April 22 2011
Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
The Government of Japan

Radiation Measurement in Ports

The need for the information on radiation dose rate for containers or ships from Japan has been on the increase overseas since the aftermath of the damage on the Fukushima nuclear power plant caused by the Great East Japan Earthquake and subsequent Tsunami.

In the face of this need, MLIT has developed the guideline on radiation measurement for export containers and ships as attached in order to provide foreign port authorities with proper access to accurate data. Attestation for radiation dose rate will be issued if the measurement is conducted based on the guideline. MLIT also provides the measurement results of dose rate of atmosphere and seawater in ports on the MLIT Website. (http://www.mlit.go.jp/kowan/kowan_fr1_000041.html)

I. Radiation Measurement in Ports

1. Export Containers

The radiation measurement is conducted based on "guideline on radiation measurement for export containers in ports" (Annex I).

2. Ships

The radiation measurement is conducted based on "guideline for measurement of dose rate for ships in port" (Annex II).

3. Atmosphere monitoring in Ports

- ✓ Monitoring of dose rate of atmosphere in ports is conducted by port authorities.
- ✓ MLIT provides the results of monitoring on its Website.

4. Seawater monitoring in Ports

- ✓ Monitoring of dose rate of seawater in ports is conducted by port authorities.
- ✓ Monitoring of dose rate for seawater in specific channel is conducted by MLIT.
- ✓ MLIT provides the results of monitoring on its Website.

II. Starting Date

The scheme stated above will commence from April 28 2011. The government of Japan will provide the information on the scheme to foreign governments so as to inform foreign port authorities and inspection bodies (such as customs and quarantine). MLIT would also inform relevant companies of the scheme through port and maritime organizations.

April 22 2011

Tentative Translation

〔Attachment 1〕

GUIDELINE ON RADIATION MEASUREMENT FOR EXPORT CONTAINERS IN PORTS

Security and Emergency Management Office, Ports and Harbours Bureau

This guideline provides a measurement method of dose equivalent rate of radiation (hereafter "dose rate") for export containers in ports. Parties undertaking the measurement of dose rate for export containers are requested to use this guideline as a reference.

1. Location

In principle, measurement should take place at the terminal gate. Alternative locations may be decided in consultation with parties concerned if measurement at terminal gate is difficult.

2. Equipment

The equipment to be used for the measurement should meet the following specifications:

Type: GM, scintillator, ionization chamber and semi-conductor survey meter;

Emitter: γ ray is to be detected;

Range for detection:

Energy range: 60 keV to 1.25 Mev for γ ray detection;

Measurement range: 0.1 μ Sv/h to 10 μ Sv/h and wider for 1 cm dose equivalent rate;

Accuracy: $\pm$20 % for ^{137}Cs;

Calibration: Proper calibration should be confirmed by a certificate of recognized organizations or their equivalent companies, inspection records by equipment supplier or copy of in-house inspection records. Annual calibration is recommended.

As some countries/regions have the criteria set by Bq/cm^2 instead of μ Sv/h, careful consideration is required in selecting the equipment.

3. Method

(1) Dose rate of container on chassis should be measured at a point 1.5m above ground level on three surfaces (aft (door), right and left), in principle, when the tractor is connected. The equipment should be placed as close as possible to the surface of the measurement point, though it should not be in contact with the surface. The measurement should take place in such a manner that the time of measurement is sufficient for the equipment to stabilize to indicate the dose rate (approximately three times the response time) and that both the maximum and minimum values for the respective point are recorded.

(2) Dose rate of container on the chassis should be measured on four surfaces (fore, aft (door), right and left), in principle, by the same manner of (1), when the tractor is removed.

The background dose rate should be read and recorded at the same time of the measurement of dose rate for container.

4. Attestation

(1) When the measurement is conducted by port authorities

When ship operators or the other parties request the port authority to conduct measurement of dose rate for export containers, port authority conducts the measurement in accordance with the measurement method provided in this guideline (chapter 3) and issues a document for attestation. The attestation is issued by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and port authority jointly, certifying the following items (refer to FORM-1)

Items: Date and Location of Measurement, Container Number, Survey Equipment (type, model), confirmation that the measurement method follows the guideline and the result of measurement.

