NATIONAL NUCLEAR REGULATOR

For the protection of persons, property and the environment against nuclear damage

No.	Title	Rev.
TM-SARA-003	NATIONAL DOSE REGISTER DATA PROVIDER MANUAL	1

UNRESTRICTED

QUALITY TRAIL

ACTION	NAME	DESIGNATION	SIGNATURE	DATE
PREPARED	Mr M Souphy	IAEA Expert	Approved	
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This Manual has been reviewed by the National Dose Register Steering Committee.

REVISION HISTORY

Rev. No.	Revision	Nature of Revision	Compiler
0	First Issue		M Souphy
1	Second Issue	Reworked the section of data report file creation according to the new template version as agreed during steering committee meeting in December 2014	M Souphy

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1. PURPOSE

The purpose of this document is to specify the process of submitting records of occupational exposures to the South African National Dose Register.

2. SCOPE

This Manual applies to all Data Providers submitting records of occupational exposures to the South African National Dose Register.

3. REFERENCES

IAEA GSR Part 3 (Interim) Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards.

4. TERMS, DEFINITIONS AND ABBREVIATIONS

4.1 Terms & Definitions

Data Provider – dosimetry service provider or authorization holder required to keep a dose register of occupational exposures and submitting dose data to the National Dose Register.

Data Upload Template - an Excel spreadsheet consisting of different fields which is used to upload occupational exposure data to the National Dose Register.

National Dose Register - an electronic database designed to collect, store and manage radiation dose of workers who are occupationally exposed to radiation.

Occupational exposure - radiation exposure of workers incurred in the course of their work.

RAIS - IAEA electronic database which is used as the National Dose Register.

Records of occupational exposure - means exposure records or dose records

Web Application - a Web Portal used to interface with the National Dose Register to upload dose data.

4.2 Abbreviations

DP: Data Provider
IAEA: International Atomic Energy Agency
IE: Internet Explorer
ISO: International Standards Organisation
NDR: National Dose Register

RAIS: Regulatory Authority Information System
SABS: South African Bureau of Standards

5. RESPONSIBILITY AND AUTHORITY

5.1 NDR Administrator

The NDR Administrator should ensure:

(a) overall administration, maintenance and management of the NDR.
(b) Provision of instructions on the data upload, access to data, and tracking of data in the NDR.
(c) adequate infrastructure to support the operation of the NDR, data security and confidentiality.

5.2 NDR IT Administrator

The NDR IT Administrator should ensure:

(a) maintenance of the NDR user interface (web-application) to interact with the database.
(b) Maintenance of the Microsoft SQL Server software.
(c) provision of technical support to the Data Providers where required, including creation of Data Provider master and sub-accounts.
(d) Provision of a secure and encrypted system for protection of data and unauthorized access.

5.3 NDR Data Providers

Data Providers should ensure:

(a) maintenance of radiation dose records for workers in compliance with NNR and Department of Health standards and transmit dose reports to the NDR in accordance with authorisation conditions.
(b) utilizing the data upload template to submit the occupational exposure records to the NDR on a periodic basis.
(c) the accuracy of occupational exposure records submitted to the NDR.
(d) inform workers of the existence and information being reported to the NDR.
(e) provision of mechanisms to ensure consent is given by workers to make data available to a third party, and to keep data confidential.
(f) authorisation of staff (sub-accounts) to upload occupational exposure records, and access data in the NDR, in accordance with holder quality policies and standards.

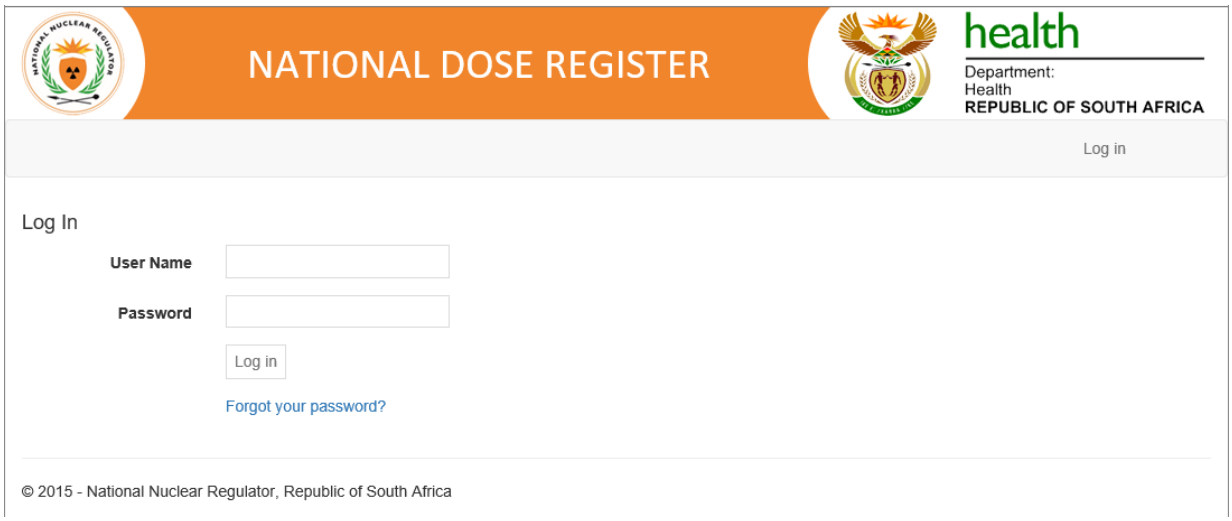
6. USING THE NDR WEB APPLICATION

The NDR application has been developed as a web application. A recent web browser (IE9 or later, or recent version of Google Chrome or Firefox) should be used. The URL to access the application, is provided to DPs by the NNR.

At each data-transfer cycle, DPs should fill in an Excel file (upload template) with the dose data, which should be submitted to the NDR through a web application.

