


Procedure to submit a sample for measurement on the SIR				
Author : C Michotte	Date: 17/04/2026 Version: 2.0	Authorized: V. Gressier	BIPM/RI-SIR-T-20	

Procedure to submit a sample for measurement on the SIR

1. Purpose and objectives


- 1.1. This procedure is for use by national metrology institutes or designated institutes wishing to send a sample for measurement on the SIR.

2. Comments

- 2.1. Please follow this procedure carefully to avoid possible delays in shipments and measurements.
- 2.2. Samples for measurement on the SIR must be supplied in ampoules that the BIPM will provide.
- 2.3. Please contact the BIPM on sir@bipm.org for help in following this procedure if required.

3. Contents

PARAGRAPH	TITLE	PAGE
1.	PURPOSE AND OBJECTIVES	1
2.	COMMENTS	1
3.	CONTENTS	1
4.	SCOPE OF THE PROCEDURE	2
5.	RADIONUCLIDES AND ACTIVITIES	2
6.	INFORMING THE BIPM THAT A SAMPLE WILL BE SENT	4
7.	CUSTOMS FORMALITIES (TO BE COMPLETED AT LEAST 4 WEEKS BEFORE DISPATCH)	4
8.	PREPARING THE SAMPLE	4
9.	DISPATCHING THE SAMPLE TO THE BIPM	5

Procedure to submit a sample for measurement on the SIR				
Author : C Michotte	Date: 17/04/2026 Version: 2.0	Authorized: V. Gressier	BIPM/RI-SIR-T-20	

10. RESULTS 6

11. REVISION HISTORY 6

4. Scope of the procedure

4.1. The procedure covers:


- 4.1.1. The radionuclides and activities that can be accepted for measurement on the SIR
- 4.1.2. Informing the BIPM that the sample will be sent
- 4.1.3. Preparing documents for customs
- 4.1.4. Preparing the samples
- 4.1.5. Dispatching the sample
- 4.1.6. Reporting results

5. Radionuclides and activities

5.1. Check that the radionuclide to be sent is listed in Table 1 and that it is possible to prepare a sample of approximately 3.6 ml of radioactive solution with the activity on delivery in the range stated. For gases, please contact the BIPM at sir@bipm.org.


Note: Please contact the BIPM at sir@bipm.org if the radionuclide is not listed or if the radionuclide has a short half-life (marked with an asterisk in the table).

5.2. For the short-lived radionuclides marked with an asterisk, the minimum activity listed in Table 1 is sufficiently high to allow the SIR measurement to be repeated several times.

Procedure to submit a sample for measurement on the SIR				
Author : C Michotte	Date: 17/04/2026 Version: 2.0	Authorized: V. Gressier	BIPM/RI-SIR-T-20	

Radionuclide		Min. activity at delivery/ MBq	Max. activity / MBq
F-18	*	0.33	23
Na-22		0.04	11
Na-24	*	0.11	7
Sc-46		0.04	12
Cr-51		2.60	100
Mn-54		0.10	29
Co-56		0.03	8
Mn-56	*	0.23	16
Co-57		0.90	100
Co-58		0.09	24
Fe-59		0.08	22
Co-60		0.04	11
Cu-64	*	1.72	121
Zn-65		0.16	45
Ga-67		0.62	100
Ge-68		0.08	24
Se-75		0.23	65
Sr-85		0.16	45
Y-88		0.04	10
Nb-95		0.11	31
Mo-99	*	1.36	50
Tc-99M	*	3.26	230
Ru-103		0.16	45
Ru-106		0.31	10
Cd-109		43.29	500
Ag-110M		0.03	9
In-111	*	0.92	65
Sn-113		0.31	88
I-123	*	2.56	180
Sb-124		0.05	10
I-131		0.21	40
Ba-133		0.23	66
Cs-134		0.05	10
Cs-137		0.15	41
Ce-139		0.71	100
Ce-141		1.41	300
Ce-144		1.50	15
Eu-152		0.08	22
Gd-153		1.94	200
Sm-153	*	12.21	400
Eu-154		0.07	21
Tb-161		9.04	500
Ho-166M		0.05	15
Yb-169		0.41	60
Lu-177		2.98	400
Ir-192		0.10	29
Tl-201	*	6.62	200
Hg-203		0.36	50
Bi-207		0.06	10
Ra-223		0.29	30
Ac-225		0.40	30
Th-228		0.07	19
Np-237		0.40	5
Am-241		10.94	50

Table 1: Radionuclides that can be accepted for measurement in the SIR and the minimum and maximum activities on the date of delivery. Please contact sir@bipm.org if the radionuclide is not listed or if it has a short half life (marked with an asterisk* in the table).

Procedure to submit a sample for measurement on the SIR				
Author : C Michotte	Date: 17/04/2026 Version: 2.0	Authorized: V. Gressier	BIPM/RI-SIR-T-20	

6. Informing the BIPM that a sample will be sent

6.1. As soon as possible, contact the BIPM on sir@bipm.org with the following information:

(1) Your details:

- Organization
- Full postal address
- Your name and job title
- Email and telephone number

(2) Details of the sample(s):

- Radionuclide(s)
- Estimated delivery date
- Approximate activity (kBq) on delivery

(3) Evidence that the organization is authorized to dispatch radioactive materials:

- Copy of organization's license to hold and export radioactivity from local regulators


6.2. The BIPM will confirm whether the ampoule(s) can be received on the date requested and will supply a small quantity of empty ampoules to the address given. These ampoules **must** be used when preparing the sample for measurement – do not substitute other types.

