

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

..... → 75 groups (488 substances)

Agrochemicals

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

.....

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

The screenshot displays the 'Chudoku-kun' diagnostic system interface. It is divided into several sections:

- Estimated Chemical Compounds:** A list of compounds with their estimated counts:

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:** A screen for selecting symptoms and signs. It includes a search bar and a list of symptoms:

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	腫脹
YES	下痢	Diarrhea		
NO	便秘	Obstipation		
unknown		Gastrointestinal hemorrhage		
- Item Navigator:** A sidebar menu for navigating between different system components.
- Confirmation Screen:** A screen for confirming the diagnosis based on clinical signs and symptoms. It includes a list of questions and answers:

YES	NO	Miosis ?	Q1 Abnormality of Hb ?	あり	なし
あり	なし	Stimulation of nervous system ?	2 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)**

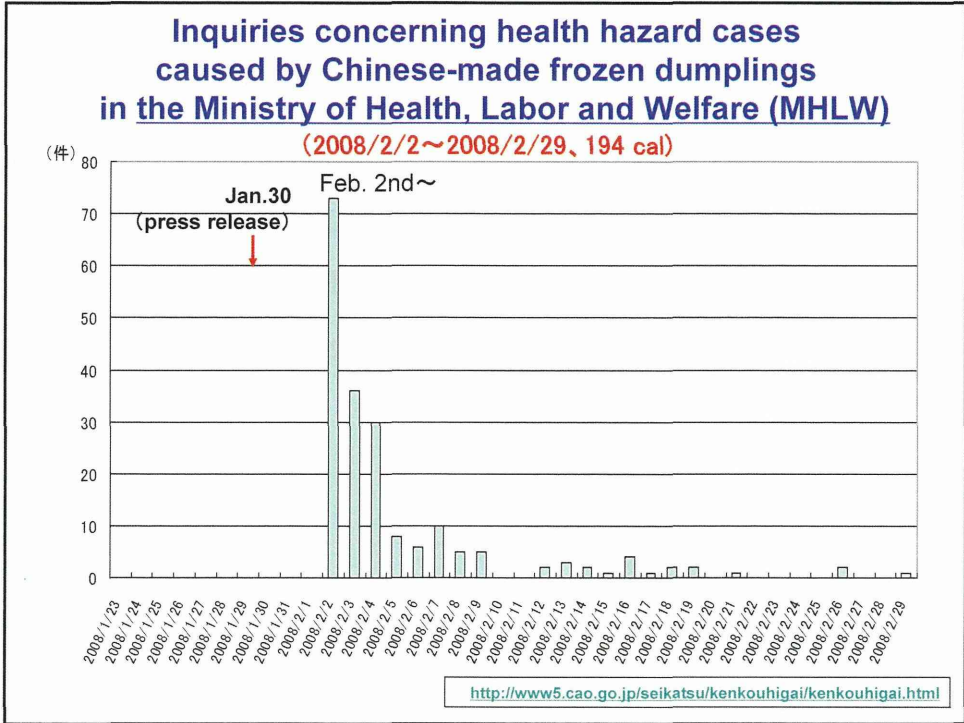


Methamidophos food contamination poisoning

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 ¹	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.