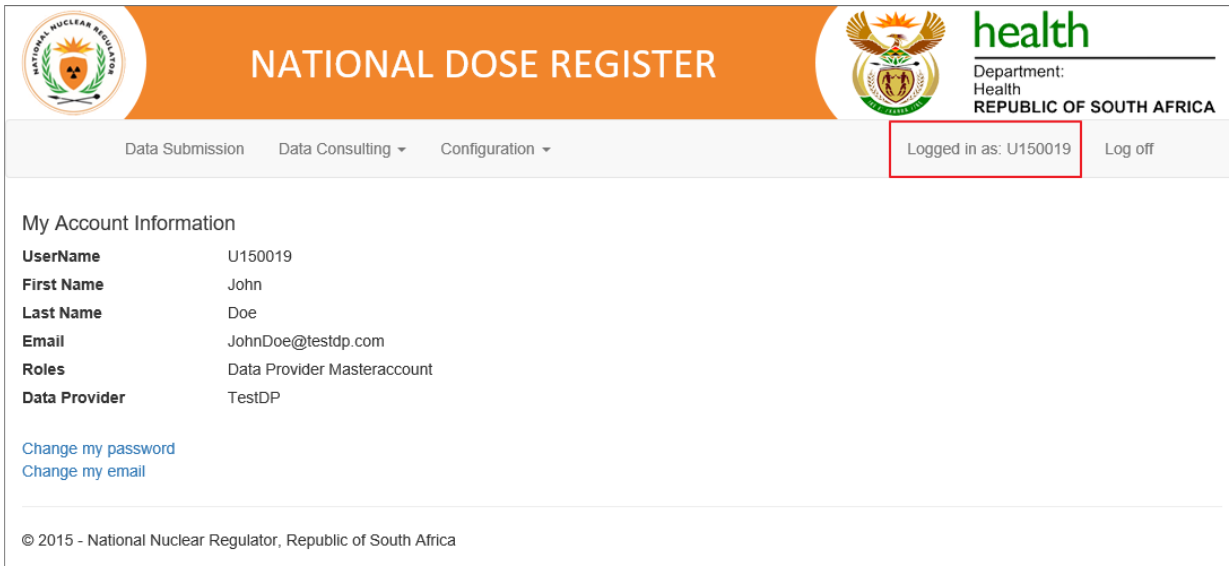
6.1 Logging in

The login credentials provided by the NNR should be used for login purposes. A password recovery procedure is available on the login screen.



6.2 Managing your account

Once logged in, an account should be managed by clicking on the “logged in as …” text in the top-right corner. This allows aview of DP account details, and changes to email addresses or passwords if desired.



6.3 Managing DP settings

There are two types of data provider accounts for accessing the NDR and uploading records to the NDR:

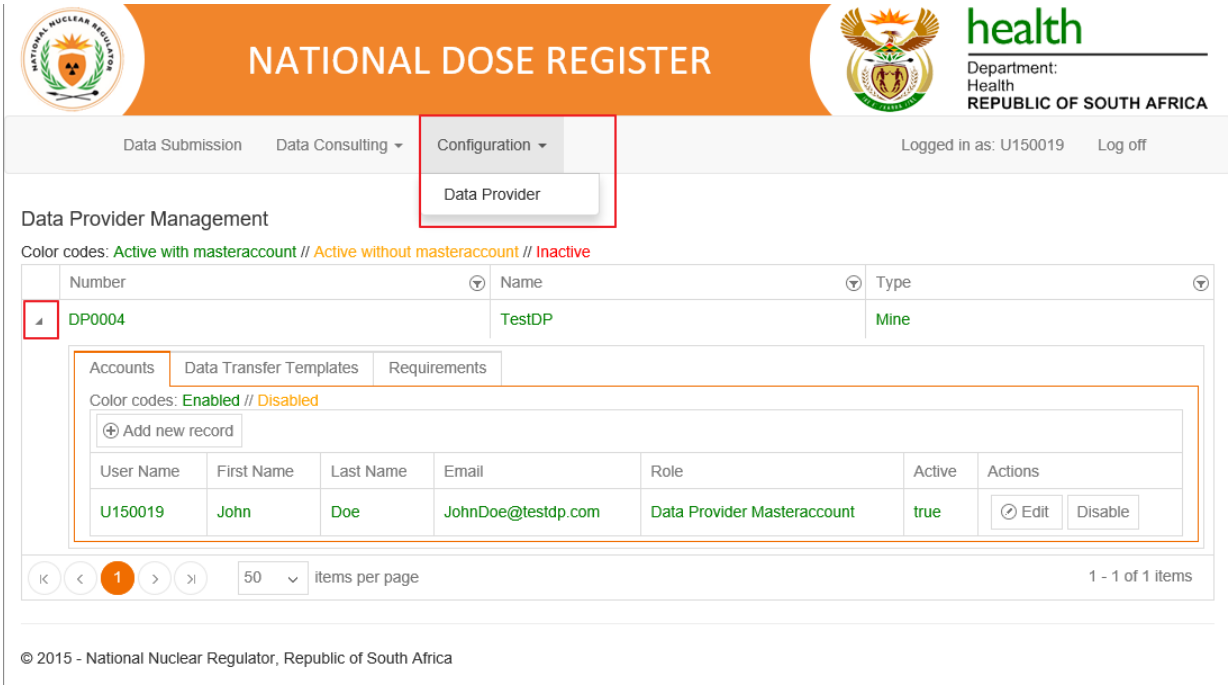
- Master account
  - Can submit data to the NDR and consult NDR data
  - Can create other organizational master or sub accounts for a DP
- Sub account
  - Can only consult NDR data

Note 1: “Consult” in the NDR context means accessing worker dose data, generating and printing reports, but NOT inserting/altering dose data.

Note 2: the NDR requires all accounts to be individual accounts, identified by the individuals’ real first name, last name and personal/professional email address. Generic accounts are not allowed.

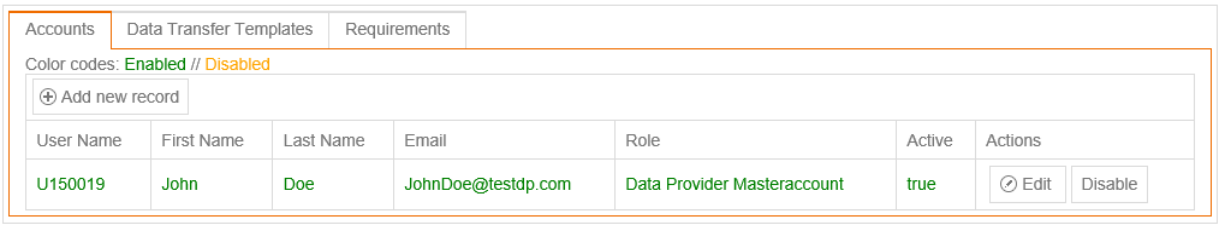
Note 3: every active data provider should have at least one active master account at all times.

Master accounts have access to the “Configuration / Data Provider” submenu where the DP information is visible. By clicking on the small arrow on the left of the DP number, the details are expanded.

