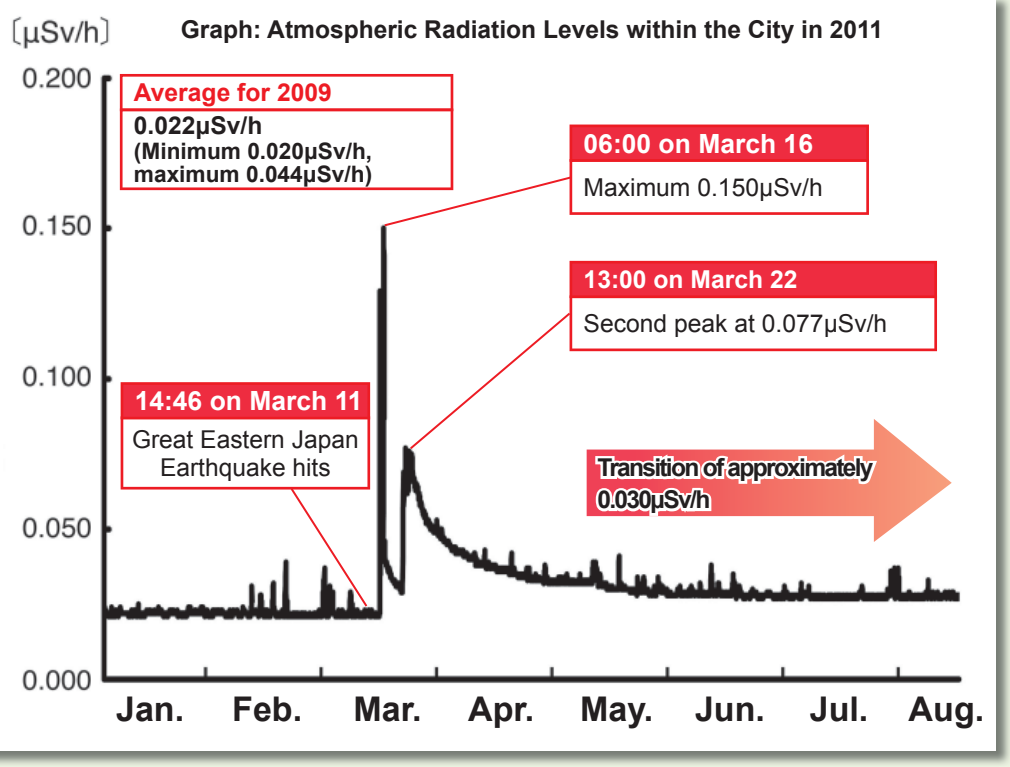
Radiation Levels in Yokohama (General Situation)

The City of Yokohama has been measuring radiation levels in the atmosphere (airborne dosages) since 1983, and we have continued with these measurements since the accident. As can be seen from the graph below, a maximum measurement of 0.150μSv/h (microsieverts per hour) was taken immediately after the accident on March 16, but this has now settled to around 0.030μSv/h, which is approximately the same level as before the accident (minimum of 0.020μSv/h to a maximum of 0.044μSv/h in 2009.) Similar trends have been recorded in other monitoring posts spread around Kanagawa Prefecture.

Graph: Atmospheric Radiation Levels within the City in 2011



Measurements taken at the monitoring post (*) located 23m above ground level at the Yokohama Institute of Environmental Sciences (Takigashira, Isogo-ku)
Measurements in units of gray (Gy) are taken at the monitoring posts and converted into microsieverts at a rate of 1 nanogray/hour (nGy/h) = 0.001 microsievert/hour (μSv/h).

* Monitoring posts are located in elevated positions on land and near buildings where changes in the effects of radiation are minimal in order to monitor radioactive substances in the air as swiftly as possible for the purpose of immediately recording any fluctuations that may occur.

In addition to this, surveys into substances falling to the earth (dust and rain) have revealed no cesium or iodine content, and there is consequently no evidence to suggest that radioactive substances that could have an adverse effect on health have accumulated in the soil in Yokohama.
We have also confirmed during airborne radiation monitoring at 220 facilities spread around the city in June and July that the amount of radiation being emitted from soil has no adverse effects on health. No areas in which particularly high levels of radiation or geographical discrepancies were recorded either.
This special edition has been issued to provide data on the levels of radioactivity in the elements that are indispensible for everyday life, including water, air and food, and to show that these levels are either undetectable or extremely minimal.
Yokohama today with regards to external exposure to radiation is at a level that will have absolutely no adverse effect on health, and we can assure you that you can carry on with your normal lifestyles with no worries at all.
Having said that, the government and all local authorities will tirelessly continue collecting information and carrying out surveys to confirm safety, make accurate decisions and formulate countermeasures in order to make sure that the effects on health caused by post-accident radiation are kept to a minimum.
Rest assured that we will do everything in our power to ensure the safety of all citizens by placing the emphasis on monitoring food to prevent increases in internal exposure, and by providing expedient and easy-to-understand information.