(2) When the measurement is conducted by ship operators or other parties

When ship operators or other parties conduct measurement of dose rate for export containers by themselves and request the port authority to confirm that the manner of measurement is in accordance with the guideline, the port authority issues a document for attestation after confirming that the measurement was done properly. The attestation is issued by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and port authority jointly, certifying the following items (refer to FORM-2)

Items: Date and Location of Measurement, Container Number, Name of inspector, Survey Equipment (type, model), confirmation that the measurement method follows the guideline and the result of measurement.

5. Indicative criteria

In accordance with the IAEA technical document, IAEA-TECDOC-1162, the value to require decontamination of a container is provided as three times the measured background dose rate (Criteria of Decontamination).

In accordance with the IMDG Code, paragraph 7.1.14.12, the value to require port authorities or terminal operators to inform related organizations before decontamination is provided as 5 μ Sv/h (Criteria for Report).

6. Action to be taken when criteria are exceeded

The handling procedure for containers in which measured dose rate exceeds criteria should be provided by MLIT, port authority and all parties concerned beforehand and notified to related organizations at the beginning of measurement of dose rate for export containers in ports.

When one dose rate exceeds "Criteria of Decontamination" for a container using the measurement method defined in chapter 3, decontamination of the container should be done at the area specified by the port authority.

If the dose rate of the contaminated container falls below "Criteria of Decontamination" after decontamination, it should then be handled as a normal container. If the dose rate of the contaminated container remains above "Criteria of Decontamination" after decontamination, related organizations must be informed.

When one dose rate exceeds "Criteria for Report" for a container using the measurement

method defined in chapter 3, related organizations must be informed.

Note: Some countries or regions have schemes in place in which decontamination or detailed investigations are required when the dose rate measured at the surface of containers exceeds three times the measured background dose rate, on the grounds that containers may potentially be contaminated.

7. Miscellaneous

This guideline will be subject to change if the situation changes greatly.

Form-1
Doc/# oooo
Date; YYYY/MM/DD

ATTESTATION

(For Radiation Dose Measurement)

This is to certify that ooport authority did, at the request of oo Co., Ltd. Measure the radiation levels as follows;

Date of Measurement:	YYYY/MM/DD, 00:00AM
Location of Measurement:	Port of oo, ooBerth, ooContainer Terminal
Container Number:	ABCU12234561
Survey Equipment:	GM type Survey Meter, (oooo Model 123456)
Measurement Method:	The radiation measurement was implemented based on "the guideline for radiation measurement on export containers" of the Ministry of Land, Infrastructure, Transport and Tourism

I hereby attest that the following measurement results were observed.

Measurement Point	Max. Value (μSv/h)	Min. Value (μSv/h)
1. Left Surface	o. o	o. o
2. Right Surface	o. o	o. o
3. Aft (Door) Surface	o. o	o. o
4. Fore Surface	o. o	o. o

*) 4.Fore surface shall be measured only when tractor is removed.

Measurement Point	μSv/h
Background Radiation	o. o

Hiroshi Hayashida/ Director General
Ports and Harbours Bureau
Ministry of Land, Infrastructure,
Transport and Tourism

oooo/ Director General
Bureau of Port and Harbor
oooo

Form-2
Doc/# oooo
Date; YYYY/MM/DD

ATTESTATION

(For Radiation Dose Measurement)

This is to certify that ooport authority confirmed the radiation measurement by oo Co., Ltd.,. Details of the radiation measurement are as follows;

Date of Measurement:	YYYY/MM/DD, 00:00AM
Location of Measurement:	Port of oo, ooBerth, ooContainer Terminal
Surveyor:	oo Co., Ltd.,
Container Number:	ABCU12234561
Survey Equipment:	GM type Survey Meter, (oooo Model 123456)
Measurement Method:	The radiation measurement was implemented, by oo Co. Ltd., based on "the guideline for radiation measurement on export containers" of the Ministry of Land, Infrastructure, Transport and Tourism

I hereby attest that the following measurement results were observed.

