HERCA
Heads of the European Radiological protection Competent Authorities

Title:	Guidance on the implementation of a radiation passbook and its practical use

Summary:	This guidance is intended to be used by the Member State Competent Authorities responsible for occupational radiation protection regardless of whether radiation passbooks are used in their respective countries. It may be used as a model for information exchange related to outside workers including self-employed workers, trainees, apprentices and students. This guidance refers to requirements as stated in the "Draft of the new BSS". By "Draft of the new BSS", it is meant "Draft of the new basic safety standards Directive, version 25.06.2012". Therefore, this guidance will be updated as soon as the BSS Directive is published.

Effective date:	2012-10 31

Document approval

Review	Author	Approval
1	HERCA Working Group Radiation Passbook & Outside workers	Board of Heads

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1. Context

a) Responsibilities of employer and undertaking regarding the radiological protection of outside workers against the risk of ionising radiation

Article 50 of the Draft of the new BSS directive states that:

*"1. **Member States** shall **ensure** that the **system for individual radiological monitoring affords outside workers equivalent protection** to that for **workers** employed on a **permanent** basis by the undertaking.*

*2. The **undertaking** shall be **responsible,** either **directly or through contractual agreements with the employer** of outside workers, for the **operational aspects** of the radiation protection of outside workers."*

By operational aspects, it is meant the aspects directly related to the specificities of the task or the workplace.

"3. In particular, the undertaking shall:

*(a) **check** that the outside worker concerned has been passed as **medically fit** for the activities to be assigned to the worker;*

*(b) **ensure** that, in addition to the basic training in radiation protection referred to in Article 16, the outside worker has received **specific training** in connection with the characteristics of the workplace and the activities;*

*(c) **ensure** that the outside worker has been issued with the necessary **personal protective equipment**;*

*(d) **ensure** that the outside worker receives **individual exposure monitoring appropriate** to the nature of the activities, and any **operational dosimetric monitoring** that may be necessary;"*

Undertaking and employer should collaborate for organising the individual exposure monitoring for the outside worker during his/her work in the controlled/supervised area of the undertaking:

- In a supervised area, the undertaking shall be responsible to indicate whether an individual exposure monitoring is strictly required depending on the radiological situation (according to art 36, point2 of the draft of the new BSS).
- For the individual exposure monitoring, the outside worker must be provided with official dosimetry (i.e. *"based on individual measurements performed by a dosimetry service"* as required by article 39 of the Draft of the new BSS);
- The official dosimeter can be provided either by the employer or by the undertaking;
- When necessary the undertaking must provide the outside worker with an additional operational dosimeter (e.g. to provide exposure data after the activity of the worker as required in the Draft of the new BSS, annex VIII, Section B, point 2).
- Both, the official and the operational dosimeters, must be appropriate to the radiological conditions of the workplace and to the peculiarities of the task to be carried out by the outside worker.
- The undertaking is responsible for verifying that the dosimeters provided for the outside worker are appropriate to the given exposure conditions.

The organisation and specificities of the individual exposure monitoring and operational dosimetric monitoring of the outside worker should be fixed by a contractual agreement between the employer and the undertaking before the worker starts his/her activities in the controlled/supervised area.

"(e) ***ensure compliance with the system of protection*** *as defined in Chapter III;"*

In the case that employer and undertaking are in different countries compliance with principles of optimisation and dose limitation is required both in the country of employment of the outside worker and in the country of the undertaking.

Consequently if the regulations of two participating countries foresee **different doses limits**, a general rule could be that **the stricter of both regulations will apply**.

However, the aspect of dose limitation should be treated case by case in the contractual agreement between the undertaking and the employer before the worker starts his/her activities in the controlled/supervised area.

For ensuring compliance with the principle of optimisation, the undertaking is also responsible to **establish doses constraints in cooperation with the employer** (article 5.b and 6.1 of Draft of the new BSS). This aspect should as well be treated case by case in the contractual agreement between the undertaking and the employer before the worker starts his/her activities in the controlled/supervised area.

"(f) ***ensure*** *or take all appropriate steps to ensure that after every activity the* ***radiological data*** *from individual exposure monitoring of each outside worker within the meaning of Annex VIII, Section B, point 2, are* ***recorded****.*

*4. **Employers** of outside workers shall, either **directly or through contractual agreements with the undertaking**, **ensure** that the **radiation protection** of their workers is in accordance with the relevant provisions of this Directive, in particular by:*

*(a) **ensuring compliance with the system of protection** as defined in Chapter III;"*

The employer should ensure, in particular, the **continuity** of the compliance with the principles of optimisation and dose limitation.