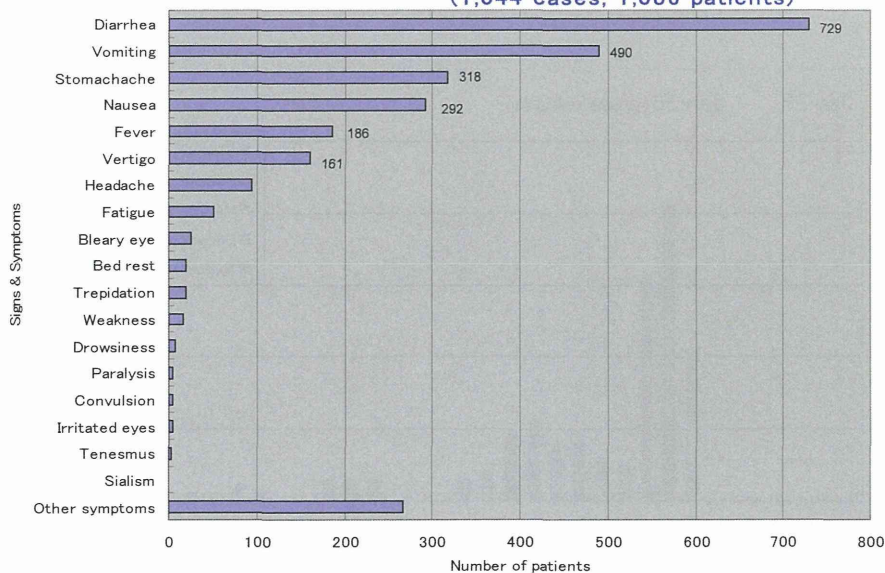
Note 4: Inquiry related to Chinese-made frozen gyoza and others

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)



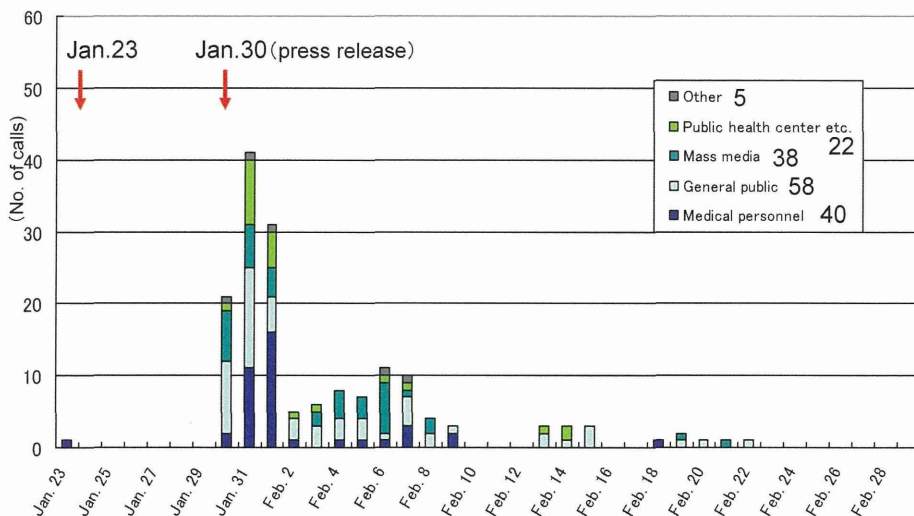
These cases in which the patient complained of symptoms, but the suspicion was cleared by clinical diagnosis and/or test results.

