



CADOR^{med} III


European Radiation Dosimetry Group



English (English) ▼

Committed effective dose assessment

Dose assessment

Settings

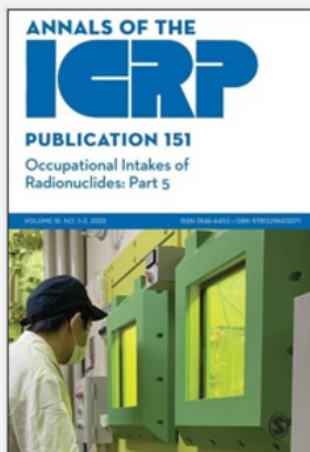
Radionuclides

Scattering factors

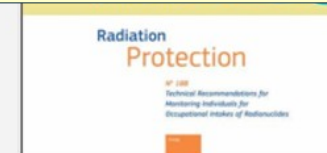
Detection limits

CADOR^{med} III

Info



How to import data
from OIR Data Viewer ?





Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

OIR Data Viewer import

Radionuclide

Chemical form

Biokinetic models

Import dose coefficients from OIR Data Viewer or
retrieve data from CADOR_{med} database

Here is the screen to import data

First, You need OIR Data Viewer on your Computer !

CADOR_{med}
database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

Default model for occupational exposures :

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



Recommended citation

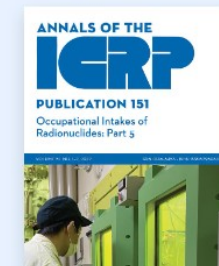
ICRP, 2022. Occupational Intakes of Radionuclides: Part 5. ICRP Publication 151. Ann. ICRP 51 (1–2).

Display **publication 151** on ICRP website

commonly encountered in workplaces. For most of the elements, reviews of data on inhalation, ingestion, and systemic biokinetics are also provided. Dosimetric data provided in the printed publications of the series include tables of committed effective dose per intake (Sv per Bq intake) for inhalation and ingestion, tables of committed effective dose per content (Sv per Bq measurement) for inhalation, and graphs of retention and excretion data for intake by inhalation. These data are provided for all absorption types and for the most common

ation 30 series (ICRP, 1979a,b, 1980, sment of internal occupational exposure sssessment. The following publications of he workplace; a list of principal chniques for the radioisotopes most

alent dose
. This publication
chromium,
ic gases neon, argon,



Download PDF

Other Resources

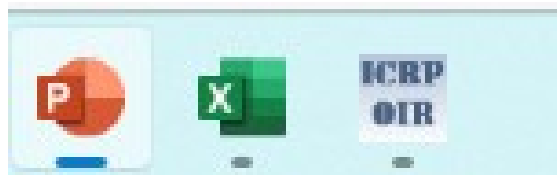
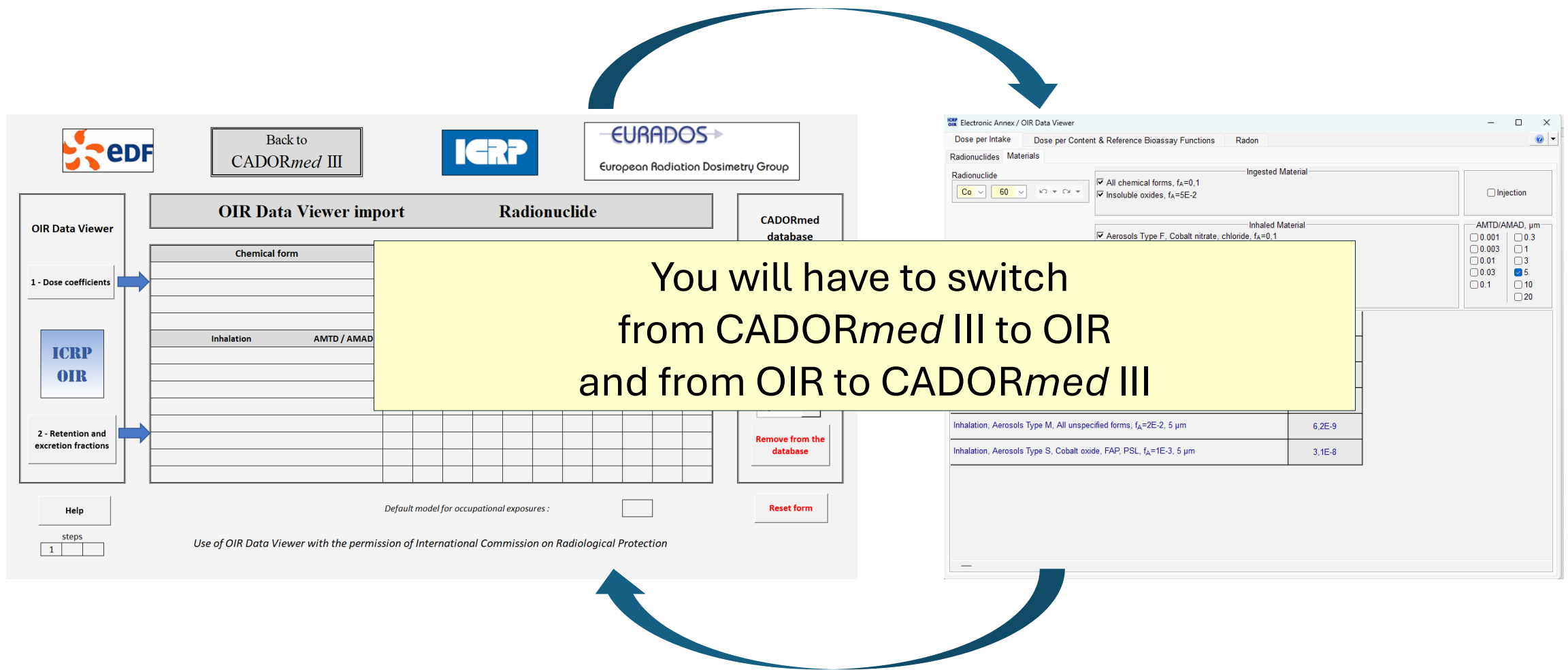
OIR Electronic Annex Distribution Set