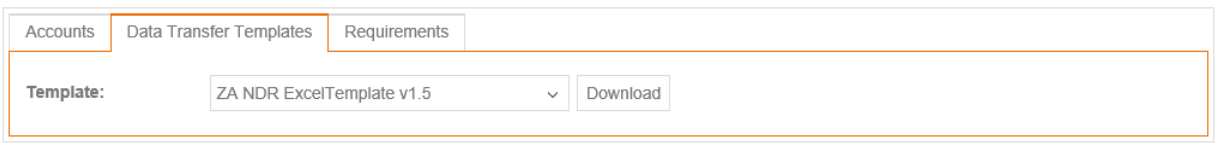


The following functionalities are available:

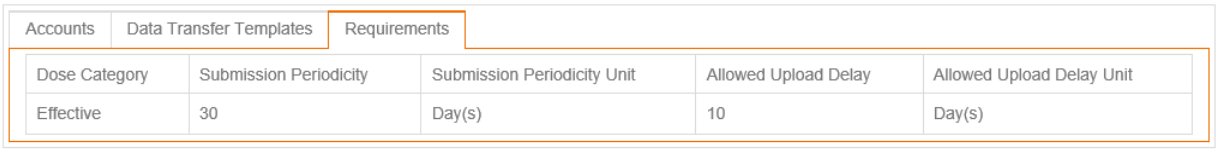
- Manage accounts of an organisation
  - Add (or edit) additional master or sub accounts
  - Disable accounts (a disabled account can no longer log in. It can be re-enabled later on)



- Download the data transfer template
  - The downloaded file will have the “FileInformation” worksheet prefilled in. **The “red” fields (template version, NDR number, name and NDR token) on that sheet should not be changed!**
  - Further down in this manual, there is a section that describes in detail how the data in the template should be populated.



- Consult the required data upload cycle



6.4 Submitting a data report

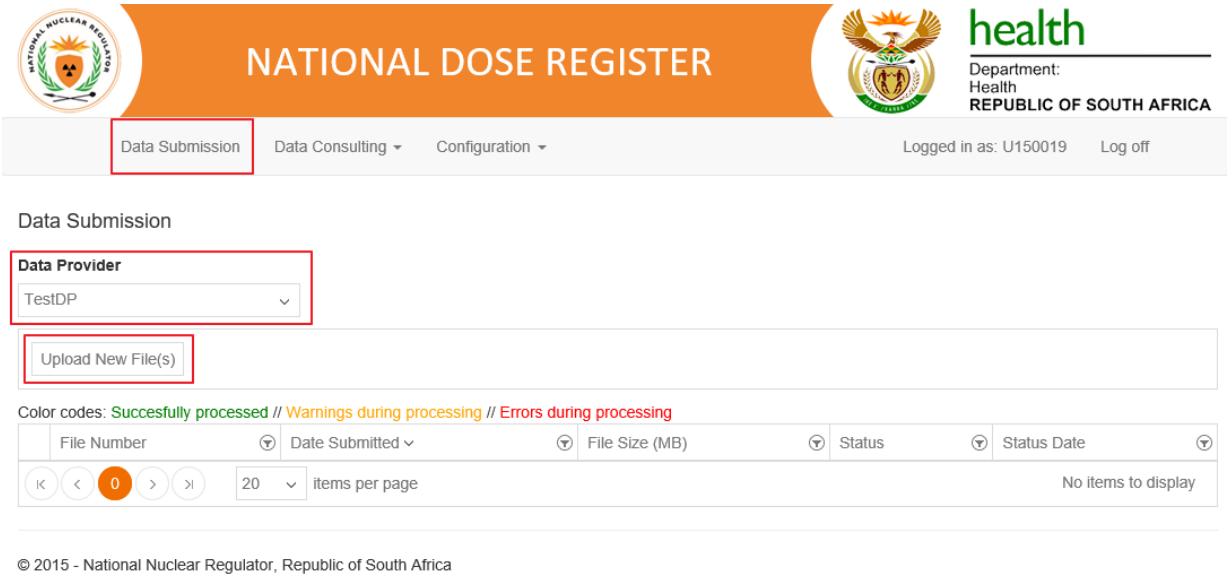
(Submitting data can only be performed by a data provider MASTER account)

Click on the “Data Submission” to access the data submission section of the application. The Data Provider represented should be selected from the dropdown list. In most cases, there should only be one option and which will be selected by default.

From there, a list of all previously submitted reports, along with their status, and also upload a new data report can be seen.

To upload a new report, click on the “Upload New File(s)” button. Multiple files can be uploaded at once if necessary.

Note: the uploaded files should be Excel files (.xlsx) and structured according to the downloaded template. See further down in this manual on details about how to correctly populate the template with data.



Once uploaded, the file will appear in the list of submitted files.

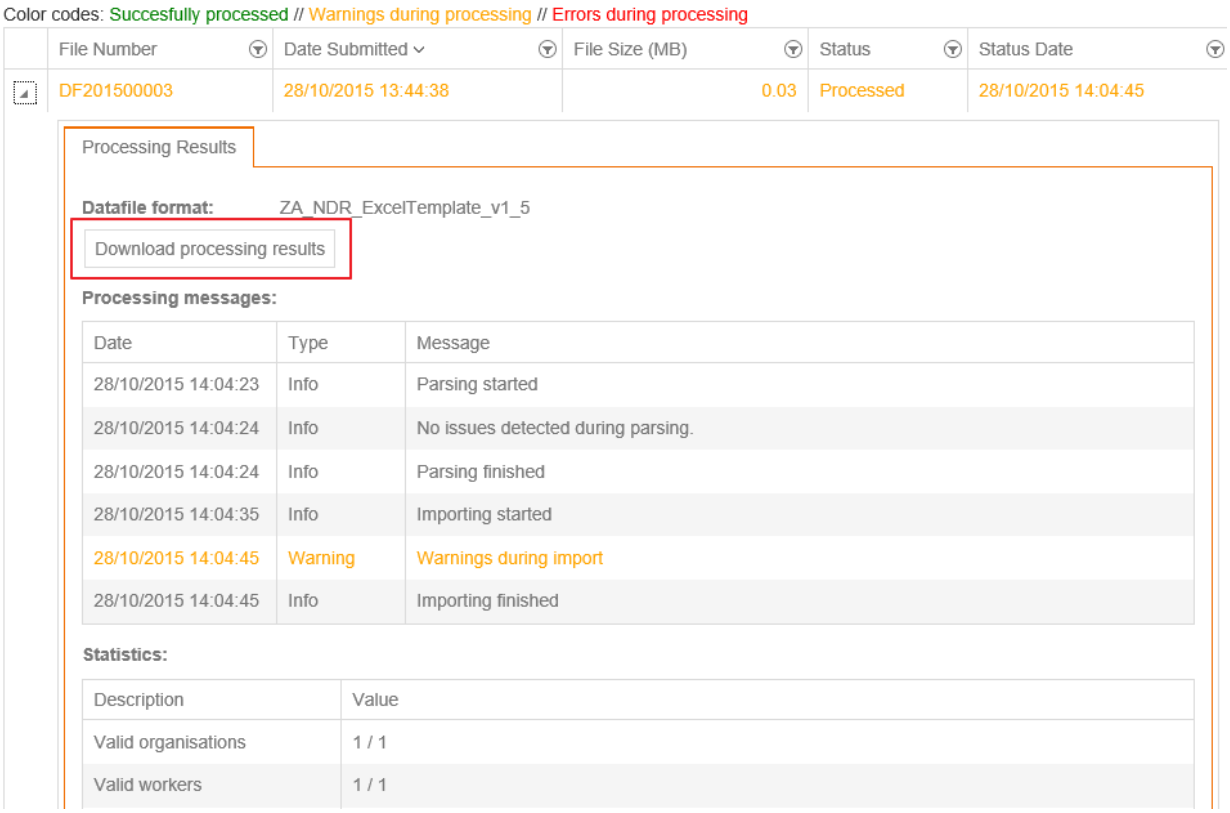
The file can have following statuses:

- Unprocessed → the system has not yet started to process the file
- Processing → the system is currently processing the file. Depending on the size of the file, this can take a considerable amount of time.
- Processed → the system has finished processing the file.

Note: the data submission page (F5 in the browser) may need to be refreshed to view the latest file status.

Once the file reaches the "processed" status, the row will show up in a colour code (green = file processed without issues, orange = processed but with issues, red = errors during processing).

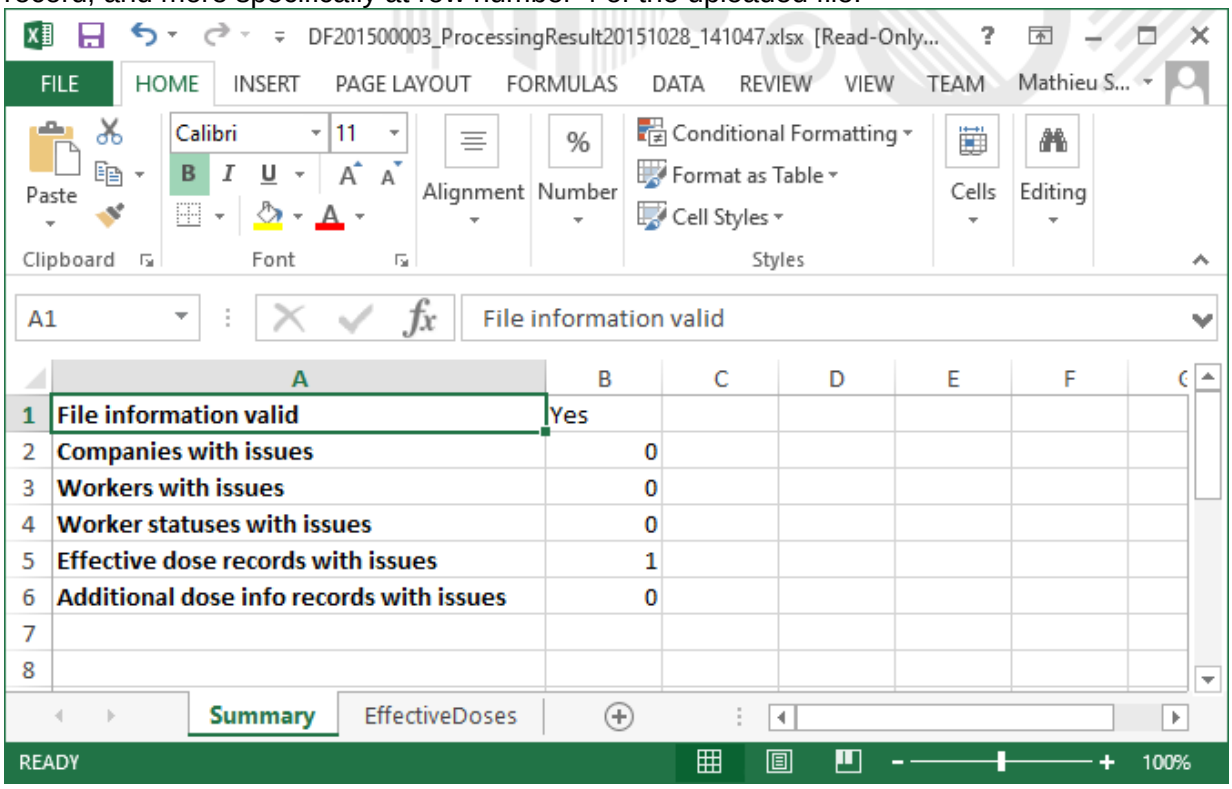
By clicking on the little arrow to the left of the file, the details can be expanded. These details will show the processing log (indicating any possible issues) and also some statistics regarding the file.

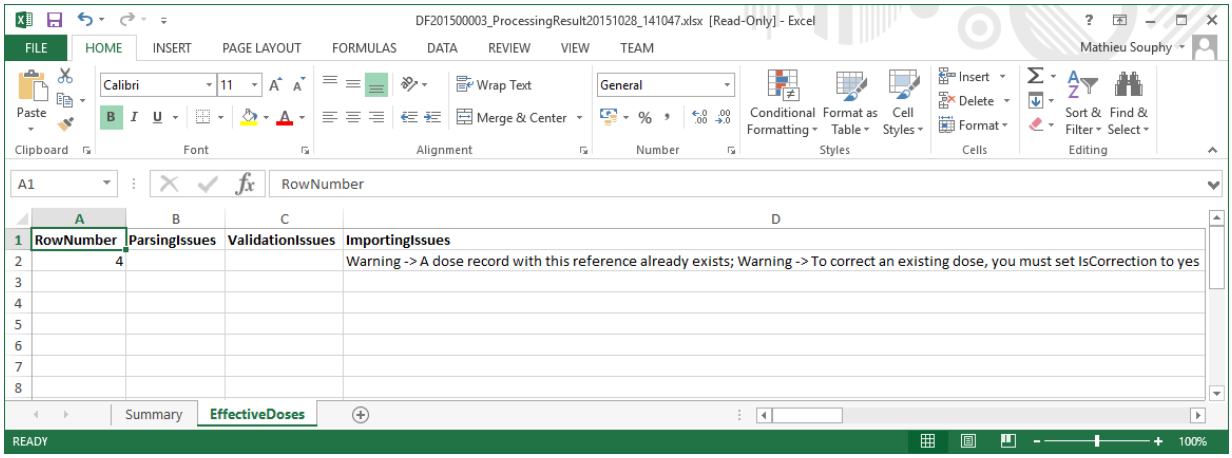


Any issues or problems should be viewed by clicking on the "Download processing results" button. This provides a resulting Excel file, giving an overview of the number of issues, and the specific worksheets in this Excel file will indicate the detailed issue and at which row number of the submitted file it occurred.