Methamidophos food contamination poisoning

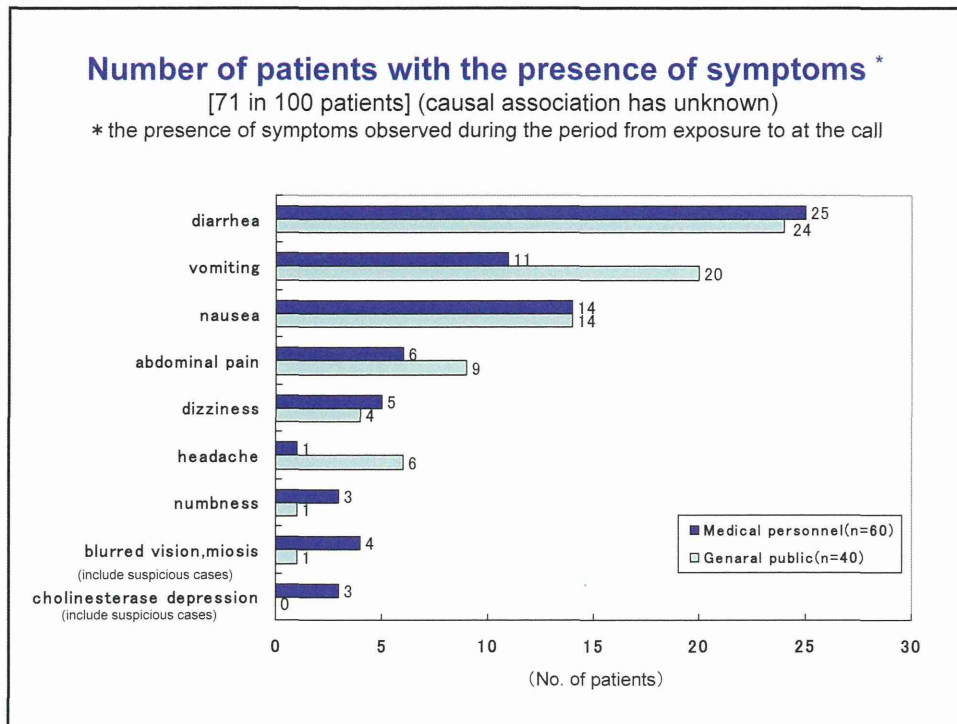
- **JPIC** received a inquiry of organophosphate poisoning at **23rd Jan.** from a medical doctor before her patients arrived at the hospital.
- That case was turned out the most serious case (5 year-old-girl) caused by food contamination of