*"(b) **providing** the **information and training** in the field of radiation protection referred to in Article 16;*

*(c) **guaranteeing** that their workers are subject to the **assessment of exposure** and **medical surveillance** under the conditions laid down in Articles 37, 39 to 48;*

The employer should ensure, in particular, that the outside worker is **continuously** monitored for his/her exposure.

*(d) **ensuring** that the **radiological data** from the individual exposure monitoring of each of their workers within the meaning of Annex VIII, Section B, point 1, are kept **up to date in the data system for individual radiological monitoring** referred to in Article 42(1)(d).*

The employer should ensure that the results of the individual monitoring of the outside worker are properly conveyed and kept up to date into the data system for individual radiological monitoring.

b) Aspects to be fixed by contractual agreement between employer and undertaking regarding the employment of an outside worker

Employer and undertaking should constitute their mutual agreement regarding duties and responsibilities for the employment of an outside worker in a contract before the outside worker begins his/her activities in the controlled/supervised area of the undertaking. The contract should define when the duties and responsibilities of the contracting parties begin, what they consist of and when they end. The following aspects of the radiological protection should be part of the contract:

- Who organises **operational and official dosimetry,** how, and to what extent;
- Who organises **medical surveillance,** how, and to what extent;
- Who organises **basic training** necessary for the work, how and to what extent;
- Who organises **specific training** necessary for the work, how and to what extent;
- Which **dose limits** have to be applied during the work;
- Which **operational dose constraints specific to the work** have to be applied (cfr. art. 6.1 (a) of the Draft of the new BSS*: "For occupational exposure, the dose constraint shall be established as an operational tool for optimisation by the undertaking under the general supervision of the competent authorities. In the case of outside workers the dose constraint shall be established in cooperation between the employer and the undertaking"*).

The employer should ensure that the national doses limits of the country of issuance are respected. If the worker is liable to exceed these doses limits during his work abroad, for instance because the dose limit in that country is less strict, the employer

should establish contractual agreements with the undertaking to ensure the respect of the stricter dose limit.

2. Implementation of a radiation passbook

Article 42 of the Draft of the new BSS establishes provisions concerning **access to results of individual monitoring**:

*"1. The **Member States shall require that the results of the individual monitoring** set out in Articles 39, 40, 51 and 52 be:*

*(a) made **available** to the competent authorities, to the **undertaking**, and to the **employer of outside workers**;*
(as appropriate according to the local rules-system)

(b) made available to the worker concerned in accordance with paragraph 2

(c) submitted to the occupational health services in order for them to interpret the implications of the results for human health, as provided for in Article 44;

*(d) **submitted to the data system for individual radiological monitoring** established by the Member State in accordance with provisions set out in Annex VIII.*

1a. Member States shall require the undertaking and the employer to grant workers to have access at their request to the results of their individual monitoring, including the results of measurements which may have been used in estimating these results, or to the results of the assessment of their doses made as a result of surveillance of the workplace.

*2. **Member States shall determine the arrangements under which the results of individual monitoring are conveyed**.*

*3. The **data system for individual radiological monitoring shall cover at least the data listed in Annex VIII**, Section A."*

The general provision mentioned at annex VIII of the Draft of the new BSS concerning the **data system for individual monitoring** says:

*"The data system for individual radiological monitoring established by a Member State may be realised either as a **centralised national network or** as a **national dose register**. These networks or registers may be **supplemented by the issuance of individual radiological monitoring documents for every outside worker**."*

According to the limitations of their centralised network/national dose register, the Member States may decide to issue individual radiological monitoring documents to all outside workers or only to cross-border outside workers (if the centralised national network/national dose register can only be used for dose control of domestic outside worker). This document can be in the form of **a radiation passbook**.

a. Purpose of the radiation passbook

The radiation passbook is **element of the data system for individual monitoring of outside workers.**

It represents a **communication tool** for the employer of the outside worker and the undertaking of the controlled/supervised area. The content of the radiation passbook should

provide all necessary radiological information about the outside worker so that the undertaking is able to provide for the outside worker a continuous radiation protection that is equivalent to those of permanent workers (compliance with the principles of optimization and limitation of doses, assessment of the exposure, medical fitness, and optionally basic and specific information and training).
In particular the recently recorded operational doses should cover the temporal gap until official dose information is available.

b. Medium used for the radiation passbook

The choice of medium used for the radiation passbook is up to the Member States. It could either be **electronic or paper-based,** the important thing being that its purpose can be met.

