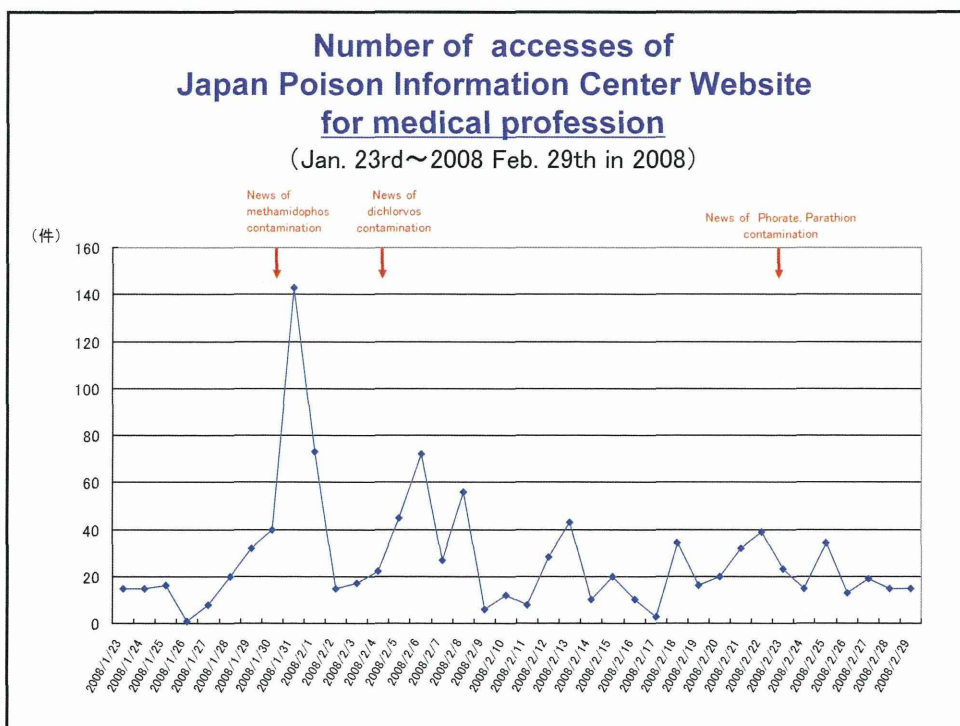
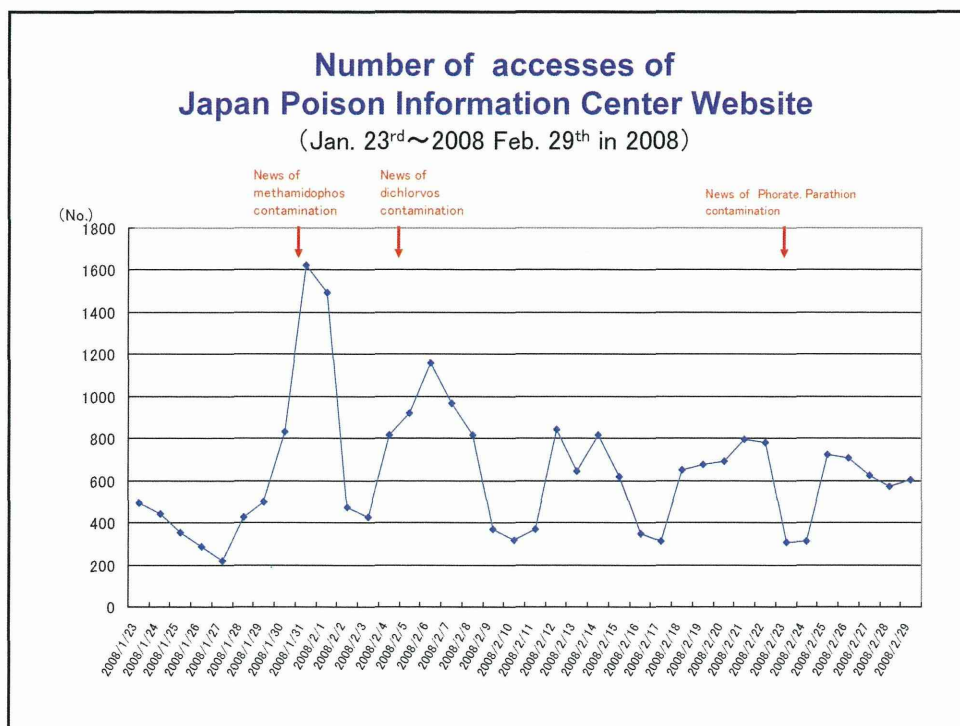
Chinese dumpling scare hits Japan - a case of methamidophos food poisoning

- The incident occurred in January 2008 in a family with one adult and four children after eating Chinese dumplings for dinner. Thirty minutes after dinner, all developed nausea, vomiting, and diarrhea.
- Dr. Sumi et al. experienced the most serious case, a five year-old girl, who suffered coma. She presented with features of cholinergic overactivity (miosis, bronchorrhea, hypersalivation) and her serum cholinesterase activity was 9 U/l (normal range, 194-467 U/l).
- They started intravenous treatment with pralidoxime iodide, atropine sulfate, and midazolam. Her symptoms improved gradually and she was discharged on day 25 without any complications.

JPIC received this case

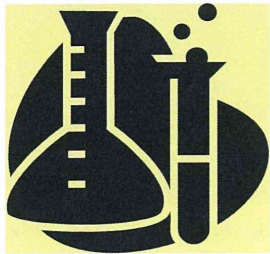
Y Sumi, Y Oode and H Tanaka: J. Toxicol. Sci., 33, 485-486, 2008.

資料 3



Case report of chemical events by familiar chemicals

Lesson to learned from Japanese Incident by **Hydrogen Sulfide** generated from household products



How to generated Hydrogen Sulfide

It was informed of "How to carry out a suicide" on the Internet "suicide site" in Japan from 2007



資料 3