methamidophos after a week at the time of press release.

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

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



資料 1



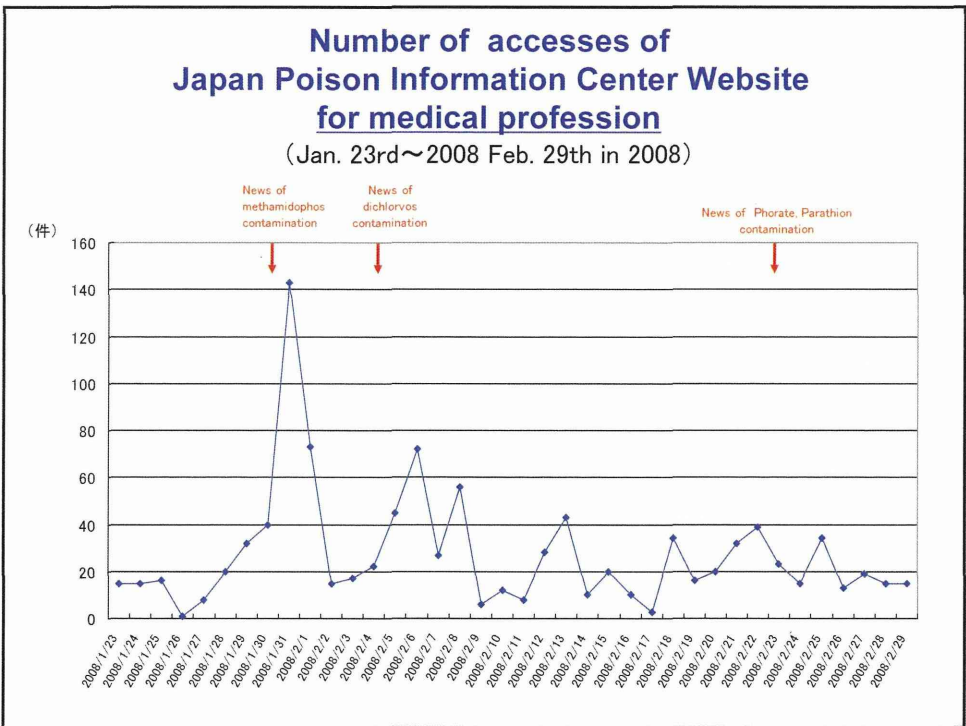
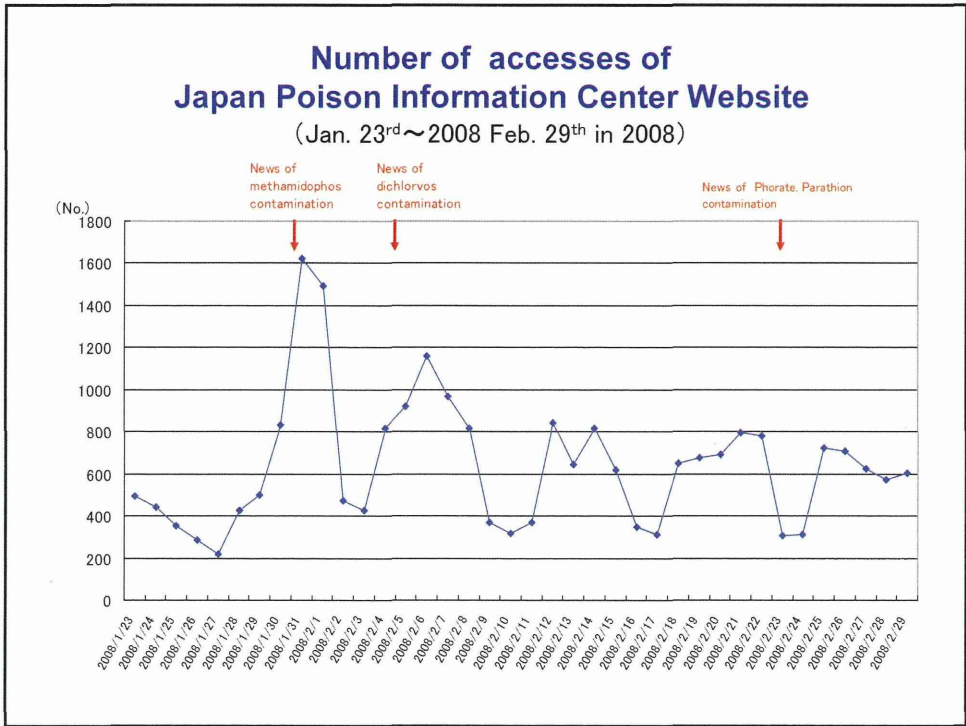
Chinese dumpling scare hits Japan - a case of methamidophos food poisoning