Resolution of Comments

Click on OIR Electronic Annex to download OIR Data Viewer

Keywords: Occupational exposure; Internal dose assessment; Biokinetic and dosimetric models; Bioassay interpretation

Key Points



Put the icons side by side on the taskbar to switch easily from CADORMed III to OIR and from OIR to CADORMed III



Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

OIR Data Viewer import

Radionuclide

Chemical form

Biokinetic models

Import dose coefficients from OIR Data Viewer or

You must import the dose coefficients first

Go to OIR

CADOR_{med}
database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

Default model for occupational exposures :

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection

Electronic Annex / OIR Data Viewer

Dose per Intake

Dose per Content & Reference Bioassay Functions

Radon

Radionuclides

Materials

Radionuclide

Cl

36

☒ All forms, $f_A=0,99$

Ingested Material

☐ Injection

AMTD/AMAD, μm

☐ 0.001
 ☐ 0.3

☐ 0.003
 ☐ 1

☐ 0.01
 ☐ 3

☐ 0.03
 ☒ 5

☐ 0.1
 ☐ 10

☐ 20

Units

Sv

/

Bq

Material	Dose Coefficient $e(50)$
Ingestion, All forms, $f_A=0,99$	9,9E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 5 μm	7,0E-10
Inhalation, Aerosols Type M, $f_A=0,2$, 5 μm	2,7E-9
Inhalation, Aerosols Type S, $f_A=1\text{E-}2$, 5 μm	5,2E-8
Inhalation, Gas or vapour Type F, Unspecified, $f_A=0,99$	1,0E-9

1 – select the radionuclide

Chlorine 36 in this example

ICRP
OIR

Electronic Annex / OIR Data Viewer

Dose per Intake

Dose per Content & Reference Bioassay Functions

Radon

Radionuclides

Materials

Radionuclide

Cl

36

Ingested Material

☒ All forms, $f_A=0,99$

Inhaled Material

☒ Aerosols Type F, $f_A=0,99$
☒ Aerosols Type M, $f_A=0,2$
☒ Aerosols Type S, $f_A=1E-2$
☒ Gas or vapour Type F, Unspecified, $f_A=0,99$

Injection

☒ Injection

AMTD/AMAD, μm

☒ 0.001 ☒ 0.3
☒ 0.003 ☒ 1
☒ 0.01 ☒ 3
☒ 0.03 ☒ 5
☒ 0.1 ☒ 10
☒ 20

Units

Sv

/

Bq

Material	
Injection	
Ingestion, All forms, $f_A=0,99$	
Inhalation, Aerosols Type F, $f_A=0,99$, 0.001 μm	
Inhalation, Aerosols Type F, $f_A=0,99$, 0.003 μm	9,0E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 0.01 μm	8,5E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 0.03 μm	5,9E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 0.1 μm	3,1E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 0.3 μm	2,8E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 1 μm	4,5E-10

2 – select all the models

All routes of intake

All chemical forms

All particle sizes

ICRP
OIR Electronic Annex / OIR Data Viewer

Dose per Intake Dose per Content & Reference Bioassay Functions Radon

Radionuclides Materials

Radionuclide

☒ All forms, $f_A=0,99$

Ingested Material

☒ Aerosols Type F, $f_A=0,99$
☒ Aerosols Type M, $f_A=0,2$
☒ Aerosols Type S, $f_A=1E-2$
☒ Gas or vapour Type F, Unspecified, $f_A=0,99$

Inhaled Material

☒ Injection

AMTD/AMAD, μm

☒ 0.001 ☒ 0.3
☒ 0.003 ☒ 1
☒ 0.01 ☒ 3
☒ 0.03 ☒ 5
☒ 0.1 ☒ 10
☒ 20

Units /

Material	Dose Coefficient $e(50)$
Injection	9,5E-10
Ingestion, All forms, $f_A=0,99$	
Inhalation, Aerosols Type F, $f_A=$	
Inhalation, Aerosols Type F, $f_A=0,99$, 0.003 μm	9,0E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 0.01 μm	8,5E-10
Inhalation, Aerosols Type F, $f_A=0,99$	
Inhalation, Aerosols Type F, $f_A=0,99$, 0.1 μm	3,1E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 0.3 μm	2,8E-10
Inhalation, Aerosols Type F, $f_A=0,99$, 1 μm	4,5E-10