If it is paper based:

- It could either be **disposable or reusable** provided that it is notified in the document.
- Although preferable that it is composed of **one document**, it could also be composed of **several documents**. In this case, each document should not necessarily be issued by the same issuing body.

c. Who should be given a radiation passbook

If the existing data system for individual monitoring (centralised national network or national dose register) does not afford outside workers equivalent protection to that for workers employed on a permanent basis by the undertaking, the Member State may have to use a radiation passbook (individual radiological monitoring document in the sense of the Draft of the new BSS) and issue it to the outside workers, including self-employed workers, students, apprentices and trainees.

Even if the data system for individual monitoring (centralised national network or national dose register) is sufficient for the radiological follow up of outside workers travelling inside the country, it may still be required to issue radiation passbooks for those outside workers travelling to countries (cross-border) where radiation passbooks are in use.

d. Language and terminology

The radiation passbook is not only for outside workers who work in foreign controlled/supervised area's within their home country (domestic outside workers) but also for outside workers who work in different foreign countries within or outside the European Union (cross-border outside workers). Therefore:

- The Member States should make use of a **common language.** Therefore, the language used in the radiation passbook should be:
    - At least English, optionally the national language(s);
    - Codes can be used to add translations at the end of the document.

- The Member States should use a **common terminology** based on the terminology used in the Draft of the new BSS. In particular, the definitions for the following terms should be taken or derived from the EC Directive: Outside worker, Undertaking, Dose limit, Occupational health service, Dosimetry service, Supervised area, Controlled area,

Effective dose, Dose constraint, Equivalent dose, Committed effective dose, Committed equivalent dose, individual exposure monitoring/operational dosimetric monitoring.

e. Issuing body of the radiation passbook

- It is up to the Member States to decide which national institution issues the radiation passbook;
- It may be an **approved dosimetry service**;
- The radiation passbook could be composed of different parts issued by different bodies (e.g. in some countries, parts about dosimetric and medical surveillance are issued by 2 different bodies);

f. Procedure for issuing the radiation passbook

The procedure for issuing the radiation passbook is up to national regulator/issuing bodies but some points should be taken into consideration when implementing it:

- The radiation passbook should be issued to a worker by using a **unique identification code for the worker**.
- The radiation passbooks should be issued with the country code, a unique radiation passbook number and radiation passbook sequence number to identify the different passbooks (with the same unique radiation passbook number) issued to an outside worker during his/her carrier.
- The radiation passbook should be **non-transferable to other** outside workers.
- The radiation passbook should be **personal property** of the worker and **remain in its possession**, in particular when he changes employer or undertaking.
- An outside worker should have only one valid radiation passbook at the same time, even if he has more than one employer **(non-plurality)**.
- The issue of a radiation passbooks should be registered in a central register to avoid that more than one valid radiation passbook is issued to a worker at the same time.
- If the radiation passbook is not disposable document, it should have a **validity** period.

3. Guidance concerning the respective roles of employer and undertaking regarding the radiation passbook

The **employer of outside workers** should:

- **Provide a radiation passbook** to all his/her outside workers or only to his/her cross-border outside workers if the centralised national network/national dose register can only be used for to dose control of domestic outside worker.

- Ensure that the **radiological data** of the individual exposure monitoring and the data of medical surveillance (medical fitness, date of next medical examination) of each of their workers are **kept up-to-date in the radiation passbook**;

- Ensure that the results of the individual monitoring of the outside worker are properly conveyed and **kept up to date into the centralized national network/national dose register** following the modalities fixed in the MS, e.g by sending copies of the radiation passbook or the data contained in the radiation passbook on regular bases.
- **Keep a register** of who has been authorised, on behalf of the employer, to write information into specified parts of the radiation passbook e.g.

- details of the current employer;
- date of medical review;
- details of official dosimetry for the current year;

If the official dosimetry is carried out by the undertaking and is not available when the worker leaves the facility, the employer should make arrangements to ensure that the official dose is transmitted to him as soon as it becomes available and that it is correctly added to the radiation passbook and into the data system for individual monitoring. In this case, the timing on the transmission of the official doses from the undertaking to the employer should be fixed in the contractual agreement, in a section concerning the organisation of the official dosimetry.

The responsible **undertaking** should:

- Use the radiation passbook to **check the dosimetric data** (in order to verify the respect of the dose limits and to apply the ALARA principle), the **medical fitness**, the basic training and whether the outside worker needs a training specific to the activities to be carried out in the controlled areas, prior to allowing the outside worker to enter the undertaking's controlled areas.