- 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 1



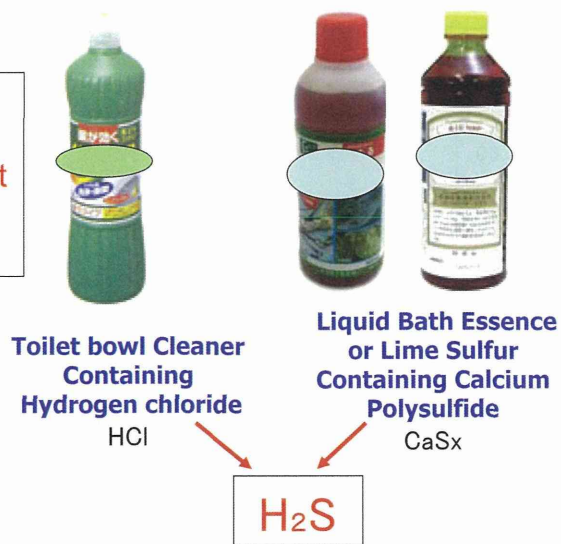
Case report of chemical events by familiar chemicals

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

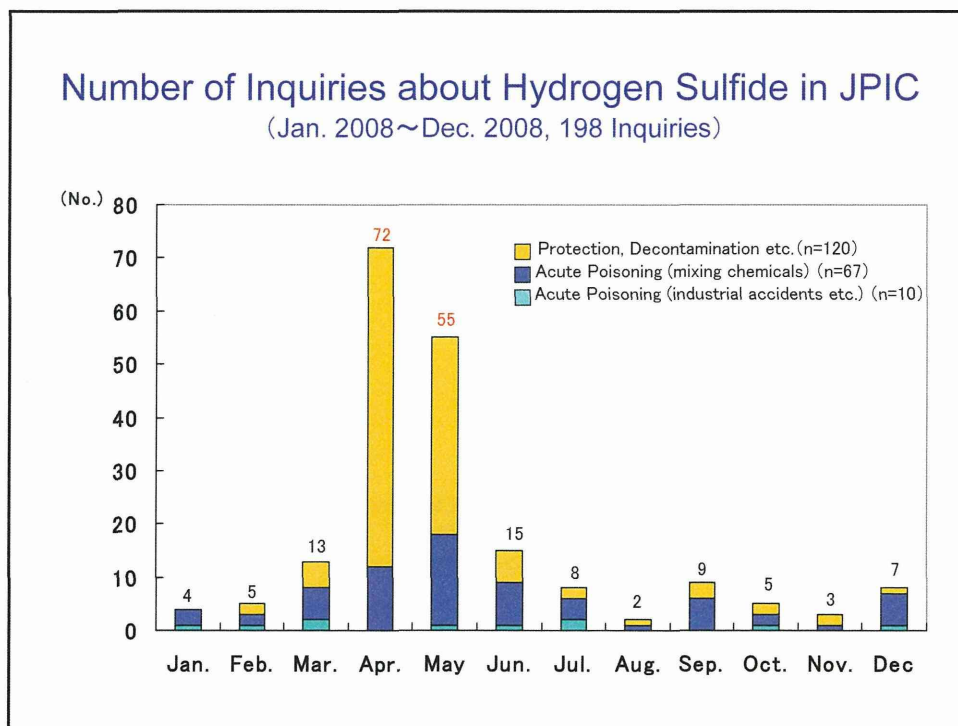
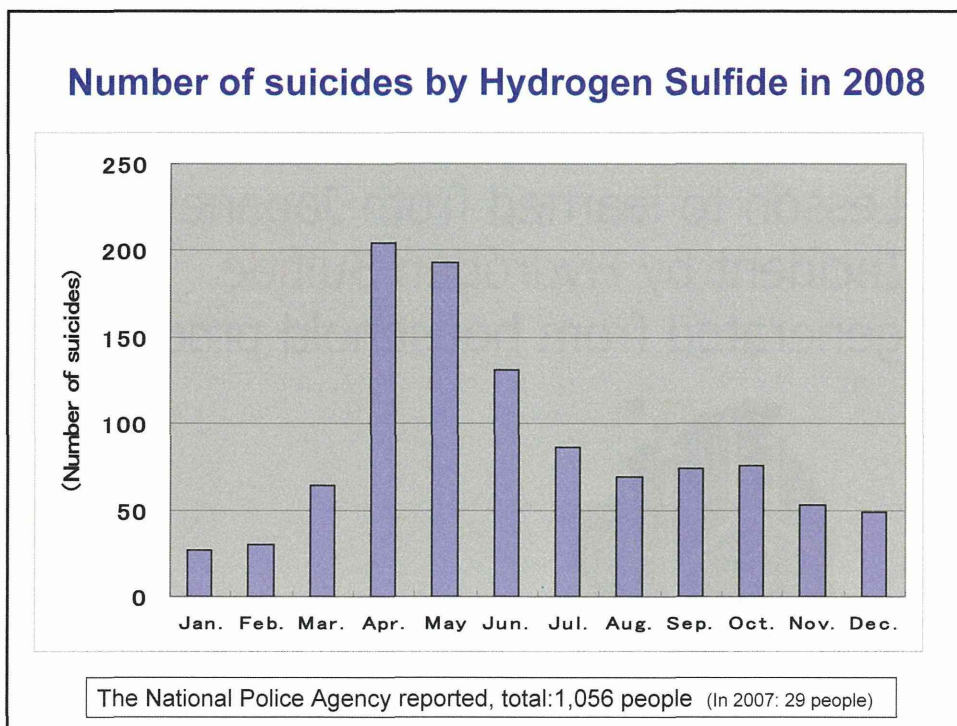