Measurement Point	Max. Value (μSv/h)	Min. Value (μSv/h)
1. Left Surface	o. o	o. o
2. Right Surface	o. o	o. o
3. Aft (Door) Surface	o. o	o. o
4. Fore Surface	o. o	o. o

*) 4.Fore surface shall be measured only when tractor is removed.

Measurement Point	μSv/h
Background Radiation	o. o

Hiroshi Hayashida/ Director General
Ports and Harbours Bureau
Ministry of Land, Infrastructure,
Transport and Tourism

oooo/ Director General
Bureau of Port and Harbor
oooo

April 22 2011
〔Attachment 2〕

GUIDELINE FOR MEASUREMENT OF DOSE RATE FOR SHIPS IN PORT

Inspection and Measurement Division, Maritime Bureau

This guideline provides a method of measurement of dose equivalent rate (hereinafter referred to as "dose rate") for ships in port to be conducted by ship operators or third parties undertaking the measurement. Ship operators are requested to use this guideline as a reference in the conduct of the measurement in port.

1) Location

As a matter of principle, measurement should take place at berth or at places for anchoring. Places of measurement may be decided otherwise in consultation with parties concerned in a case where measurement in the aforementioned places is difficult.

2) Equipment

The equipment to be in use for the measurement should meet the following specifications:

Type: GM, scintillator, ionization chamber and semi-conductor survey meter;

Emitter: γ ray is to be detected;

Range for detection:

Energy range: 60 keV to 1.25 MeV for γ ray detection;

Measurement range: 0.1 μ Sv/ h to 10 μ Sv and wider for 1cm dose equivalent rate;

Accuracy: $\pm$20 % for ^{137}Cs;

Calibration: It should be clarified that proper calibration is implemented by the certificate of recognized organizations or their equivalent companies; inspection records by equipment supplier or photocopy of in-house inspection records. Annual calibration is to be desired.

It should be noted that some countries/regions have the criteria set by Bq/cm2 instead of μ Sv/h, whereby requiring cautious consideration in selection of the equipment.

3) Method

Dose rate should be measured at five points in total. The five points comprise one point for deck of the bow, two points in total for deck of both sides in the vicinity of mid-ship, one point for deck of the stern, and one point in the vicinity of forecastle. Other points may

be subject to measurement as a result of consultation amongst ship operators and measurement companies, taking into account the ship destination, cargoes to be carried and time needed for measurement. The measurement should be conducted in accordance with operational manuals for the equipment and the equipment should be placed as close as possible to the surface of the measurement points, but caution should be taken not to be in contact with the surface. The measurement should take place in such a manner that the interval of measurement is sufficient for the equipment to stabilize in indicating the dose rate (approximately three times of response time) and that the both maximum and minimum values for respective point are to be recorded. In the conduct of the measurement the background dose rate should be read and subsequently recorded.

4) Attestation

Ship operators may request the Government or Class NK to issue a document for attestation when they conduct measurement of dose rate following this guideline. The measurement may be conducted by ship operators for themselves or third parties instead and the above mentioned document will be requested in the following manners.

(1)Request for attestation by Government

Ship operators may request Maritime Bureau, Ministry of Land, Infrastructure, Transport and Tourism (MLIT) for a document of attestation, submitting to MLIT reports containing the results of measurement to be conducted following this guideline. Maritime Bureau issues the document as set out in FORM-1, having confirmed that the data provided in the reports are based on the measurement method provided in this guideline.

(2)Request for attestation by Class NK

Ship operators may request Class NK for a document of attestation, submitting to Class NK reports containing the results of measurement to be conducted following this guideline. Class NK issues the document as set out in FORM-2, having confirmed that the data provided in the reports are based on the measurement method provided in this guideline.

5) Criteria for recommending decontamination

In accordance with the IAEA technical document, IAEA-TECDOC-1162, the value to recommend decontamination of ships in port is provided as three times of measured background dose rate.