- **Record data from operational dosimetry about radiation doses** received by the outside worker in the undertaking's controlled/supervised area in his/her radiation passbook.

- In the case the official dosimetry of the outside worker is organised by the undertaking, the responsible undertaking should **record** in the radiation passbook **the already available data from official dosimetry about radiation doses** received by the outside worker in the controlled/supervised area.

- **Keep a register** of who has been authorised, on behalf of the undertaking, to write information into specified parts of the radiation passbook e.g. estimated doses for activities in the undertaking's controlled areas.

The radiation passbook has to be returned to the legally designated owner as his/her property (the worker, the employer, the issuing authority, according to the country regulation).

4. Data to include in the radiation passbook

The content of the document (passbook or single use document) should provide the information to be communicated (supplied) as required in annex VIII, section B of the Draft of the new BSS.

*"1. **Any data system** of the Member States for individual radiological monitoring of exposed workers shall comprise the **following sections**:*

*(a) particulars concerning the **worker's identity**;*
*(b) particulars concerning the **medical surveillance** of the worker;*
*(c) particulars concerning the **undertaking** of the worker and, in the case of an outside worker, the **employer** of the worker;*
*(d) the **results of the individual monitoring** of the exposed worker.*

2. The competent authorities of the Member States shall take the measures necessary to prevent any forgery or misuse of, or illegal tampering with, the data system for individual radiological monitoring.

A: Data to be included in the data system for individual radiological monitoring

*3. Data on the **worker's identity** shall include the worker's*

a) surname;
a) first name;
b) sex;
c) date of birth;
d) nationality; and
e) unique identification number.

*4. Data on the **medical surveillance** of the worker shall include*

(a) the medical classification of the worker in accordance with Article 45 (fit; fit, subject to certain conditions; unfit);
(b) information on any restrictions on working with radiation;
(c) the date of the last periodic health review;
(d) the responsible occupational health service; and
(e) the period of validity of the result.

*5. Data on the **undertaking** shall include the name, address and unique identification number of the undertaking.*

*6. Data on the **employment** of the worker shall include:*
(a) the name, address and unique identification number of the employer;
(b) the starting date of employment; and
(c) the categorisation of the worker in accordance with Article 38.

*7. The **results of the individual monitoring** of the exposed worker shall include:*

(a) the official dose record for the last 5 calendar years (year; effective dose in mSv; in the event of non-uniform exposure, dose-equivalent in the different parts of the body in mSv; and in the event of internal contamination, the committed dose in mSv); and

(b) the official dose record for the current year (period; effective dose in mSv; in the event of non-uniform exposure, dose-equivalent in the different parts of the body in mSv; and in the event of internal contamination, the committed dose in mSv).

B: Data on outside workers to be supplied via the data system for individual radiological Monitoring

***1. Before the start of any activity**, the **employer** of the outside worker shall **supply the following data to the undertaking** via the data system for individual radiological monitoring:*

a) data on the employer of the outside worker in accordance with Section A, point 6;
b) data on the medical surveillance of the outside worker in accordance with Section A, point 4;
c) the results of the outside worker's individual exposure monitoring in accordance with Section A, point 7.

*2. The following data **shall be recorded or have been recorded by the undertaking** in the data system for individual radiological monitoring **after the end of any activity**:*

(a) the period covered by the activity;
(b) an estimate of any effective dose received by the outside worker (operational dose

for the period covered by the activity);
(c) in the event of non-uniform exposure, an estimate of the dose-equivalent in the different parts of the body;
(d) in the event of internal contamination, an estimate of the intake or the committed dose.

C. Provisions concerning the individual radiological monitoring document

1. Member States may decide to issue an individual radiological monitoring document for every outside worker.

2. The document shall be non-transferable.

3. Member States shall take the measures necessary to prevent a worker from being issued with more than one valid individual monitoring document at the same time.

4. In addition to the information required in Part A and Part B, ***the document shall include the name and address of the issuing body and the issuing date****."*

In agreement with these requirements, the following **data fields are suggested by the HERCA WG1**. **Mandatory fields are given in black, optional fields in grey**. It is up to the Member States to decide whether the grey fields are integrated or not. It is also up to the Member States to integrate other fields.

If an optional field is integrated in the radiation passbook by a Member State, the undertakings of the other countries **are invited to fill it in** even if this field is not mandatory in their country (unless there are no monitoring data for it).