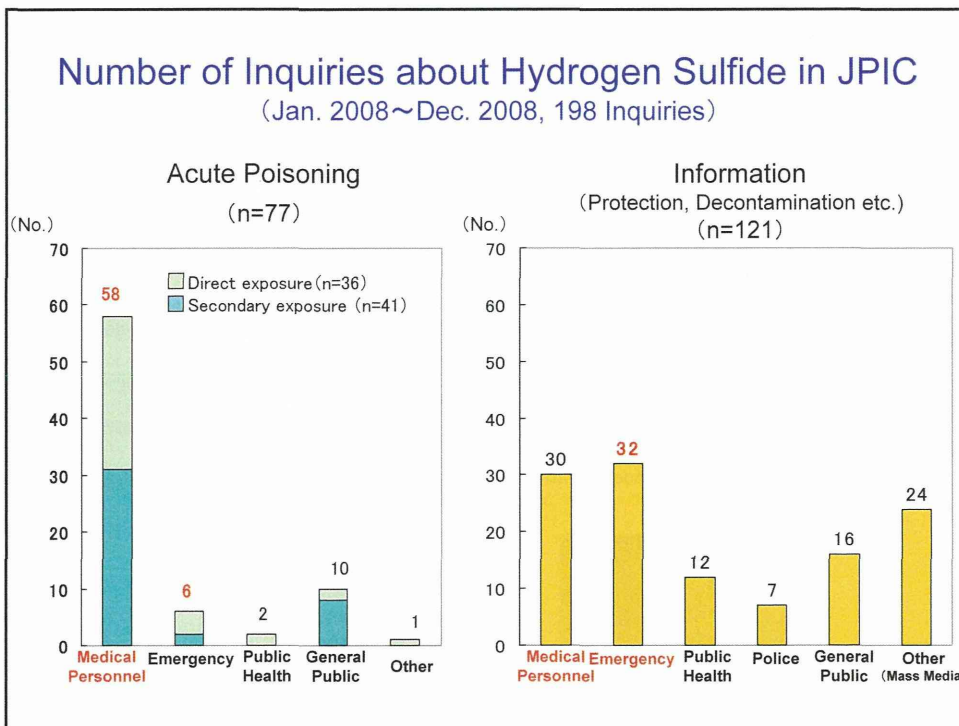
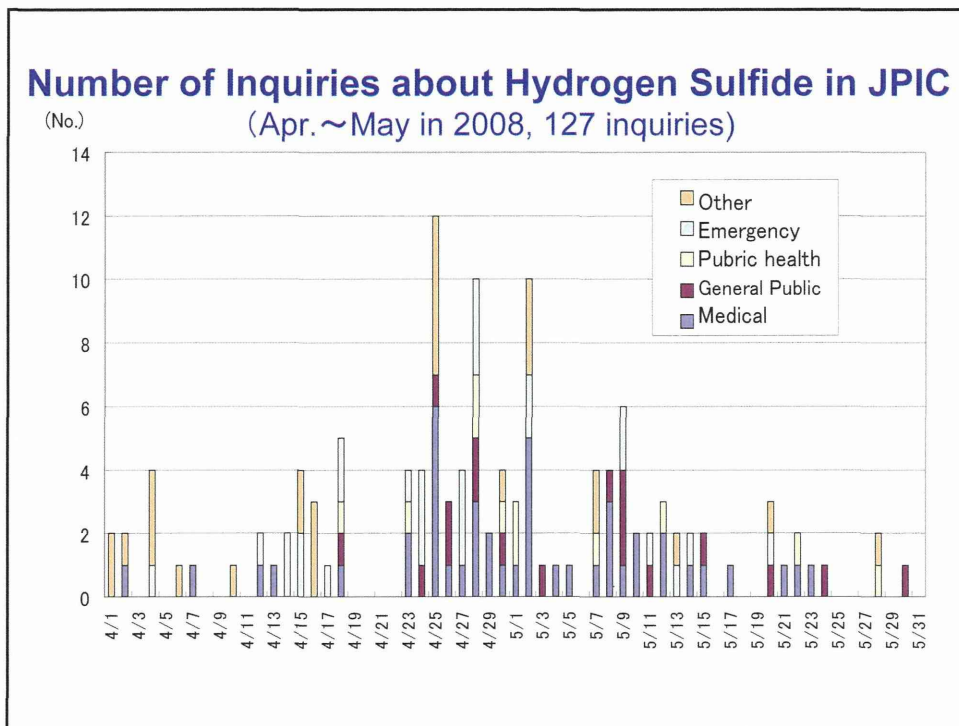
How to generated Hydrogen Sulfide