3 – Click on this button
The data is copied in the clipboard

Go to CADORmed



Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

OIR Data Viewer import

Radionuclide

Chemical form

Biokinetic models

Click on Dose Coefficients button

Inhalation

AMTD / AMAD

0,001 µm

0,003 µm

0,01 µm

0,03 µm

0,1 µm

0,3 µm

1 µm

3 µm

5 µm

10 µm

20 µm

lower or
higher

CADOR_{med}
database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

Default model for occupational exposures :

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

2

OIR Data Viewer import

Radionuclide

Cl-36

Chemical form		Biokinetic models										
Injection			Import retention/excretion fractions of the default model									
Ingestion, All forms, fA=0,99												
Inhalation	AMTD / AMAD	0,001 µm	0,003 µm	0,01 µm	0,03 µm	0,1 µm	0,3 µm	1 µm	3 µm	5 µm	10 µm	20 µm
Aerosols Type F, fA=0,99												
Aerosols Type M, fA=0,2												
Aerosols Type S, fA=1E-2												
Gas or vapour Type F, Unspecified, fA=0,99												

The dose coefficients are in the form
You must import the retention / excretion fractions
Go to OIR

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection

CADORmed database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

ICRP OIR Electronic Annex / OIR Data Viewer

Dose per Intake **Dose per Content & Reference Bioassay Functions** Radon

Radionuclides Materials

Radionuclide
Co 60

Ingested Material
☒ All chemical forms, $f_A=0,1$
☒ Insoluble oxides, $f_A=5E-2$

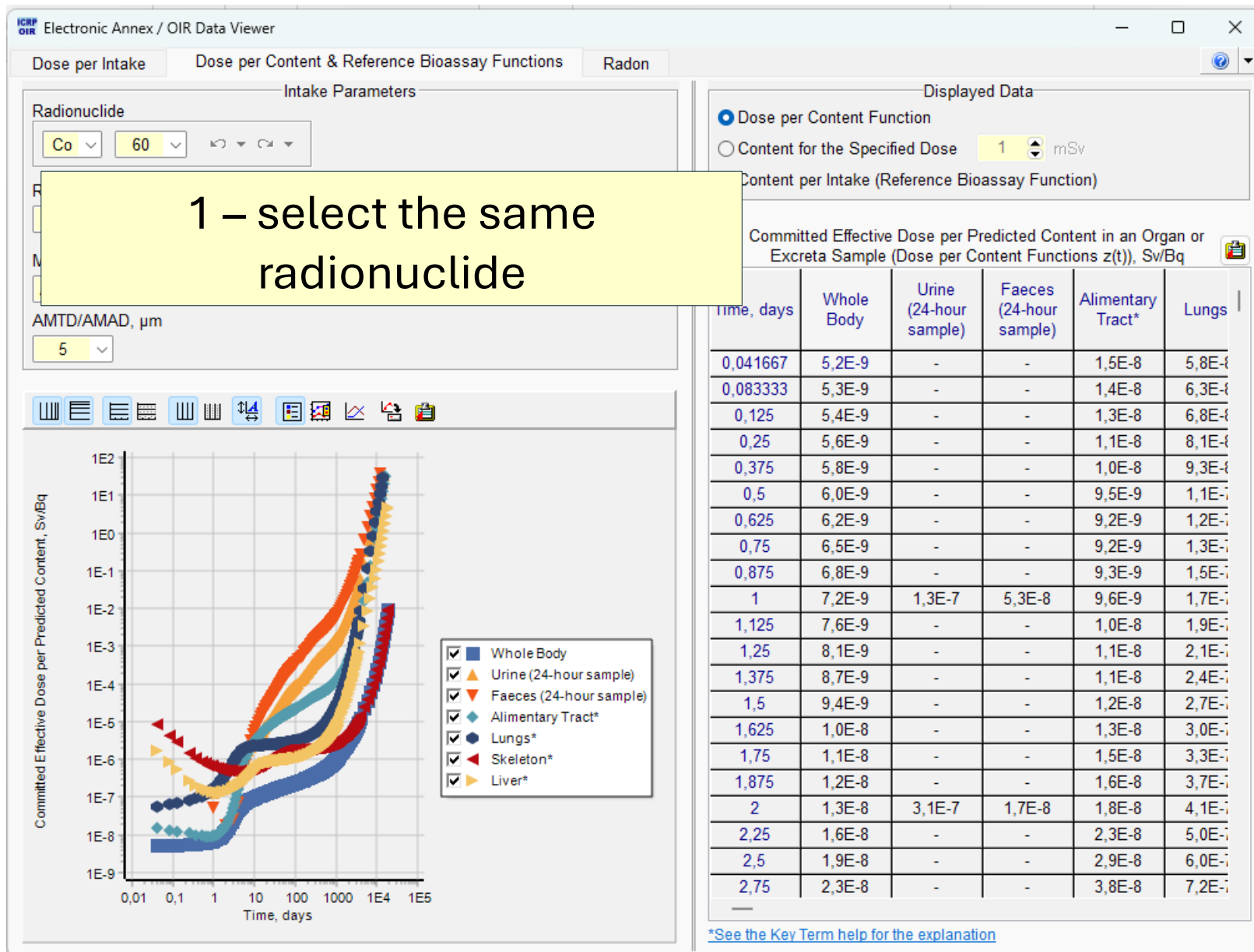
☐ Injection

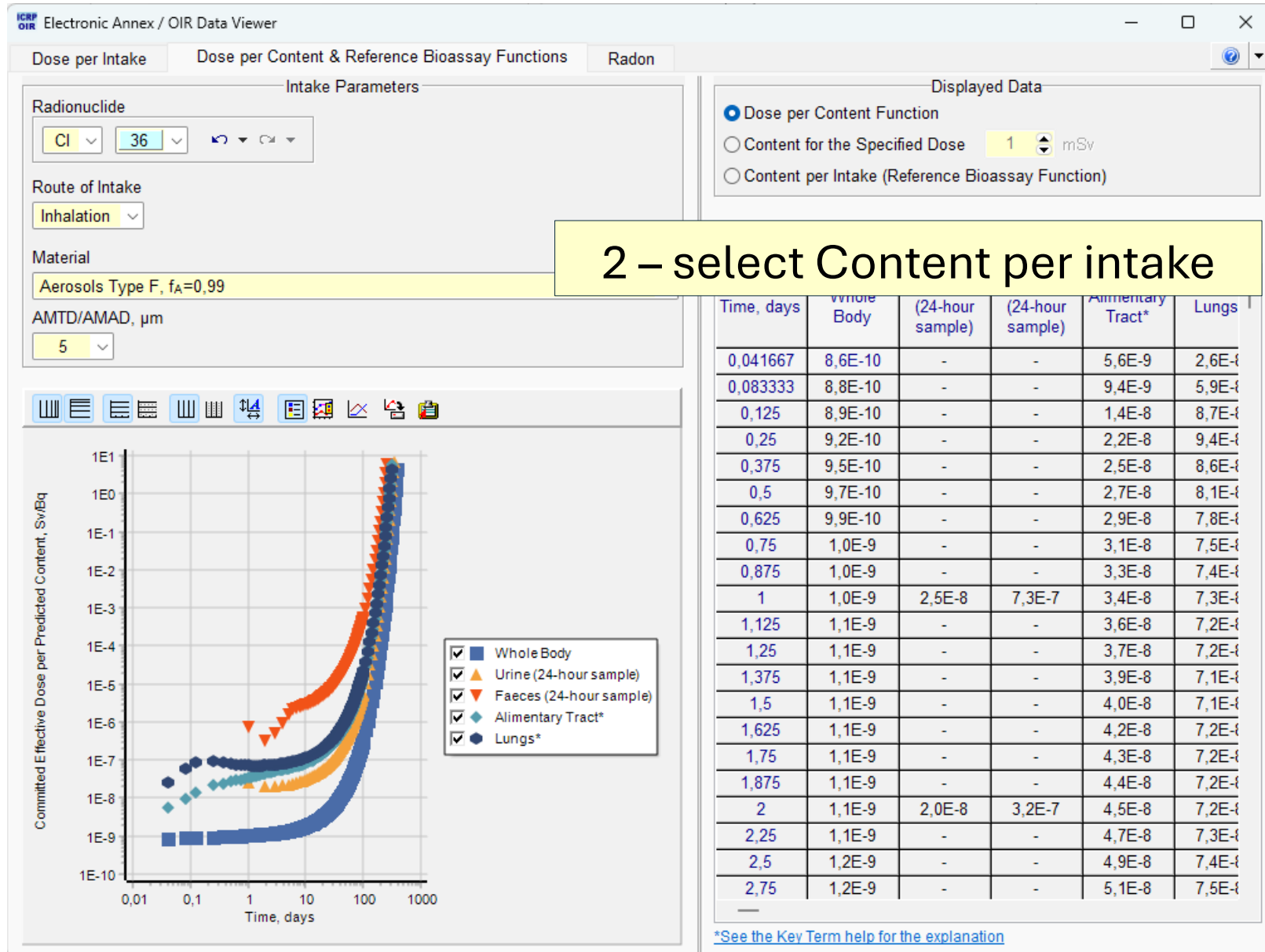
**In OIR select
“Dose per Content & Reference Bioassay Functions”**