Details of the radiation worker

(Information to be provided by the company or institution designated by the competent authority as the issuing entity i.e. the entity that issues the radiation passbook)

Surname
2nd Surname
First name
Middle names
Sex
Date of birth
Place of birth
Nationality
Picture
Signature
address
Unique identification number
(unique number in the worker's employer's country, for example:
National number
Social security number
Fiscal number)

Relevant dose limits and period of the dose limits in the country of issuance
(The period of a dose limit can be for example a calendar year, rolling 12 month…. Although this field specifies the dose limits and period of the dose limits in the country of issuance, compliance with principles of optimisation and dose limitation is required both in the country of employment of the outside worker and in the country of the undertaking. Therefore, the aspect of dose limitation should

be treated case by case in the contractual agreement, the general rule being that the stricter of both regulations applies)

Effective dose and period
Equivalent dose Eyes and period
Equivalent dose Skin and period
Equivalent dose Extremities and period
Other

Issuing details of the radiation passbook

(Information to be provided by the issuing entity)

Unique reference of the passbook

(for example:
Radiation passbook number
Radiation passbook sequence number
Bar code or RFID)

Issuing date
Expiry date
Issuing body

Address
Tel number
Fax number
E-mail
Web address
Mark of endorsement

General information

(To be completed by the Member States: any information needed by foreign undertaking to interpret the conditions applying to this worker, depending on the nationality of his employer – although optional, it is strongly recommended to add a minimum of information)

Contents
Guidelines to fill in the radiation passbook
General information – including:

- purpose of the passbook
- conditions of use
- scope of application
- temporality
- conditions of issue/renewal
- loss of the radiation passbook/damage to the radiation passbook
- pursuit in case of fraudulent use/entries/amendments
- summary of the legal provisions relative to the operational protection of outside workers, including the definition of the following concepts:
    - undertaking
    - employer of outside workers
    - outside worker
    - official dosimetry
    - operational dosimetry
    - responsible party
    - issuing entity/responsible entity
    - responsible person
    - under apron/above apron
    - national dose limits (explanation)
- national requirements regarding health surveillance of outside workers

Current employer of the outside worker

(this information must be provided by the employer)

Employer

- Name
- Identification number *(unique number in the employer's country)*
- Employer number
- Address
- Tel
- Fax
- e-mail address

Employment

- Start date
- End date

Occupational category (*either free text or by means of a code provided that the correspondence of the codes with the occupational categories is given in an annex to the passbook. ESOREX Taxonomy is already the fruit of a consensus at European level, so it would be ideal to start from that. However, separations within the medical specialities (ie. Doctors, nurses etc) should be introduced as in the UNSCEAR taxonomy In annex 2, see a comparison of the taxonomy for activity sectors and occupational categories used by UNSCEAR, ESOREX and SISERI)*

Categorisation (A or B)

Stamp and signature or identification number of the responsible party

Medical surveillance

(this information should be provided by the approved medical practitioner or approved occupational health service acting for the employer or for the undertaking in case the medical surveillance is delegated to the undertaking)

Date of the last periodic health review

Type of examination

- Prior *(for medical examination prior to employment or affectation to work with radiations)*
- Periodic *(for periodic reviews of health)*
- Special *(for special medical surveillance in case some dose limits are exceeded)*

Medical classification *(fit, not fit, fit subject to special conditions as shown)*

Restrictions to work with radiations *(it can be specified here if someone is not fit to work with a respiratory protection in the sense that it can be a counter-indication to work with open sources in some circumstances)*

Validation of result *(approved medical practitioner, approved occupational health service or other authorised person)*

- Name
- stamp and signature or identification number

Period of validity of the result

Official dose record up to the radiation passbook issue date

(information provided by the entity issuing the radiation passbook)

("Official" means that this monitoring is "based on individual measurements performed by a dosimetry service (recognized by the competent authorities)" as required by article 39 of the Draft of the new BSS)

Occupational life time dose (mSv)
(best estimate of the occupational life time dose based on the available dose records)
External dose

Personal dose equivalent $H_p(10)$ for photons and betas (a)
Personal dose equivalent $H_p(10)$ for neutron (b)
Skin dose [Personal dose equivalent $H_p(0.07)$]
Equivalent dose to specific body location (extremities/other area's)
Equivalent dose to the lens of the eye [Personal dose equivalent $H_p(3)$]

Internal dose

Committed effective dose from internally deposited radionuclide(s) [E(50)] (c)
Radionuclide(s)
Dose assessment method (body counter, urine, faeces, air sampling, …)
Committed equivalent dose [$H_T(50)$] to specific individual organs or tissues