For instance, in the screenshot above, it is indicated that there are warnings during import of the data. When the result Excel is downloaded, the details of this warning should be examined,

as shown in the screenshots below. In this case, an issue was detected with an “Effective Dose” record, and more specifically at row number 4 of the uploaded file.





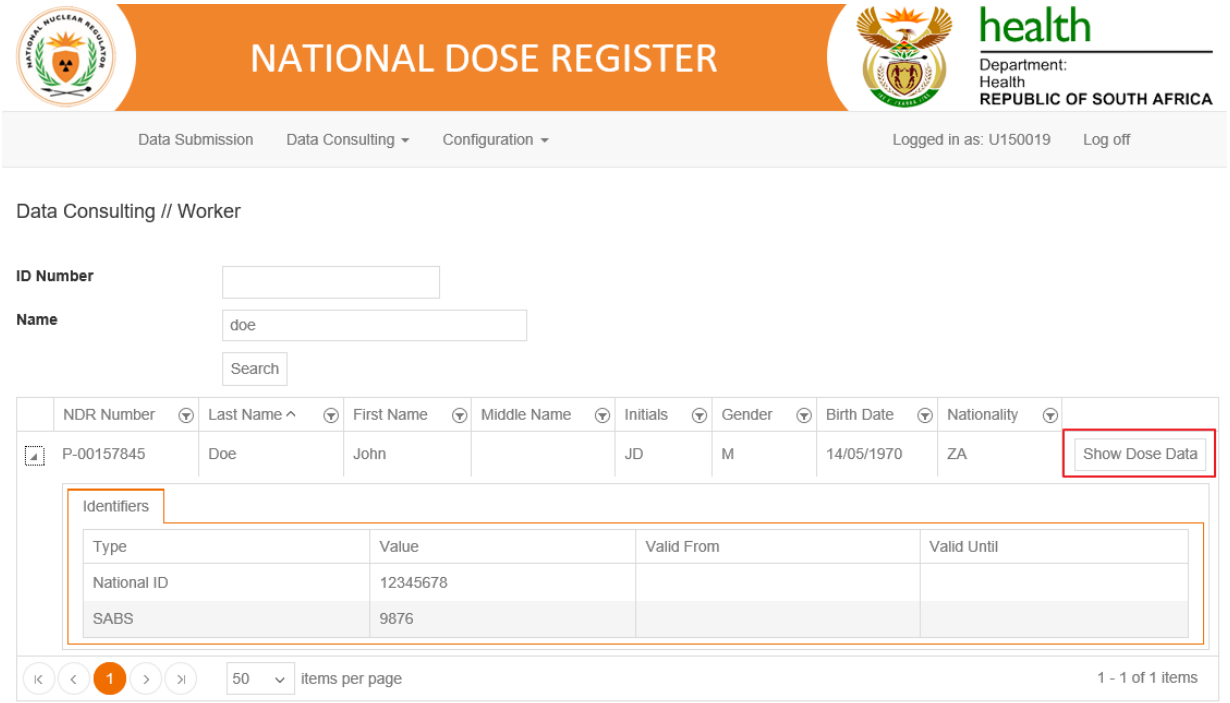
6.5 Consulting worker dose data

(Consulting data can be performed by both a data provider MASTER and SUB account)

The application also allows the DPs to consult dose data from any worker in the system. In order to do so, click on the “Consulting / Worker” button in the menu.

To search for a worker, the part of the identifier and/or name of the worker should be typed in the appropriate search boxes, followed by clicking on the Search button.

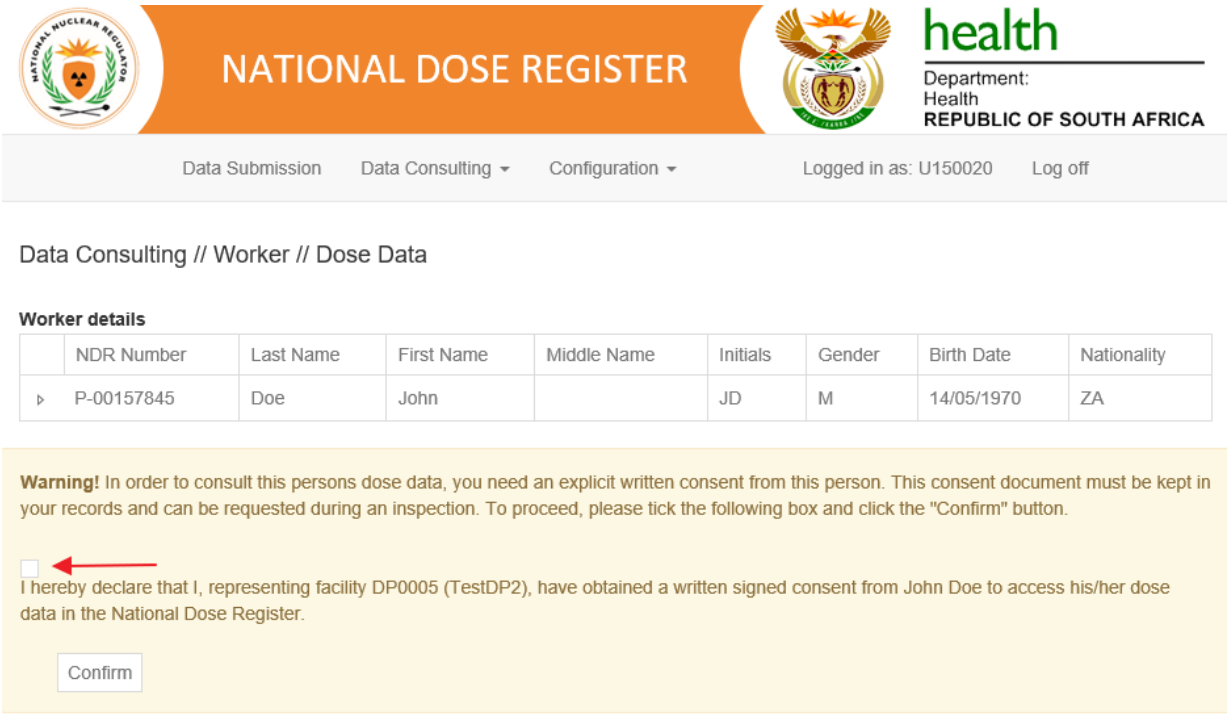
When a worker is found, a click on the little arrow on the left of the name will expand the details.