Ship operators should ensure that decontamination takes place when the measured dose rate exceeds 5 μ Sv/h, which is provided in paragraph 7.1.14.12 of the IMDG Code.

6) Action to be taken in excess of the criteria

It is recommended that measures for decontamination be taken in a case where the measured dose rate is in excess of three times of measured background dose rate. Ship operators are requested to take measures for decontamination when the measured dose rate exceeds 5 μ Sv/h. Appropriate measures to decontaminate should be decided upon in close consultation among interested parties.

It should be noted that some countries or regions have schemes in place in which decontamination or detailed investigations are required in such cases that the measured dose rate for ships have exceeded three times of measured background dose rate, on the grounds that ships may potentially be contaminated.

7) Miscellaneous

This guideline will be subject to review on the basis of the experiences gained in the application of this guideline.

FORM - 1

＜SAMPLE＞

No.2011-

Date :

ATTESTATION

MEASUREMENT OF RADIAION DOSE
FOR SHIPS DEPARTING JAPAN IN PORT

This is to attest, on the basis of a declaration by the applicant, that the measurement of radiation dose rate for the following ship in port provided in the report was conducted based on "the Guideline for Measurement of Radiation Dose Rate for Ships in Port (dated 22 April 2011)" developed by the Ministry of Land, Infrastructure, Transport and Tourism. A photocopy of the report is herewith attached.

Name of ship:
Port of Registry:
Gross Tonnage:
IMO Number:
Date of measurement:
Place of measurement:

Issued by

Director, Inspection and Measurement Division
Maritime Bureau
Ministry of Land, Infrastructure, Transport and Tourism

FORM-2

<SAMPLE>

No.2011-

Date :

ATTESTATION

MEASUREMENT OF RADIAION DOSE
FOR SHIPS DEPARTING JAPAN IN PORT

This is to attest, on the basis of a declaration by the applicant, that the measurement of radiation dose rate for the following ship in port provided in the report was conducted based on "the Guideline for Measurement of Radiation Dose Rate for Ships in Port (dated on 22 April 2011)" developed by the Ministry of Land, Infrastructure, Transport and Tourism. A photocopy of the report is herewith attached.

The attestation is issued in accordance with the request by Ministry of Land, Infrastracture, Transport and Tourism of Japan.

Name of ship:
Port of Registry:
Gross Tonnage:
IMO Number:
Date of measurement:
Place of measurement:

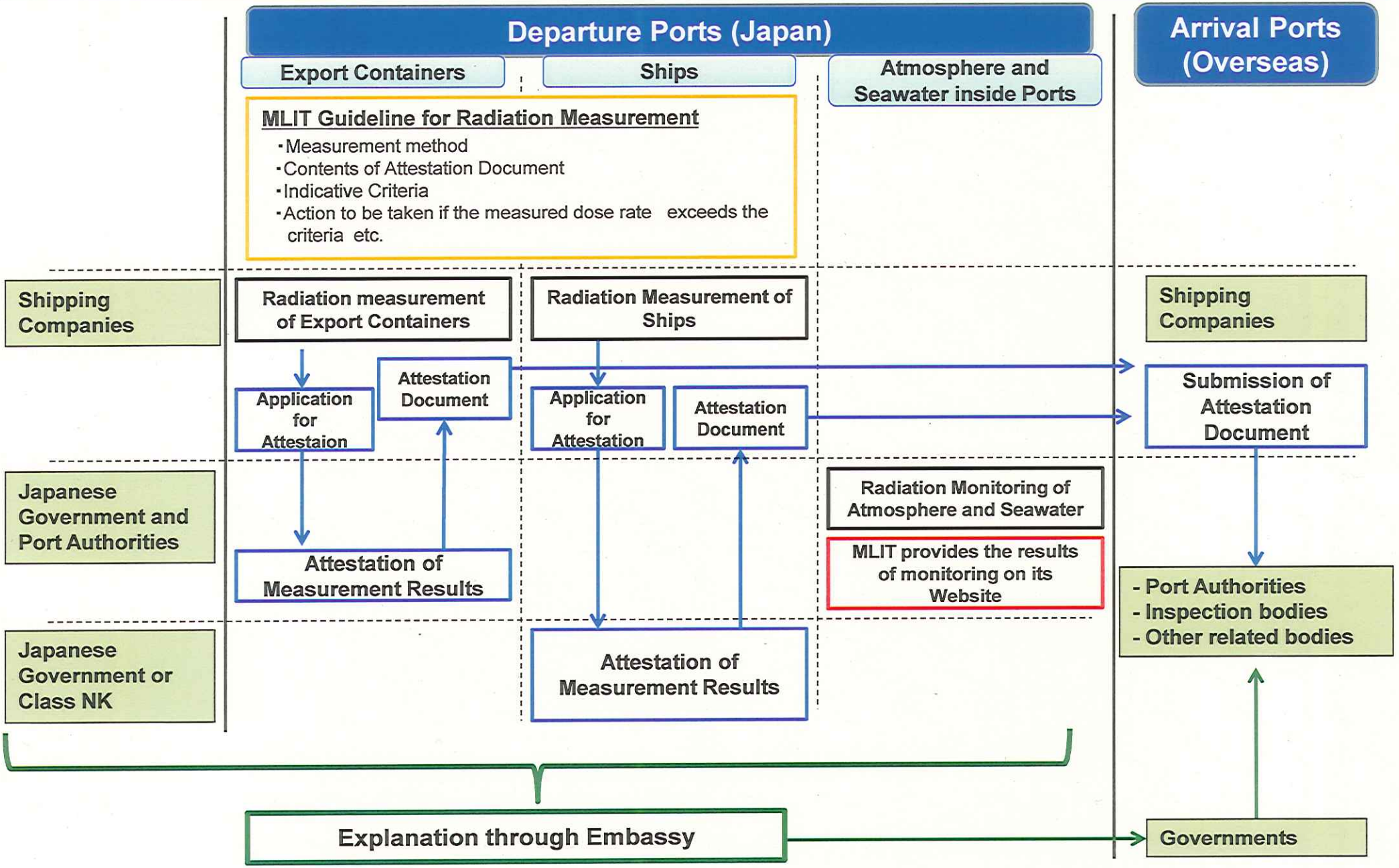
Issued by

_____

General Manager of ClassNK Survey Department

Radiation Measurement in Ports in Japan (Outline)

MLIT



Radiation Measurement on Containers and Ships in Ports (Outline)

MLIT

MLIT has developed the guideline on radiation measurement for export containers and ships in ports in response to the need for the information on radiation dose rate for containers and ships from Japan. Radiation measurement on containers and ships is due to start at Yokohama Port and Tokyo Port.

1. Framework

Based on MLIT guideline, port authorities or shipping companies measure the dose rate of radiation for containers and ships, and **public institutions(government of Japan, port authorities, or Class NK) issue the attestation for radiation dose measurement** on the request from shipping companies.

2. Method

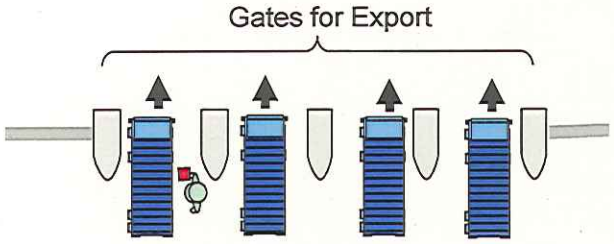
Radiation measurement will be conducted at container terminal gates and decks of ships, **using mobile-type radiation meters.**

3. Indicative Criteria

According to the standard value developed by international bodies (IAEA, IMO), **criteria for decontamination is defined on the guideline.** If the measured dose rate exceeds the criteria, decontamination will be taken.

The dose rate of radiation on the surface of containers and ships is measured by mobile-type radiation meters.

Measurement at container terminal gate (image)



Radiation Measurement of Containers

Radiation Measurement of Vessel Bodies