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



資料 1





Hydrogen sulfide suicides putting family members, neighbors at risk

(Mainichi Daily News, 2008 Apr. 24th)

- A spate of suicides by people mixing chemicals to create deadly hydrogen sulfide gas has occurred across Japan this April, while family members and residents have also fallen victim by inadvertently inhaling the gas.
- Inhaling hydrogen sulfide several times at a concentration of between 800 and 1,000 parts per million causes instant death. The chemical smells like rotten eggs, but in high concentrations it becomes odorless.
- In one incident in Hadano, Kanagawa Prefecture, last July, two family members of a man who committed suicide also died.
- In a separate incident in Nishinomiya, Hyogo Prefecture this April, residents in the apartment of a man who committed suicide were affected by the gas and were rushed to hospital.
- Following the spate of suicides, Kyoto Prefecture Police have asked Internet providers with offices located in the prefecture to delete Web pages that contain information on how to create hydrogen sulfide.

Teenage girl gasses self to death with Hydrogen Sulfide, 14 local residents hospitalized

(Mainichi Daily News, 2008 Apr. 24th)

- KONAN, Kochi -- A teenage girl fatally gassed herself by generating deadly hydrogen sulfide at her home here, forcing dozens of residents in the neighborhood to flee their homes, police said.
- Following the incident, 14 local residents including the girl's mother were hospitalized apparently after inhaling the toxic gas. Her death follows a spate of incidents in which people mixed detergent to produce hydrogen sulfide to kill themselves.
- At around 8 p.m. on Wednesday, a 14-year-old, third-year girl at a public junior high school was found dead after apparently inhaling hydrogen sulfide in the bathroom of her apartment inside a municipal housing complex in Konan, local police said.
- Three bottles containing commercially available detergent were found in the bathroom, leading investigators to suspect that she committed suicide by producing hydrogen sulfide.
- A total of 21 local residents were transported to four hospitals, and 14 of them were hospitalized. Sixty-eight other residents went to hospitals on their own.
- Due to fears of hydrogen sulfide poisoning, 75 residents of the housing complex were evacuated and spent the night at a nearby gymnasium.



Rescue workers question evacuees
at a gymnasium in Konan
where they took shelter.

JPIC received this case

If indiscriminate terrorism using **Hydrogen Sulfide** were occurred in office/subway !!



Taking alarm for upcoming G8 summit in Japan !!

2008.5.9 Weekly Post

Action for the events

- In April 2008, the Japanese government classified the information about synthesizing hydrogen sulfide as “harmful information” and, with the help of internet providers, restricted general access to the information.
- The bath essence product which was containing polysulfide, was collected voluntarily, and it was stopped selling and producing by the company.
- JPIC informed of treatment information etc. about hydrogen sulfide poisoning to the MLHW and medical professionals via the Internet and by materials.