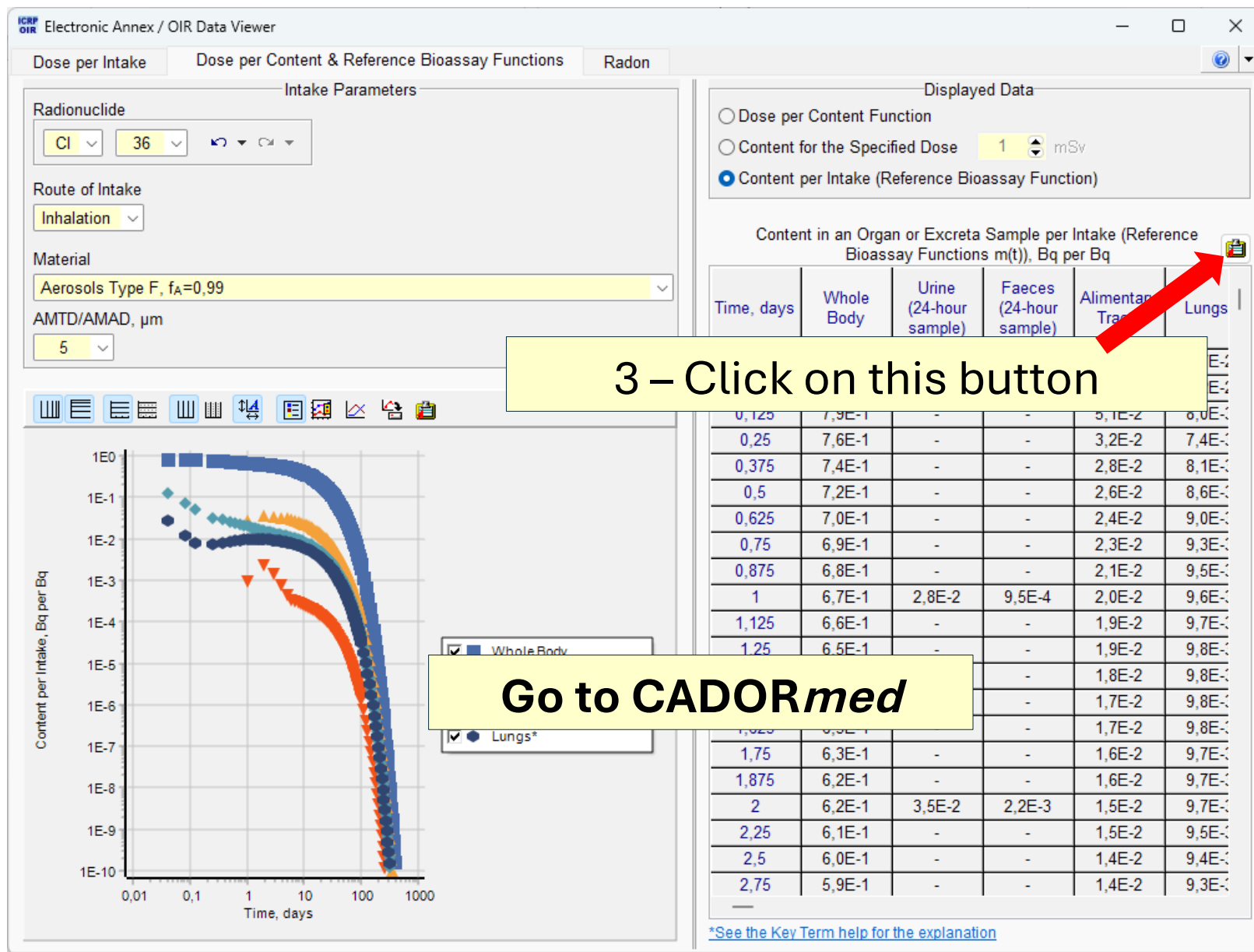
Units Sv / Bq

Material	Dose Coefficient $e(50)$
Ingestion, All chemical forms, $f_A=0,1$	$3,2E-9$
Ingestion, Insoluble oxides, $f_A=5E-2$	$2,1E-9$
Inhalation, Aerosols Type F, Cobalt nitrate, chloride, $f_A=0,1$, $5\text{ }\mu\text{m}$	$4,2E-9$
Inhalation, Aerosols Type M, All unspecified forms, $f_A=2E-2$, $5\text{ }\mu\text{m}$	$6,2E-9$
Inhalation, Aerosols Type S, Cobalt oxide, FAP, PSL, $f_A=1E-3$, $5\text{ }\mu\text{m}$	$3,1E-8$

☐ 0.1 ☐ 10
☐ 20









Back to
CADOR_{med} III



OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1 2

OIR Data Viewer import

Radionuclide

Cl-36

Chemical form		Biokinetic models										
Injection		Import retention/excretion fractions of the default model										
Ingestion, All forms, fA=0,99												
Inhalation	AMTD / AMAD	0,001 µm	0,003 µm	0,01 µm	0,03 µm	0,1 µm	0,3 µm	1 µm	3 µm	5 µm	10 µm	20 µm
Aerosols Type F, fA=0,99												
Aerosols Type M, fA=0,2												
Aerosols Type S, fA=1E-2												
Gas or vapour												
Click on Retention and excretion fractions button												

Click on Retention and excretion fractions button

CADORmed database

3 - Add to database



Retrieve data

H-3

Remove from the database

Reset form

Default model for occupational exposures :



Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

2

OIR Data Viewer import

Radionuclide

Cl-36

The model inhalation, Type F, 5 µm has been imported													
Injection													
Ingestion	ne default												
Inhalation		AMTD / AMAD	0,001 µm	0,003 µm	0,01 µm	0,03 µm	0,1 µm	0,3 µm	1 µm	3 µm	5 µm	10 µm	20 µm
Aerosols Type F, fA=0,99													
Aerosols Type M, fA=0,2													
Aerosols Type S, fA=0,75													
Gas or vapour													
You must import the default model GO to OIR													

Default model for occupational exposures :