Effective dose [sum of (a), (b) and (c)]
Authorized signature/stamp of the issuing entity and date
(not necessarily a physical signature)

Official doses (mSv) for the last 5 calendar years *(Not including the current year. Mandatory for persons having a 5 year dose limit)*

Year *(calendar years)*
Effective dose [sum of (a), (b) and (c)]
External dose

Personal dose equivalent $H_p(10)$ for photons and betas (a)
Personal dose equivalent $H_p(10)$ for neutron (b)
Skin dose [Personal dose equivalent $H_p(0.07)$]
Equivalent dose to specific body location (extremities/other area's)
Equivalent dose to the lens of the eye [Personal dose equivalent $H_p(3)$]

Internal dose

Committed effective dose from internally deposited radionuclides [E(50)] (c)
Radionuclide(s)
Dose assessment method (body counter, urine, faeces, air sampling, …)
Committed equivalent dose [$H_T(50)$] to specific individual organs or tissues

(Although the fields "skin dose", "equivalent dose to specific body locations", "equivalent dose to the lens of the eye" and "committed effective dose from internally deposited radionuclides" are in grey (optional), it should be mandatory to include them into the radiation passbook in the cases where outside workers are liable to receive significant internal exposure or significant exposure of the lens of the eye, specific body locations or skin. Art 39 of the Draft of the new BSS says: "In case where category A workers are liable to receive significant internal exposure or significant exposure of the lens of the eye or extremities, an adequate system for monitoring shall be set up". In addition, art 10 of the Draft of the new BSS stipulates dose limits for the lens of the eyes, the skin, the hands, forearms, feet and ankles. In annex VIII of the draft of the new BSS, these fields are well mentioned but while using the formulation "in the event of non-uniform exposure …", "in the event of internal contamination …".

Authorized signature/stamp of the issuing entity and date or of the responsible person of the employer and date

Details concerning the entities responsible for the record of the official dosimetry
(Approved dosimetry service or National Dose Register)
(only if different with section 2, entity issuing the radiation passbook)

Responsible entity
Date
Name
Address
Name and job title of the contact person
Tel number
Fax number
E-mail address

Official dose record for the year …..(mSv)
(The document should indicate clearly if these are the doses per monitoring period or cumulative.
(This information should be provided by the entity issuing the radiation passbook or by the employer or health physics service or other person acting for him)
(If the document can be kept by the outside worker more than one year (the first year should the year of issuance of the passbook), there should have the possibility to enter the official dose records for the whole validity period into the passbook. In this case, more than one table should be available in the radiation passbook)

Period
Start date
End date
Effective dose [sum of (a), (b) and (c)]
External dose
Personal dose equivalent $H_p(10)$ for photons and betas (a) *(if a lead apron is used, enter here the calculated effective dose)*
Personal dose equivalent $H_p(10)$ for neutron (b)
Skin dose [Personal dose equivalent $H_p(0.07)$]
Equivalent dose to specific body location (extremities/other area's)
Equivalent dose to the lens of the eye [Personal dose equivalent $H_p(3)$]
Personal dose equivalent $H_p(10)$ under apron
Personal dose equivalent $H_p(10)$ above apron

Internal dose
Committed effective dose from internally deposited radionuclides [E(50)] (c)
Radionuclide(s)
Dose assessment method (body counter, urine, faeces, air sampling, …)
Committed equivalent dose [$H_T(50)$] to specific individual organs or tissues

(Although the fields "skin dose", "equivalent dose to specific body locations", "equivalent dose to the lens of the eye" and "committed effective dose from internally deposited radionuclides" are in grey (optional), it should be mandatory to include them into the radiation passbook in the cases where outside workers are liable to receive significant internal exposure or significant exposure of the lens of the eye, specific body locations or skin. Art 39 of the Draft of the new BSS says: "In case where category A workers are liable to receive significant internal exposure or significant exposure of the lens of the eye or extremities, an adequate system for monitoring shall be set up". In addition, art 10 of the Draft of the new BSS stipulates dose limits for the lens of the eyes, the skin, the hands, forearms, feet and ankles. In annex VIII of the draft of the new BSS, these fields are well mentioned but while using the formulation "in the event of non-uniform exposure …", "in the event of internal contamination …".

