5. Method of Radioactivity Contamination Test

Radioactivity Contamination Test (Check of radioactive materials attached)
Use the Surface Contamination Measuring Instrument (GM Survey Meter, etc)
For details, refer to "4. How to Use the Measuring Instruments" and the instruction manual of each model.

〔Preparations before testing〕
① Place a PVC sheet etc. on the floor where contamination is checked to prevent contamination.
② Protect the surface contamination measuring instrument from radioactive contamination by wrapping the instrument and the GM tube with a thin PVC sheet or food packaging wrap.
When fixing with curing tape, etc., make sure that it does not cover the detection area window.



〔Setup of the measuring instrument〕
① Turn on the surface contamination measuring instrument.
② Turn off the speaker during the evacuation inspection.
③ Set the time constant to 3 (seconds).
④ Set the measurement range to 10k (10,000cpm).
※Models with auto-switching measuring ranges do not need to be adjusted to 10k.

☆ Setting standard of the measurement range (Model: in the case of use of TGS- 146B)

10k range (10,000min^{-1}) ➢ When measuring 6,000 cpm
30k range (30,000min^{-1}) ➢ When measuring 13,000cpm
100k range (100,000min^{-1}) ➢ When measuring 40,000cpm

〔Contamination testing of residents, etc.〕
☆When using model: TGS-146B and NHJ120
①Move the GM Detector at a speed of about 10 cm/s to identify the spot where the needle of the analog meter swings abruptly.
When the needle swings out, adjust the measurement range.

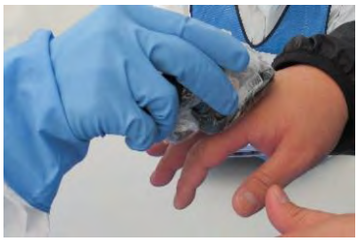
②Move the GM Detector in a continuous zigzag pattern over the entire body at a distance of about 1 cm from the head and clothing and avoiding contact.

③When the needle swings abruptly, move the detector slowly over the area at a speed of about 1 cm/s to identify the point where attachment of radioactive materials is concentrated.
When the point is identified, stop the detector and read the indicated digital value.
When the indicated value fluctuates greatly, read the median value of the fluctuation range.

☆ When using model: B20J

①Move the detector window at a distance of about 1cm from the measurement target so that it does not touch the surface, and move it slowly in a continuous zigzag pattern to find a place where the measurements is high.

②Fix the instrument at a place where the measured value is high, and read the value after 10 seconds (the longest response time).



〔Contamination testing of the carrying article〕

In the evacuation inspection, articles carried in a bag or pouch can be measured from the outside of the bag or porch. Measurement by opening the bag or pouch is not necessary.

〔How to calculate surface contamination density (Bq/cm^2) from measurements (cpm)〕

An example of how to calculate the amount of radioactivity per square centimeter (Bq/cm^2) from the measured values(cpm) is shown below.

There are differences in measurement efficiency (instrument efficiency) and detection area (incident window area) depending on the model of surface contamination measuring instrument used, so please check in advance.

<u>Equation</u>

Surface contamination density (Bq/cm^2)

= Measured Value (cpm) ÷ 60 (s) ÷ Source Efficiency ÷Measurement Efficiency ÷Detection Area (cm^2)

(When GM Survey Meter TGS-146B etc. is used)

When the measured value is 40,000 cpm in the condition where Source Efficiency is 0.5, Measurement Efficiency is 0.5, and the Detection Area of the detector is 20 cm^2, the radioactivity at that point is about 130 Becquerel (Bq).

Calculation

40,000 (cpm) ÷ 60 (s) ÷ 0.5 (Source Efficiency) ÷ 0.5 (Measurement Efficiency) ÷ 20 (Detection Area cm^2) ≒ 130Bq/cm^2

6. Actions to be Taken when Contamination is Identified (Decontamination method)

When a hand is contaminated, the contamination should be removed with wet wipes.
When handling a container of wet wipes, be careful not to contaminate the container.
Move the wet wipe from the outside to the center to avoid spreading any contamination.

Always use the clean face of the wet wipe.

(Note)

Radioactive iodine may not be completely removed even when wiped with a wet wipe.
If the area is rubbed too hard with a wet wipe, the skin may be scratched and radioactive materials may enter the body, so cover the contaminated section of the body with food wrap to contain the contamination instead of rubbing too hard.
Wait until the contaminant is removed naturally over time.

If you feel anxious, consult a medical facility.

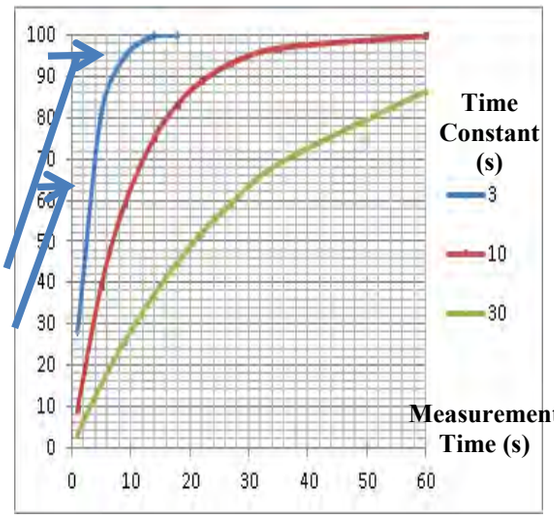
7. Precautions in Using the Instrument

①Relationship between Time Constant and the Indicated Value

In the measurement, read the indication of the meter after more than three times the time constant (seconds) has elapsed. The true value cannot be obtained unless more than three times the time constant has elapsed because of the relationship between the time constant and the indicated value.

95% or above at three times the time constant

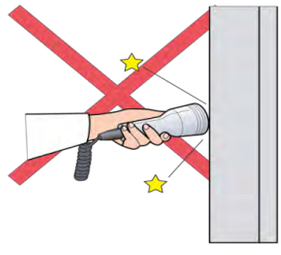
63.2% at the time equal to the time constant



Relationship between Time Constant and the Indicated Value

②Precautions in Using the Instrument

The instrument is a precision device.
Never expose the instrument to rain nor lift the device using the cable.



Memos

Contact Points