To consult the dose data, the “Show Dose Data” button on the right of the worker should be clicked.

Should DPs try to consult the doses of a worker for whom no data has been submitted previously, (e.g. a potentially new employee , the DP should first need to obtain a written consent from this worker. A warning box will appear telling the DP to obtain such consent. In order to be able to continue consulting the doses, checkbox and “Confirm” buttons have to be clicked. It is the DP’s responsibility to store this signed document in the medical files of the worker. Once the consent has been confirmed, the DP will be able to consult the dose data as further documented below.

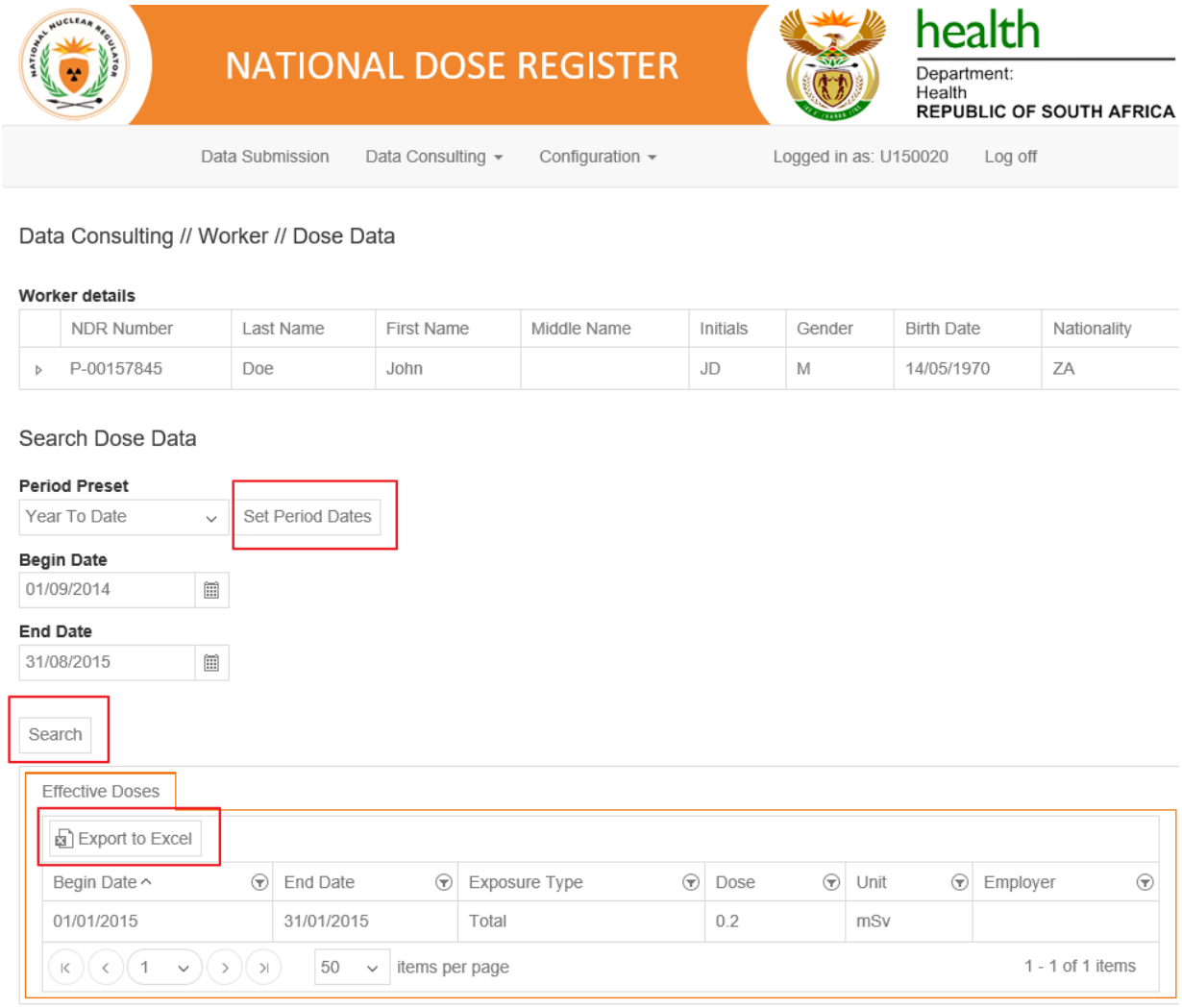
Note: A consent is valid for the whole DP organisation. This means that if one account of the DP organisation confirms that consent has been obtained from a given worker, any other account from the same organisation will not need to obtain the consent again in the future.



To search for doses for the given worker, the period to be searched in the begin and end date search boxes should be manually entered, or these should be prefilled by selecting a pre-set from the dropdown and clicking the “Set Period Dates” button.

Once the search criteria are defined, the “Search” button should be clicked, and the results will show up in the grid below. The results may be exported to Excel if necessary, by clicking on the “Export to Excel” button.

Note: for confidentiality reasons, the “Employer” column should only be filled with data if the particular dose was recorded at the DP organisation. Employer information from any doses that were recorded at any other organisations is not visible.



7. POPULATING THE DATA UPLOAD TEMPLATE

The NDR is a computer based system that incorporates a secure web-based portal and a database (RAIS) for the storage of dose records.

The NDR is located on the NNR Server in Pretoria. All personal information uploaded, accessed and stored in the NDR should be handled in accordance with the relevant national legislation.

Data Providers should upload occupational exposure on a periodic basis to the NDR in accordance with the steps below.

7.1 Creating a data report file

Dose data files submitted to the NDR should be structured in a predefined way, so that the NDR automated data import application can handle the incoming data correctly.

Microsoft Excel 2007 or above should be used as the data container to submit the data to the NNR.
Data should be provided in the Excel template which consists of multiple worksheets (referred to as “tabs”).

***Important note 1**: As a general principle regarding all the fields in the template: fields (or column headers) marked in red are mandatory information, and corresponding data should be provided at all times when a new record (line) is inserted in the corresponding tab.*

***Important note 2**: Some fields in the template have restrictions on them to allow only specific values to be entered (typically enforced by the means of a dropdown list). It is very important that Data Providers adhere to these predefined values, and not enter any other value, or the data-parsing system on the NNR server will fail to correctly process the file. Should some values be missing from any of the dropdowns, the NNR should be contacted to discuss the possibility to add the values, which might then be included in a future version of the template.*

***Important note 3**: All NNR regulated Data Providers should periodically upload all occupational dose records for all workers to the NDR. The SABS should exclude all occupational dose records for NNR regulated Data Providers (NORM and Nuclear Installations) during the periodic data upload to the NDR.*

***Important note 4**: The SABS should upload the data for all Department of Health regulated entities, except for NORM holders regulated by NNR.*

Below is a description of the various tabs and fields in the provided Excel template (v1.5), and how to correctly fill the fields.