TOTAL *(sum of the periodical contributions to the effective dose for one year)*

Signature of the responsible person and identification number of the employer of outside worker

Operational dose in the undertaking's controlled area(s) (member states)

(an estimate of any dose received by the outside worker (not necessarily measured with an EPD), to be filled after the end of any activity in the undertaking's controlled area. Most of the time, operational dosimetry will be organised by the undertaking that will therefore be responsible to fill in this section. However it cannot be excluded that sometimes operational dosimetry is organised by the employer (if fixed by contractual agreement), in this case, the employer is responsible to fill in this section)

Undertaking

Name and address
Unique identification number
Tel
Fax
e-mail address

Period covering the activity

Start date
End date

Effective dose [sum of (a), (b) and (c)]

External dose

Personal dose equivalent $H_p(10)$ for photons and betas (a) *(if a lead apron is used, enter here the calculated effective dose*)
Personal dose equivalent $H_p(10)$ for neutron (b)
Skin dose [Personal dose equivalent $H_p(0.07)$]
Equivalent dose to specific body location (extremities/other area's)
Equivalent dose to the lens of the eye [Personal dose equivalent $H_p(3)$]
Personal dose equivalent $H_p(10)$ under apron
Personal dose equivalent $H_p(10)$ above apron

Internal dose

Committed effective dose from internally deposited radionuclides [E(50)] (c)
Radionuclide(s)
Dose assessment method (body counter, urine, faeces, air sampling, …)
Committed equivalent dose [$H_T(50)$] to specific individual organs or tissues

(Although the fields "skin dose", "equivalent dose to specific body locations", "equivalent dose to the lens of the eye" and "committed effective dose from internally deposited radionuclides" are in grey (optional), it should be mandatory to include them into the radiation passbook in the cases where outside workers are liable to receive significant internal exposure or significant exposure of the lens of the eye, specific body locations or skin. Art 39 of the Draft of the new BSS says: "In case where category A workers are liable to receive significant internal exposure or significant exposure of the lens of the eye or extremities, an adequate system for monitoring shall be set up". In addition, art 10 of the Draft of the new BSS stipulates dose limits for the lens of the eyes, the skin, the hands, forearms, feet and ankles. In annex VIII of the draft of the new BSS, these fields are well mentioned but while using the formulation "in the event of non-uniform exposure …", "in the event of internal contamination …".

Signature/stamp of the responsible person for the undertaking or employer and date

Information regarding training in radiological protection

(To be filled by the person or entity responsible for the training. Note that information on training on respiratory protection could also be included here)

Basic Training in radiological protection

Date
Number of hours
Description of the contents
Centre or training company
Signature and stamp of the responsible for the entity or delegated person
Valid until
Observations

Specific training in radiological protection

Date
Number of hours
Description of the contents
Centre or training company
Signature and stamp of the responsible for the entity or delegated person
Valid until
Observations

Annex 1. Radiation Passbook Model

The following model of a harmonized radiation passbook for Europe with a minimum of obligatory requirements (black fields) and optional requirements (gray fields) has been drafted by HERCA/WG1.

This **model should be considered as a communication tool** to visualize the required data as given in this guidance document. It is not obliged to use the model exactly as it is. Countries can use their own model as far as it meets the requirements contained in the guidance document and concerning the minimal data content (black fields) in the radiation passbook model.

Annex 2. Comparison of the taxonomy for activity sectors and occupational categories used by UNSCEAR, ESOREX and SISERI

Table B4. Comparison of the taxonomy for activity sectors and occupational categories used by UNSCEAR, ESOREX and SISERI.