Up-to-date and detailed data on all measurements are available on the [Radiation Information] page on the Yokohama website:

http://www.city.yokohama.lg.jp/shobo/kikikanri/h2303jishin/#hosya

Atmospheric Radiation Levels (Airborne Dosages)

Radiation levels in the atmosphere were measured in 220 elementary and junior high schools, nursery schools and parks located around the city by the end of July. Measurements were also started in kindergartens from August. We intend to continue confirming safety in this way by taking measurements in a well-balanced manner throughout all wards in the city.

Members of the Fire Department measuring atmospheric radiation levels in the grounds of a school

Results of Measurements in Each Ward (Maximum/Minimum Values by Month)
(Unit: μSv/h)(Gauges: Geiger Counters)

	June - September			June - September	
	Minimum	Maximum		Minimum	Maximum
Tsurumi Ward	0.04	0.17	Kanazawa Ward	0.02	0.20
Kanagawa Ward	0.03	0.18	Kohoku Ward	0.02	0.19
Nishi Ward	0.02	0.16	Midori Ward	0.01	0.18
Naka Ward	0.05	0.18	Aoba Ward	0.04	0.15
Minami Ward	0.02	0.21	Tsuzuki Ward	0.03	0.19
Konan Ward	0.02	0.16	Totsuka Ward	0.03	0.17
Hodogaya Ward	0.03	0.16	Sakae Ward	0.04	0.18
Asahi Ward	0.02	0.17	Izumi Ward	0.02	0.16
Isogo Ward	0.02	0.17	Seya Ward	0.04	0.15

Won't soil samples be tested?

Special equipment and time is required to implement soil testing, so in the meantime we are concentrating on airborne radiation measurements taken just above ground level, as these provide us with results on whether the levels pose a risk to health or not comparatively quickly.
We are currently investigating the implementation of soil tests in accordance with necessity while continuing to refer to the values we obtain from airborne radiation measurements taken just above the ground.

Inqiries:
Elementary and Junior High Schools: Board of Education Secretariat, Educational Facilities Division: Tel: 671-3299, Fax: 664-4743
Nursery Facilities: Child and Youth Bureau, Nursery Operations Division: Tel: 671-3997, Fax: 664-5479
Kindergartens: Child and Youth Bureau, Child-Care Support Division: Tel: 671-2084, Fax: 663-1925
Parks: Environmental Planning Bureau, Parks and Green Place Preservation Division: Tel: 671-3848, Fax: 633-9171

Equipment for Measuring Radiation Levels and Understanding the Results

There are a wide range of gauges and meters available for measuring radiation levels, but they do not all take measurements in the same way or show the same results. There are cases in which taking measurements simultaneously with different gauges provides different results. The substances given off by radiation are not emitted continuously but in intermittent bursts, which results in the measured values increasing and decreasing.
For example, places that indicate radiation levels of 0.10μSv and 0.11μSv do not necessarily mean that the 0.11μSv area is continuously more contaminated, as these figures could be reversed during the next reading. Because of this, it is necessary to take accurate readings and then interpret their meanings by taking into account margins for error and natural fluctuations.

Measurement Equipment Used by the City of Yokohama (All measurements are based on notifications received from and guidelines established by the central government.)

	Geiger Counters (Geiger Muller Counters)			Scintillation Sensors		Semiconductor Sensors
				Probe Type	Well Type	
Measurable Radiation Rays	γ-rays	γ-rays	γ-rays and β-rays	γ-rays	γ-rays	γ-rays
Appearance						
Medium	Airborne rays (simple)	Airborne rays	Surface contamination	Food (simple) Airborne rays	Water, etc.	Food, etc. (nucleus analysis *)
Price	Approx. 150,000 yen	Approx. 400,000 yen	Approx. 250,000 yen	Approx. 500,000 yen	Approx. 5 million yen	Approx. 15 million yen

* **Nucleus analysis:** Analyzes in detail the type of radiation and the levels involved.