7. Customs formalities

- 7.1. Complete form BIPM-ADM-DOU-F-02 omitting part 4: Instruction for return. The description in box 3 should include the UN type of package if relevant. The AirWay Bill (AWB) may be sent separately by email later. In case of road transport, indicate a reference or tracking number.
- 7.2. For countries outside the European Union, prepare a pro-forma invoice stating a commercial value for the ampoule(s) of 45 Euros.
- 7.3. Scan and email the form BIPM-ADM-DOU-F-02 (plus the pro-forma invoice if needed) to customsbipm@bipm.org and to sir@bipm.org at least 3 weeks before shipment (1 week for countries in the European Union). When part of the information requested on the form is not available 3 weeks in advance, the form should be sent anyway, and the missing information sent at a later stage.

8. Preparing the sample

- 8.1. Mark the ampoule (supplied by the BIPM) clearly with the radionuclide, the acronym for your laboratory and the year, using an indelible marker pen directly onto the glass. **Do not fix a label onto the ampoule.**

Procedure to submit a sample for measurement on the SIR				
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8.2. Dispense the standardized solution into the ampoule. The volume must be between 3.40 cm³ and 3.80 cm³ (this is equivalent to a filling height of 19 to 21 mm for a density of 1 g cm⁻³).

Note: Ensure that all the information that will be needed to report the results is recorded (see form SIR-F-05.pdf).

8.3. Flame-seal the ampoule.

8.4. Check that the ampoule is free from surface contamination (for example, by wiping the surface of the ampoule with a filter paper and checking the filter paper using a surface contamination monitor). Do not dispatch the ampoule if contamination is found but repeat the sample preparation.

8.5. Check that the ampoule is not leaking (for example, by placing the ampoule in nearly-boiling distilled water and looking for a trail of bubbles). If leakage is detected, do not dispatch the ampoule but repeat the sample preparation.

Note: For steps 8.4 and 8.5, follow local regulations as appropriate.

9. Dispatching the sample to the BIPM

9.1. Pack the ampoule in accordance with the appropriate IATA or ADR regulations, including any handling instructions if required.

9.2. Arrange the dispatch of the package using an authorized courier, door-to-door delivery to the BIPM, free of charge for the BIPM.

Notes:

1) *If necessary, the BIPM can clear the package through customs at the NMI cost – please contact customsbipm@bipm.org to discuss this option.*

2) *Please avoid delivery on Fridays if possible.*


9.3. Mark the package and associated documentation with the following consignee:

Mrs Tiphaine CHOTEAU
 Bureau International des Poids et Mesures (Département R.I.)
 Pavillon de Breteuil
 Parc de Saint Cloud (porte du Mail sur la D910)
 12 Bis Grande Rue
 92 310 Sèvres
 France

Email : sir@bipm.org
 Tel : +33 1 45 07 70 88

Coordonnées géographiques :
 48° 49.740' N, 2° 13.197' E ou 48.82900 N, 2.21995 E

9.4. In case of type A or excepted package (UN2915 or UN2910), **add the following information on the package:**

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“DELIVERY INSTRUCTIONS:

The package should be delivered personally to any person of the Département des Rayonnements Ionisants of the BIPM. Please phone to the BIPM **before arrival** (+33 1 45 07 70 88, +33 6 31 55 31 01, +33 6 28 18 48 38, +33 1 45 07 70 70). **The package should not be left at the reception (Accueil) of the BIPM./**

Le colis doit être livré en main propre à toute personne du département des rayonnements ionisants. Veuillez appeler le BIPM **avant votre arrivée** (+33 1 45 07 70 88, +33 6 31 55 31 01, +33 6 28 18 48 38, +33 1 45 07 70 70). **Le colis ne doit pas être déposé à l'accueil du BIPM.”**

- 9.5. Describe the type of package (for example, Type A or Excepted package) on the Airway bill; send a scan of the AWB and dangerous goods declaration by e-mail to customsbipm@bipm.org and to sir@bipm.org.
- 9.6. Confirm by email to sir@bipm.org that the package has been dispatched.
- 9.7. The BIPM will confirm by email when the package is received.

10. Results

- 10.1. Complete form SIR-F-05.xls and send it to sir@bipm.org.
- 10.2. The BIPM will analyze the results and report them following the procedure for a CIPM key comparison in CIPM-MRA-D-05 Measurement Comparisons in the CIPM MRA.

11. Revision History

Version number	Date of Issue/Review	Author	Modifications / comments
1.0	1/8/2018	C Michotte	First issue
1.1	6/10/2020	C. Michotte	Changes related to the new DOU-F-02 form, including road transport. Delivery instructions in case of type A package.
1.2	11/09/2023	C. Michotte	Comment on Table 1 added. Table 1 updated. Address and instructions of delivery updated.
2.0	17/04/2026	C. Michotte	Update of Table 1. Removal of possibility to pickup the package at the airport. More detailed instructions for customs formalities and delivery