Code	UNSCEAR	Code	ESOREX	Code	SISERI
1	**Natural sources of radiation**		**Natural sources of radiation**		**Natural sources of radiation**
1.1	Civilian aviation	R30	Civilian aviation-total	5.1	Civilian aviation
		R31	- flight crew		**NO**
		R32	- cabin staff		**NO**
		R10	Underground mining	5.2	Underground mining
1.2	Coal mining	R11	- U'ground coal mining		**NO**
1.3	Other mineral mining	R12	- U'ground non-coal mining		**NO**
1.4	Oil and natural gas industries		**NO**	5.7	Oil and gas industries
1.5	Processing of minerals and ores		**NO**	5.3	Handling of minerals and ores
1.6	Work in places other than mines with substantial exposure to radon				
		R40	Show caves		**NO**
		R50	Water plants	5.6	Water capture and treatment
				5.5	Thermal centres
		R90	Other activities with exposure to natural sources	5.8	Miscellaneous
2	**Nuclear fuel cycle**		**Total nuclear**	**6**	**Nuclear fuel cycle**
2.1.1	Underground uranium mining	R20	Uranium mining	6.1	Uranium mining and milling
2.1.2	Aboveground uranium mining				
2.2	Uranium milling				
2.3	Uranium enrichment and conversion	N12	Fuel enrichment	6.2	Uranium enrichment and conversion
2.4	Fuel fabrication	N11	Fuel fabrication	6.3	Fuel fabrication
2.5	Reactor operation	N20	Power generating stations	6.4	Power generating stations
	NPP-employees	N21	NPP - own staff		
	NPP-contractors - maintenance	N22	NPP - outside workers	6.7	Contractors servicing maintenance fuel cycle
2.7	Fuel reprocessing	N13	Fuel reprocessing	6.5	Fuel reprocessing
2.8	Research in the NFC	N30	Nuclear research centres	6.7	Nuclear research centres
2.6	Nuclear decommissioning	N70	Nuclear decommissioning		NO
2.9	Waste management	N40	Waste management	6.6.1 &.2	Waste management
2.10	Safety and safeguard inspections	N50	Storage of radioactive materials	6.6.3 &4	Storage
2.11	Transport within NFC	N60	Transport on nuclear sites	3.1	Transport within NFC
		N90	Other use in nuclear sector, (please specify)	6.8	Other
3	**Medical uses**	**M0**	**Total medicine**	**2**	**Total medicine**
3.1.1	Diagnostic radiology	M10	Diagnostic radiology	2.1	Diagnostic radiology
3.1.2	interventional radiology	M11	Interventional radiology	2.4	Interventional radiology
	Medical doctor	M12	Cardiology	2.4.1	Cardiology
	Nurse			2.4.2	Neurology
	Technicians			2.4.3	Vascular
		M13	Surgical radiology	2.4.4	Others
		M15	Radiology+therapy, hospitals		
3.2	Dental radiology	M40	Dentistry	2.2	Dentistry
3.3	Nuclear medicine	M30	Nuclear medicine	2.6	Nuclear medicine
	Medical doctor				
	Nurse				
	Technicians				
3.4	Radiotherapy	M20	Radiotherapy	2.5	Radiotherapy
	Medical doctor			2.3	
	Nurse			2.7	

Code	UNSCEAR	Code	ESOREX	Code	SISERI
	Medical physicist			2.8	Labour medicine Labs with radioimmunology Blood products irradiation
				2.9	Medical veterinary and pharmaceutical Research
				2.11	Outside maintenance workers
3.5	All other medical uses	M90	Other medical uses	2.12	Miscellaneous
4	**Industrial uses**	**I0**	**Total industry**	**4**	**Industry**
4.1	Industrial irradiation	I40	Industrial irradiation	4.5	Industrial irradiation
4.2	Industrial radiography	I10	Industrial radiography	4.1.1 to 3	
		I11	Industrial radiography fixed units	4.1.1	Industrial radiography fixed units
		I12	Industrial radiography - mobile	4.1.2	Industrial radiography - mobile
				4.1.4 to 6	Other controls; gauges; lead control
4.3	Luminizing	I31	Luminizing		NO
4.4	Radioisotope production	I30	Radiochemical manufacture	4.3	Radioisotope production
4.5	Well-logging		Well-logging	4.7	Well-logging
4.6	Accelerator operation	I50	Accelerator operation	4.2	Accelerator operation
4.7	All other industrial uses	I90	Other industrial uses	4.4	Radiopolymere; others
		I20	Transport		
		I60	Chemical industry		
				4.6	Control for person security
6	**Defence activities**			**1**	**Defence**
6.1	Weapon production		**NO**	1.7	Building bombs &other
6.2	Nuclear ships and support activities		**NO**	1.1	Propulsion (crew, building and maintenance, training)
6.3	All other defence activities		**NO**	1.2	Medical and veterinary departments
				1.3	Intervention et préparations à l'intervention
				1.4	Industrial uses
				1.5	Aircrew (incl cosmic)
				1.6	Installation cycle
				1.8	Transport
				1.9	Miscellaneous
5	**Miscellaneous**	**E0**	**Total education, research, safety**		
	Educational establishments	E1	Higher education		
		E2	Radiation research		
	Safety and inspections		Safety and inspection	7.3	Inspection and control
		M50	Veterinary medicine	2.10	Veterinary medicine
	Veterinary medicine		**NO**		
				7	**Others**
	Other specified occupational groups			7.1	Research outside nuclear and medical
				7.2	Crisis situations (firemen…)
	Contractors			7.4	Foreign activities in foreign countries
				7.5	Others
	Transport			3.2	Transport in industry and medical sector
	Waste management other than NFC				