CADORmed database

3 - Add to
database



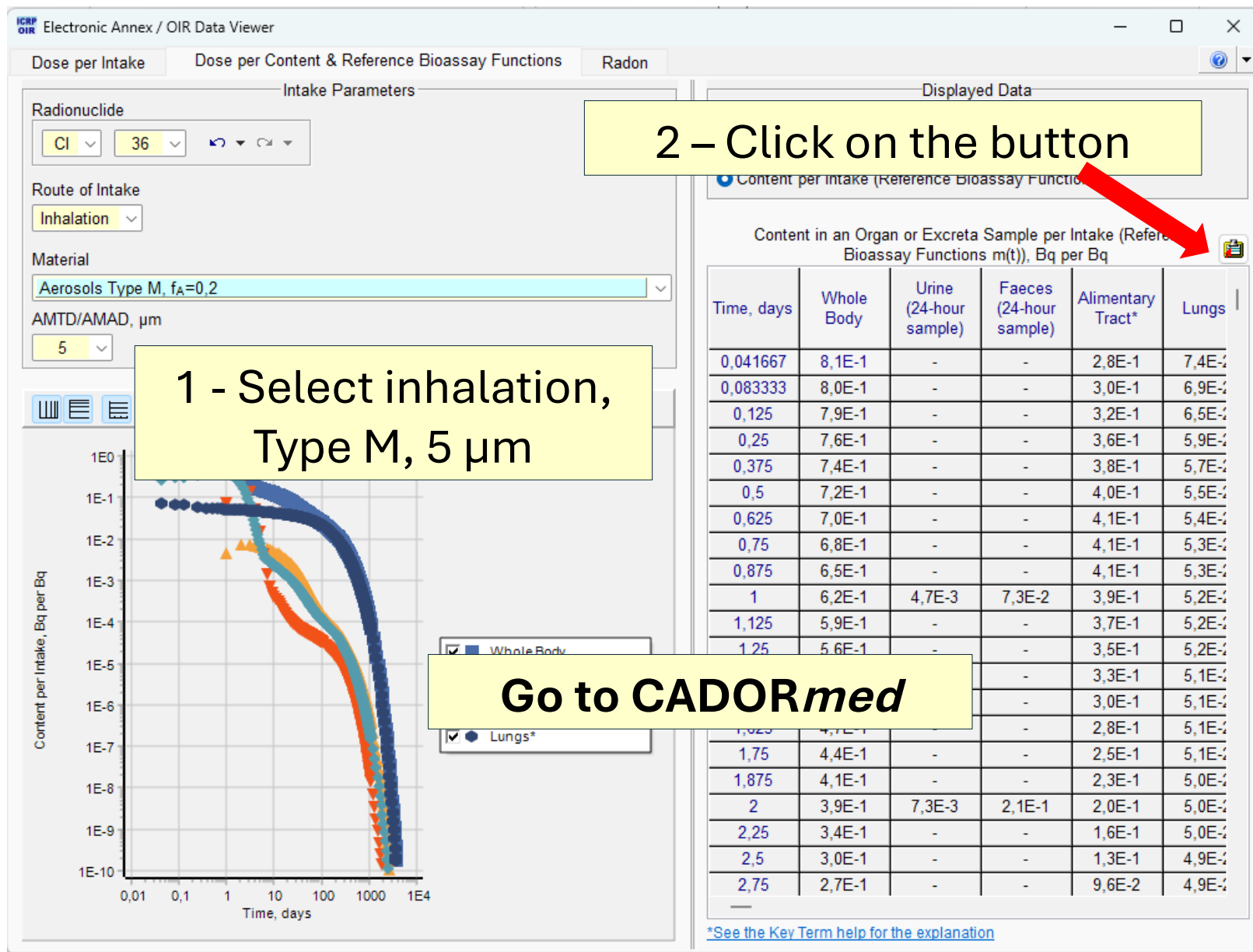
Retrieve data

H-3

Remove from the
database

Reset form

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection





Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

2

OIR Data Viewer import

Radionuclide

Cl-36

Chemical form

Biokinetic models

Injection

Ingestion, All forms, fA=0,99

Import retention/excretion fractions of the default
model

Inhalation

AMTD / AMAD

0,001 µm

0,003 µm

0,01 µm

0,03 µm

0,1 µm

0,3 µm

1 µm

3 µm

5 µm

10 µm

20 µm

Aerosols Type F, fA=0,99

Aerosols Type M, fA=0,2

Aerosols Type S, fA=1E-2

Gas or vapour

Click on Retention and excretion
fractions button

CADORmed database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

Default model for occupational exposures :

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



Back to
CADORmed III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1 2 3

OIR Data Viewer import

Radionuclide

Cl-36

Click on Add to database button
inhalation, Type M, 5 μm
has been imported

Inhalation	AMTD / AMAD	0,001 μm	0,003 μm	0,01 μm	0,03 μm	0,1 μm	0,3 μm	1 μm	3 μm	5 μm	10 μm	20 μm
Aerosols Type F, fa=0.99												
Aerosols Type M, fa=0.99												
Aerosols Type S, fa=0.99												
Gas or vapour Type												

You may import other models or add
the data in CADORmed database

CADORmed
database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

Default model for occupational exposures :



Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1 2 3

OIR Data Viewer import

Radionuclide

Cl-36

Chemical form

Biokinetic models

Injection

Ingestion, All forms, fA=0,99

Inhalation

AMTD / AMAD

Aerosols Type F, fA=0,99

Aerosols Type M, fA=0,2

Aerosols Type S, fA=1E-2

Gas or vapour Type F, Unspecified, fA=0,99

Import more retention/excretion fractions from OIR
Data Viewer or add to the CADOR_{med} database

Microsoft Excel

The radionuclide Cl-36 has been added to the CADOR_{med} database

OK

CADOR_{med} database

3 - Add to
database



Retrieve data

H-3

Remove from the
database

Reset form

Default model for occupational exposures :



Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



Back to
CADOR_{med} III



OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

Click here to go back to the Home page

Chemical form

Biokinetic models

Import dose coefficients from OIR Data Viewer or
retrieve data from CADOR_{med} database