7.2 File Information

This first tab contains general information about the file, as follows.

Field Name	Type	Purpose	Mandatory?	Notes
Template Version	Text	This is a predefined version number and should NOT be changed.	Yes	
NDR Number	Text	This is an identification number that the NNR has communicated to Data Providers. It will be predefined	Yes	

		and should NOT be changed		
Name	Text	This is the company name. It will be predefined and should NOT be changed.	Yes	
NDR Token	Text	This is a unique token that the NNR has communicated to you**.** It will be predefined and should NOT be changed.	Yes	**It is strictly confidential and should not be shared with anybody outside the Data Provider organisation!**
Responsible Person Name	Text	Name of the person in the Data Provider organisation responsible for the NDR data transfer	No	
Responsible Person Email	Text	Email address of the responsible person	No	
Responsible Person Phone Number	Text	Phone number of the responsible person	No	

7.3 Companies

Data Providers (for example mines) should only list the company name, with maybe a minimal set of “subcompanies”. For actual Dosimetry Service Providers, this list should contain all the companies for which radiation monitoring services are provided.
The minimal set of information required to define a company is its name, the SABS practice code and one identifier.
An identifier shall be specified by the identifier type and the actual identifier value, and up to 3 identifiers may be specified for a company. An identifier value should be specified without punctuation or hyphens.
As much identifiers as possible if available should be specified, as it will greatly enhance the data quality of the NDR by avoiding double company entries in the NDR database.
To specify the company country, the official ISO country code should be specified.
Historic records should be kept in this tab, and the data in this tab at each data-transfer cycle does not need to be cleared.

Field Name	Type	Purpose	Mandatory?	Notes
Name	Text	Company’s full name	Yes	

ShortName	Text	Company's short name (e.g. the official abbreviation)	No	
PracticeCode	ChoiceList	SABS practice code applicable to the company	Yes	Refer to the worksheet "ReferenceList" to see the list of codes and their description
Address	Text	Company address	No	
Country	ChoiceList	ISO code of the company's country of operation	No	Refer to the worksheet "ReferenceList" to see the list of countries. If left blank, country is assumed to be South Africa
ID1_Type	ChoiceList	Type of the primary identification number of the company	Yes	
ID1_Value	Text	Value of the primary identification number of the company	Yes	
ID2_Type	ChoiceList	Type of a second identification number of the company	No	
ID2_Value	Text	Value of the second identification number of the company	No (yes if ID2_Type specified)	
ID3_Type	ChoiceList	Type of a third identification number of the company	No	
ID3_Value	Text	Value of the third identification number of the company	No (yes if ID3_Type specified)	

7.4 Workers

On the workers tab, all the workers that are monitored and for which the data is submitted to the NDR should be provided.
The minimal set of required information are the initials, the last name, gender, nationality and one identifier.
An identifier shall be specified by the identifier type and the actual identifier value, and up to 5 identifiers may be specified for a worker. An identifier value should be specified without punctuation or hyphens.
As much identifiers as possible if available should be specified, which will greatly enhance the data quality of the NDR and by avoiding double person entries in the NDR database.
To specify the person nationality, the official ISO country code should be specified.
Historic records should be kept in this tab, and the data in this tab at each data-transfer cycle does not need to be cleared.

Field Name	Type	Purpose	Mandatory?	Notes
FirstName	Text	Person's first name	No	
MiddleName	Text	Person's middle name	No	
LastName	Text	Person's last name (surname)	Yes	
Initials	Text	Person's initials	Yes	
BirthDate	Date	Person's birth date	No	Format "yyyy-mm-dd"
Gender	ChoiceList	Person's gender	Yes	"M", "F" or "UNKNOWN"
Nationality	ChoiceList	ISO code of person's country of nationality	Yes	Refer to the worksheet "ReferenceList" to see the list of countries.
ID1_Type	ChoiceList	Type of the primary identification number of the person	Yes	For a South African worker, this MUST be "National ID"
ID1_Value	Text	Value of the primary identification number of the person	Yes	For a South African worker, this must be the value of his national id
ID1_ValidFrom	Date	Start date of validity of ID1	No	Format "yyyy-mm-dd"
ID1_ValidUntil	Date	End date of validity of ID1	No	Format "yyyy-mm-dd"
ID2_Type	ChoiceList	Type of a second identification	No	

		number of the person		
ID2_Value	Text	Value of the second identification number of the person	No (yes if ID2_Type specified)	
ID2_ValidFrom	Date	Start date of validity of ID2	No	Format “yyyy-mm-dd”
ID2_ValidUntil	Date	End date of validity of ID2	No	Format “yyyy-mm-dd”
ID3_Type	ChoiceList	Type of a third identification number of the person	No	
ID3_Value	Text	Value of the third identification number of the person	No (yes if ID3_Type specified)	
ID3_ValidFrom	Date	Start date of validity of ID3	No	Format “yyyy-mm-dd”
ID3_ValidUntil	Date	End date of validity of ID3	No	Format “yyyy-mm-dd”
ID4_Type	ChoiceList	Type of a fourth identification number of the person	No	
ID4_Value	Text	Value of the fourth identification number of the person	No (yes if ID4_Type specified)	
ID4_ValidFrom	Date	Start date of validity of ID4	No	Format “yyyy-mm-dd”
ID4_ValidUntil	Date	End date of validity of ID4	No	Format “yyyy-mm-dd”
ID5_Type	ChoiceList	Type of a fifth identification number of the person	No	
ID5_Value	Text	Value of the fifth identification number of the person	No (yes if ID5_Type specified)	
ID5_ValidFrom	Date	Start date of validity of ID5	No	Format “yyyy-mm-dd”
ID5_ValidUntil	Date	End date of validity of ID5	No	Format “yyyy-mm-dd”

7.5 Worker Status

For each change of an employment status for a given worker, a new record should be specified. The minimal set of required information should be the person identification (specified by one combination of a person identification type and value), the employer identification (specified by one combination of a company identification type and value), the status date and the actual status.

The WorkActivities field is optional but it should be filled in if information about the work activities or the sector that the worker is active in is available. This is a free text field, and multiple work activities for the same worker by delimiting the different values with a semicolon (;) (e.g. “Mining;Radiography”) may be specified. This could become a fixed structure of work activities later when enough data about the work activities has been collected.

If no information about the work status for a given worker is available, no record for the worker or any “dummy” data should be specified, and the NDR system will then create a default status in the database.