Geiger counters are very easy to operate, but slightly higher levels of radioactivity tend to be detected during airborne measurements than scintillation sensors when the levels are very low. We use these for measuring airborne radioactivity in school grounds, etc.

Scintillation sensors are more sensitive than Geiger counters and the range of fluctuation is characteristically smaller. The well-type sensors are covered in lead, which prevents them from being affected by radiation in the surrounding atmosphere and consequently allows them to measure minute levels of radiation. We use the probe-type sensors for simple inspections of airborne rays and radiation in food, and the well-type sensors for inspecting drinking water.

Semiconductor sensors enable the types of nucleus in radioactive substances emitted by γ-rays to be analyzed, which requires special knowledge and skills. This tells us how much of which type of radioactive substances are included in the samples, and we use them to implement detailed analyses on food and other such items.

Food and Drinking Water

■ Safety of the Food in Distribution

Meat, vegetables, fish and other agricultural, livestock and marine produce are applicably managed and inspected by the producers to ensure their safety prior to distribution. Items assessed as having values that exceed control standards are prevented from being shipped and distributed, and the producers then implement reviews, etc,, from a management point of view.
Owing to these measures, the safety of food in distribution is guaranteed.

The city of Yokohama will continue to inspect agricultural produce grown within the city before it is distributed and maintain our system of guaranteeing safety before produce reaches the food chain as a fundamental policy, as well as inspecting produce that has been distributed to the market to ensure that all residents can continue their carefree lifestyles.
Inqiries:
Health and Social Welfare Bureau, Food Sanitation Division: Tel: 671-2459, Fax: 641-6074

■ Situation Regarding Agricultural, Livestock and Marine Products in Yokohama

Inspections of radiation densities are carried out on all agricultural, livestock and marine products produced within the city (spinach, cucumber, egg plants, corn, pork, sea cucumbers, etc.) and on all other seasonal vegetables and fruit in accordance with shipping periods. Results so far have shown that most products show no detectable signs of radiation, and the ones that do have levels far below the control standards.

- With regard to agricultural soil, Kanagawa prefecture regularly carries out inspections at six agricultural areas, including those in Yokohama City (Hodogaya ward.) All measurements have been far below the standards established by the government's Nuclear Emergency Response Headquarters.
- Inspections are carried out on the sea water in which the live fish destined for central wholesale markets (two in total; the Honmoku Market and the Nambu Market) are caught, and neither radioactive cesium nor iodine have been detected.
- In response to the issue of cattle fed on rice straw contaminated with radioactive cesium being distributed throughout the country, all cattle are being subject to simple tests at food sanitation inspection centers as well as nucleus analysis tests at sanitation research centers since August 08 in addition to the inspections performed prior to shipping.
  In addition to this, in August tests were carried out on Fukushima cattle that have remained in Yokohama since April and levels of radioactive cesium that exceed control standards were detected in some. Sale of all remaining cattle has since been halted.
- Simple tests are also being carried out on produce (agricultural and marine produce) that has already been distributed at the food sanitation inspection centers located in central wholesale markets.

Inqiries:
Health and Social Welfare Bureau, Food Sanitation Division: Tel: 671-2459, Fax: 641-6074
Environmental Planning Bureau, Agricultural Promotion Division:
Tel: 671-2637, Fax: 664-4425

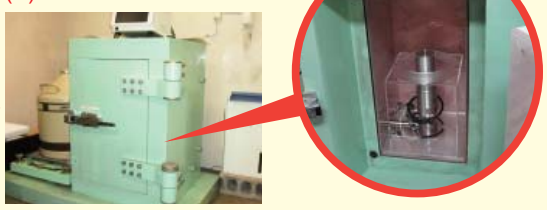
Inspection (Nucleus Type Analysis) Flow

(1) Produce washed

(2) Produce finely chopped

(3) Produce packed into the measurement unit

(4) Produce measured



■ Lunches Provided by Schools and Nursery Schools

Lunches Provided by Schools and Nursery Schools
The well-balanced, nutritional lunches provided by schools are served to several-hundred thousands babies, infants and students, and they all use ingredients available on the open market as a basic principle. During preparation the ingredients are thoroughly washed and heated not only in consideration of the radioactivity released by the nuclear power plant accident but also from the viewpoint of preventing food poisoning, and full attention is paid to ensure maximum levels of sanitation and hygiene. In addition to the measures implemented to guarantee safety by the producers, food tests are carried out every day (the day before the food is served) before it is delivered in bulk to the relevant elementary schools. Measures are in place to use the wide range of information available and halt deliveries in the event of problems arising.
Inqiries:Elementary and Junior High Schools: Board of Education Secretariat, Educational Facilities Division: Tel: 671-3277, Fax: 681-1456
Nursery Facilities: Child and Youth Bureau, Nursery Operations Division:
Tel: 671-2397, Fax: 664-5479