Inhalation	AMTD / AMAD	0,001 µm	0,003 µm	0,01 µm	0,03 µm	0,1 µm	0,3 µm	1 µm	3 µm	5 µm	10 µm	20 µm

Once the radionuclide has been added
the form is cleared

Default model for occupational exposures :

CADOR_{med} database

3 - Add to
database



Retrieve data

H-3

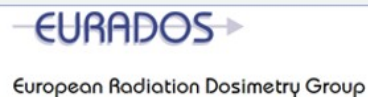
Remove from the
database

Reset form

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection



CADOR_{med} III



English (English) ▼

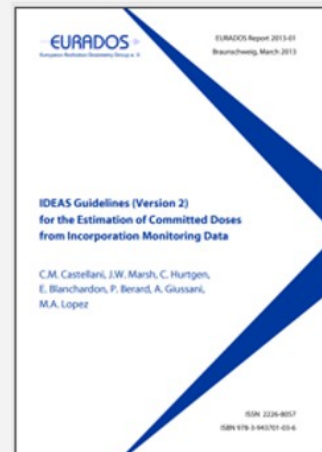
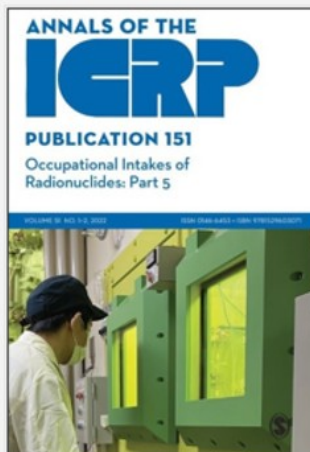
Committed effective dose assessment

Settings

CADOR_{med} III

Dose assessment

Click on Dose assessment button to check





Back to
CADORMed III

Folders

Save

Delete

New

Report

Radionuclide

Cl-36

EURADOS

European Radiation Dosimetry Group

Analysed data

☒ WBC

E > 100 keV

☒ Urine

Normalised urine

☐ Faeces

72-h sample

☐ Organ

E > 100 keV

Alimenta

Date of intake

Date

Hour

Routine

Measurements

Goodness of fit

Observed

Chi²

Theoretical

Chi²

Dof

P-value

Chi² test requires at least 2 values

0 0 0

Route of intake

Inhalation



Chemical form

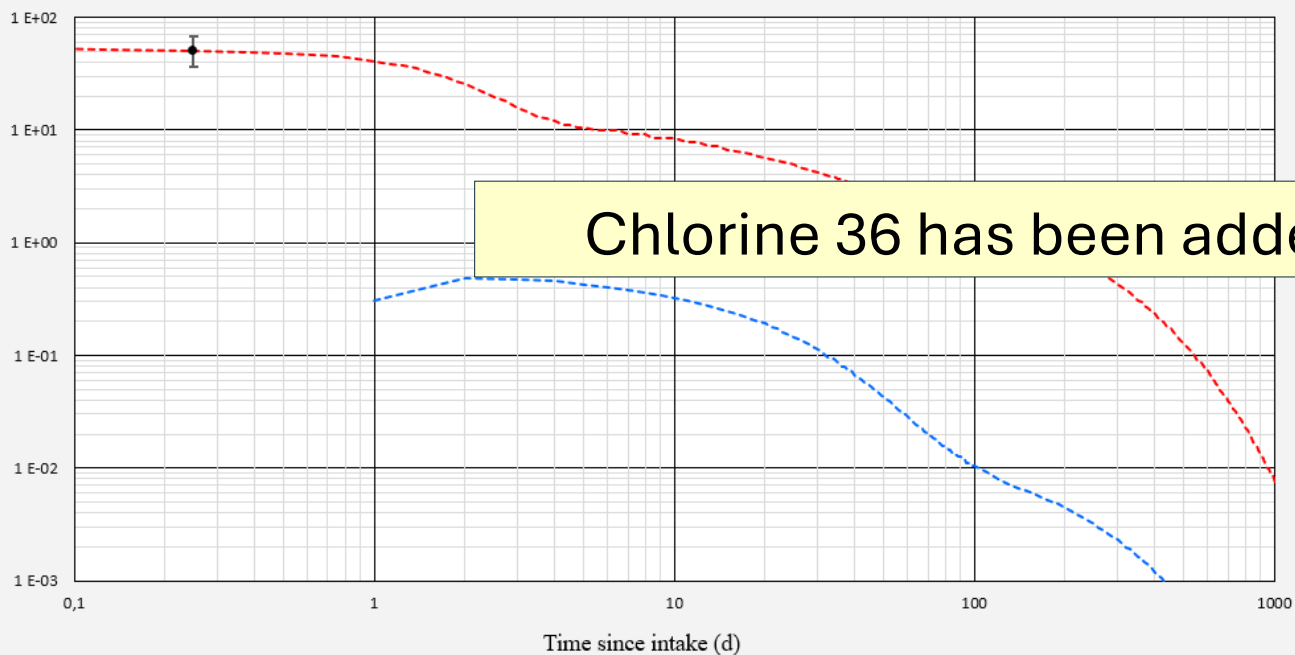
Aerosols Type M, fA=0,2

Type M

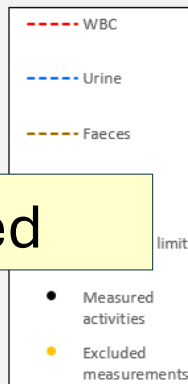
AMTD / AMAD

5 µm

Activities in organs or daily excreta (Bq)



