

Q&A about the measurement of the nuclear fission products of dust particles in the air

Q1 Where is the place of sampling and measurement?

A1 At Tokyo Metropolitan Industrial Technology Research Institute (Aomi, koto-ku, Tokyo).

Q2 How is the air dust sample collected?

A2 Dust in the air is collected on a glass fiber filter with the air sampler set at 1m high from the ground.

Sampling is done once a day for 24 hours (16:00-16:00).

Q3 How is radioactivity of dust particles in the air measured?

A3 Filter sample is set on a germanium semiconductor detector, and measured and analyzed by the method authorized by Ministry of Education, Culture, Sports, Science and Technology (MEXT).

Q4 What is measured in with a germanium semiconductor detector?

A4 Germanium semiconductor detector can identify the nuclides in the sample by the energy of detected gamma ray, and can also measure the quantities by the numbers of the gamma ray.

The concentration of a nuclide in the air (Bq/m<sup>3</sup>) is calculated dividing the quantity of the nuclide (Bq) by the quantity of the air collected in sampling (m<sup>3</sup>).

Q5 What is the difference germanium semiconductor detector and a survey meter?

A5 Survey meters can only detect radiation or measure a dose (rate), not identify the nuclides in the sample or their quantities.

Q6 What is the detection limit?

A6 The detection limit is the minimum value for the nuclide that can be detected when the sample is measured by the method authorized by Ministry of Education, Culture, Sports, Science and Technology (MEXT). “ND (Not detected)” indicates the value less than the detection limit.

Detection limits will vary for factors such as measurement time, the nuclides in the sample and their activity.

Detection limits may vary for the same measurement condition, because of the characteristic of radiation measurement that the radioactive nuclide decays with radiation randomly not orderly.

Q7 Why is the result of only radioactive iodine (I-131,I-132) and cesium( Cs-134, Cs-137) announced.

A7 It is described in the guideline by MEXT for environment monitoring of radionuclides in emergency and the indexes by Nuclear regulation Authority for intake restriction of radionuclides from foods and drinks that the measures for decreasing radiation exposure are taken for radionuclides such as iodine and cesium.

So the results of 4 nuclides, iodine-131, iodine-132, cesium-134 and cesium-137, which not exist in nature normally and may have significant influences on radiation exposure in the case of atomic plant accident are announced.