■ Drinking Water

No radioactivity has been detected in the city's drinking water up until now. Yokohama's drinking water was tested with the only radioactivity measurement unit in the prefecture, owned by the city of Yokosuka, from the moment the earthquake struck up until July. We installed our own measurement unit in August and have since reinforced our testing activities. The results of the radioactivity tests on drinking water are available on the Water Works Bureau website, or from a dedicated telephone line (0180-994-924, calls will be charged.)
Water Works Bureau, Customer Service Center:
Tel: 847-6262, Fax: 848-4281
Water Works Bureau, Water Quality Division:
Tel: 371-5656, Fax: 371-6942

Scene of drinking water being tested

Swimming Areas in Marine Parks

Radioactivity levels are measured in sea water and in airborne emissions above beaches.

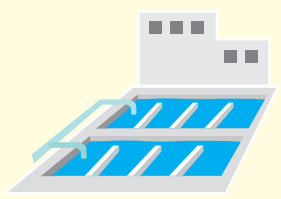
No radioactive cesium or iodine has been detected in sea water.

The levels of airborne radioactivity detected on beaches are similar to those detected in surrounded areas.

Inqiries: Health and Social Welfare Bureau, General Sanitation Division:
Tel: 671-2458, Fax: 663-7327

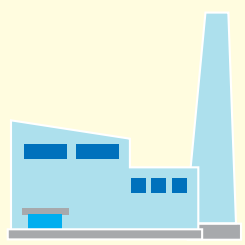
Sewerage and Garbage

■ Sewerage



No radioactivity was detected in influent wastewater or final effluent, and densities far below the standards currently established for landfills were detected from incinerated ash concentrated during sludge treatment.
The ash generated up until now has been mixed with earth excavated from building sites and effectively reused as improved soil in backfill for construction projects and in cement.
Suitable mixtures for improved soil are being carefully managed, and the production of safe products is continuing. Orders from contractors with regard to the reuse of the ash in cement have been halted, and the residual amount is being safely stored within facilities.
The level of radioactivity detected in the environment within the Sewerage Treatment Center estate is between 0.06 and 0.1μSv/h, which is the same as the surrounding airborne levels and poses no threat whatsoever to the health of the people living nearby.
Inqiries:
Environmental Planning Bureau, Sewerage Facility Management Division:
Tel: 671-3966, Fax: 641-4870

■ Garbage



The incinerated ash generated by the city's four garbage incineration plants currently in operation was tested for radioactivity, and the density of radioactive cesium detected was far below the standards currently established for landfills by the government.
No radioactivity was detected in the waste water flowing from the Shinmeidai landfill or the Minami Honmoku final treatment facility.
The levels of airborne radioactivity measured in the estates of all other facilities were the same as other results detected in the city at between 0.06 and 0.13μSv/h, and it has been confirmed that these levels will have no adverse effect on the health of people living in the surrounding areas.
Inqiries:
Resources and Waste Recycling Bureau, Resources and Waste Policy Division: Tel: 742-3713, Fax: 742-3983

Column <Measures Adopted by the Port of Yokohama>

The Port of Yokohama plays an extremely important role in industrial activities and in supporting our daily lives from the point of view of distribution. However, false rumors regarding radioactivity caused by the nuclear power plant accident have given rise to anxieties in overseas companies who use the port.
Because of this, airborne radioactivity and radioactivity levels in sea water are being monitored and export cargo containers are being tested for radioactivity in accordance with government guidelines. The results of these measurements are being made public and certificates based on the results issued. The actual levels of radioactivity are low and the Port of Yokohama can be used without any concerns whatsoever, and we are currently promoting the safety of the Port of Yokohama to shipping companies, cargo owners, the embassies of all nations and other organizations.
Inqiries: Port and Harbor Bureau, Port Administration Division: Tel: 671-2714, Fax: 671-0141

Scene of a cargo container being tested for radioactivity