Historic records should be kept in this tab, and the data in this tab at each data-transfer cycle does not need to be cleared.

Field Name	Type	Purpose	Mandatory?	Notes
PersonIDType	ChoiceList	IDType used to identify person	Yes	Use one of the ID types used on the Workers tab for this worker
PersonIDValue	Text	Associated IDValue used to identify this person	Yes	Use the associated ID value according to the specified person ID type
CompanyIDType	ChoiceList	IDType used to identify the employer company	Yes	Use one of the ID types used on the Companies tab for this company
CompanyIDValue	Text	Associated IDValue used to identify the employer company	Yes	Use the associated ID value according to the specified company ID type
StatusDate	Date	The date that the mentioned status has taken effect	Yes	Format “yyyy-mm-dd”
WorkStatus	ChoiceList	The actual status	Yes	
WorkActivities	Text	Specify the workactivities for this worker	No	Multiple workactivities for the same worker may be specified by delimiting them with a semicolon (e.g. “Mining;Radiography”)

7.6 Effective Doses

All data providers should fill in this tab at the required transfer cycle.
The minimal set of required data should be the worker identification, the company identification, the begin and end dates of the dose records measuring period, the exposure type, the dose value and its unit.
6.6.3 **It is important that the data in this tab be cleared at every new data-transfer cycle. This means that at each data-transfer cycle (typically each month or quarter), a fresh EffectiveDoses tab should be started and only the data that applies to this data-transfer cycle (i.e. only the data from the last month or quarter) should be provided.**

Field Name	Type	Purpose	Mandatory ?	Notes
PersonIDType	ChoiceList	IDType used to identify person	Yes	Use one of the ID types used on the Workers tab for this worker
PersonIDValue	Text	Associated IDValue used to identify this person	Yes	Use the associated ID value according to the specified person ID type
CompanyIDType	ChoiceList	IDType used to identify the employer company	Yes	Use one of the ID types used on the Companies tab for this company
CompanyIDValue	Text	Associated IDValue used to identify the employer company	Yes	Use the associated ID value according to the specified company ID type
BeginDate	Date	The begin date of the period of the doserecord	Yes	Format “yyyy-mm-dd”. Begin date is assumed to start at 00:00 on the specified day
EndDate	Date	The end date of the period of the doserecord	Yes	Format “yyyy-mm-dd”. End date is assumed to end at 23:59 on the specified day
ExposureType	ChoiceList	The type of exposure (internal, external or total)	Yes	

DoseValue	Decimal number	The actual dose value	Yes	
DoseUnit	ChoiceList	The unit of the dose value	Yes	
DataProviderReference	Text	Specify your internal reference of this dose (e.g. database record id)	No	This can be used to identify a submitted dose that needs to be corrected. It is the preferred method of correcting a dose
IsCorrection	ChoiceList	Used to correct a previously submitted dose record	No	If set to “Yes”, the record will overwrite any previously submitted dose records. Either the “DataProviderReference” field or the “OldValueToCorrect” field must be specified in this case
OldValueToCorrect	Decimal number	The previously submitted value in case of a correction	No	If a correction is needed, and “DataProviderReference” was not provided for the original dose, the system will try to find the dose to correct according to this value and by looking up the same worker, company, period and exposure type
Comment	Text	Used to specify any comments about this dose record	No	

7.7 Additional Dose Information

Only the Data Providers that are required to do so according to their authorisation conditions should fill in data in this tab at the required transfer cycle.

The minimal set of required data should be the worker identification, the company identification, the beginning and end dates of the dose records measuring period, the dose value and its unit. As much of the other optional fields (like dose measure, radiation type, etc.) as possible or as required by the authorisation should be provided.

It is important that the data in this tab be cleared at every new data-transfer cycle. This means that at each data-transfer cycle (typically each month or quarter), a fresh

AdditionalDoseInformation tab should be started and only the data that applies to this data-transfer cycle (i.e. only the data from the last month or quarter) should be provided.

Field Name	Type	Purpose	Mandatory ?	Notes
PersonIDType	ChoiceList	IDType used to identify person	Yes	Use one of the ID types used on the Workers tab for this worker
PersonIDValue	Text	Associated IDValue used to identify this person	Yes	Use the associated ID value according to the specified person ID type
CompanyIDType	ChoiceList	IDType used to identify the employer company	Yes	Use one of the ID types used on the Companies tab for this company
CompanyIDValue	Text	Associated IDValue used to identify the employer company	Yes	Use the associated ID value according to the specified company ID type
BeginDate	Date	The begin date of the period of the doserecord	Yes	Format “yyyy-mm-dd”. Begin date is assumed to start at 00:00 on the specified day
EndDate	Date	The end date of the period of the doserecord	Yes	Format “yyyy-mm-dd”. End date is assumed to end at 23:59 on the specified day
DoseMeasure	ChoiceList	The appropriate dose measure	No	
RadiationType	ChoiceList	The appropriate radiation type	No	
DoseEquivalent	ChoiceList	The appropriate dose equivalent	No	
ExposedBodyPart	ChoiceList	The appropriate exposed body part	No	

DoseValue	Decimal number	The actual dose value	Yes	
DoseUnit	ChoiceList	The unit of the dose value	Yes	
DosimeterType	ChoiceList	The appropriate dosimeter type used	No	
DosimeterNumber	Text	The appropriate dosimeter number used	No	
DataProviderReference	Text	Specify your internal reference of this dose (e.g. database record id)	No	This can be used to identify a submitted dose that needs to be corrected. It is the preferred method of correcting a dose
IsCorrection	ChoiceList	Used to correct a previously submitted dose record	No	If set to “Yes”, the record will overwrite any previously submitted dose records. Either the “DataProviderReference” field or the “OldValueToCorrect” field must be specified in this case
OldValueToCorrect	Decimal number	The previously submitted value in case of a correction	No	If a correction is needed, and “DataProviderReference” was not provided for the original dose, the system will try to find the dose to correct according to this value and by looking up the same worker, company, period and exposure type
Comment	Text	Used to specify any comments about this dose record	No	

7.8 ReferenceList and DataLists

Two additional tabs, ReferenceList and DataList, are for reference only and used to look up the country ISO codes, SABS practice codes, and also to have an overview of which values are allowed to be entered in the various dropdown fields. The additional tabs should not be modified by Data Providers.

7.9 Saving the data file

The data file should be saved as a regular .xlsx file (not an xlt template !) when all the data is entered in the Excel file.
Each file should be named according to the current data-transfer cycle, to ensure a consistent naming format and ease of retrievability, e.g. NDRData_201410.xlsx to indicate October 2014 in this occurrence.