Chlorine 36 has been added



3 years

1E-03

Range

Scale

Calculation parameters

Radionuclide

Cl-36

Type

M

fA

0,20

Route of intake

Inhalation

AMAD

5 µm

e(50) (Sv/Bq)

2,70E-09

Results

Intake (Bq)

6,58E+01

Committed
effective dose
(mSv)

1,78E-04

☐ Radionuclides associated
with this intake



Back to
CADORMed III

Folders

Save

Delete

New

Report

Radionuclide



European Radiation Dosimetry Group

Analysed data

☒ WBC

E > 100 keV

☒ Urine

Normalised urine

☐ Faeces

72-h sample

☐ Organ

E > 100 keV

Date of intake

Date

Hour

Routine

Measurements

Goodness of fit

Observed
Chi²

Theoretical
Chi²

Dof

-1

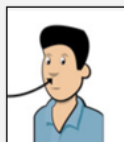
P-value

The radionuclide has been removed from
the database

0 0 0

Route of intake

Inhalation

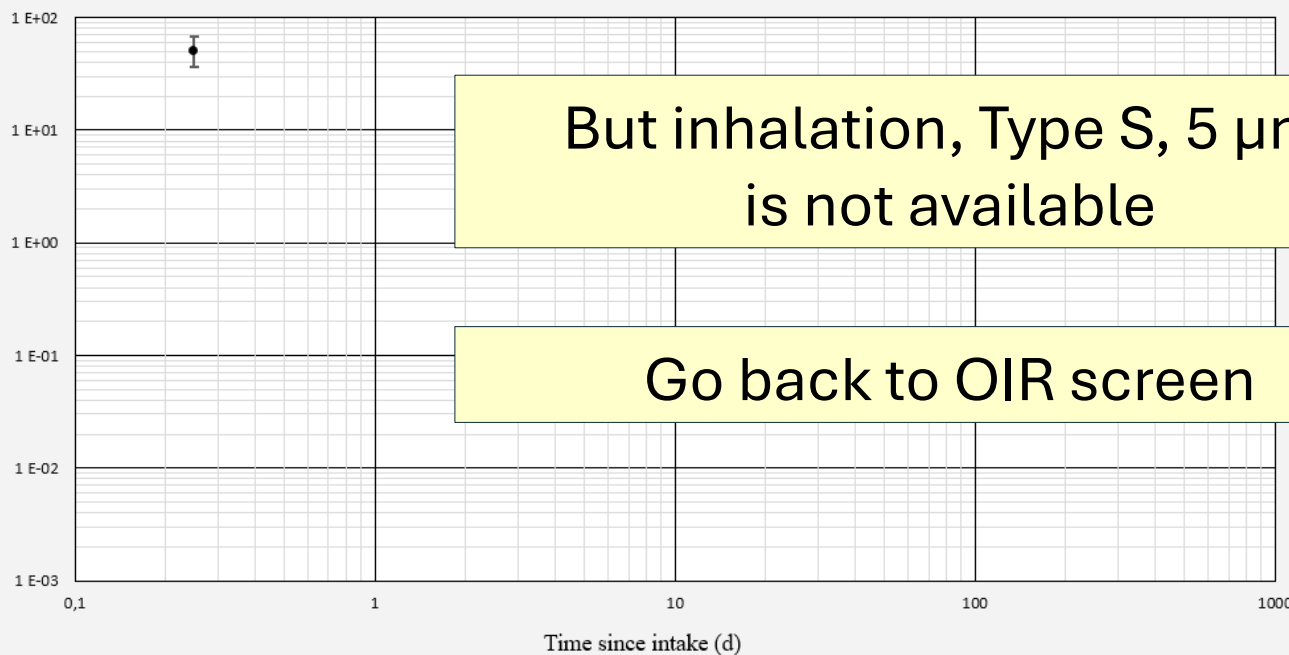


Chemical form

Type S

AMTD / AMAD

Activities in organs or daily excreta (Bq)



--- WBC
--- Detection limit
• Measured activities
• Measurements

3 years

1E-03

Range

Scale

Calculation parameters

Radionuclide

Type

fA

Route of intake

Inhalation

AMAD

e(50) (Sv/Bq)

Results

Intake (Bq)

Committed
effective dose
(mSv)

☐ Radionuclides associated
with this intake



Back to
CADOR_{med} III



EURADOS
European Radiation Dosimetry Group

OIR Data Viewer

1 - Dose coefficients

ICRP
OIR

2 - Retention and
excretion fractions

Help

steps

1

OIR Data Viewer import

Radionuclide

Chemical form

Biokinetic models

Import dose coefficients from OIR Data Viewer or
retrieve data from CADOR_{med} database

Inhalation

AMTD / AMAD

0,001 µm

0,003 µm

0,01 µm

0,03 µm

0,1 µm

0,3 µm

1 µm

3 µm

5 µm

10 µm

20 µm

Click on Retrieve data button

Select Cl-36 in the drop-down list

CADOR_{med}
database

3 - Add to
database



Retrieve data

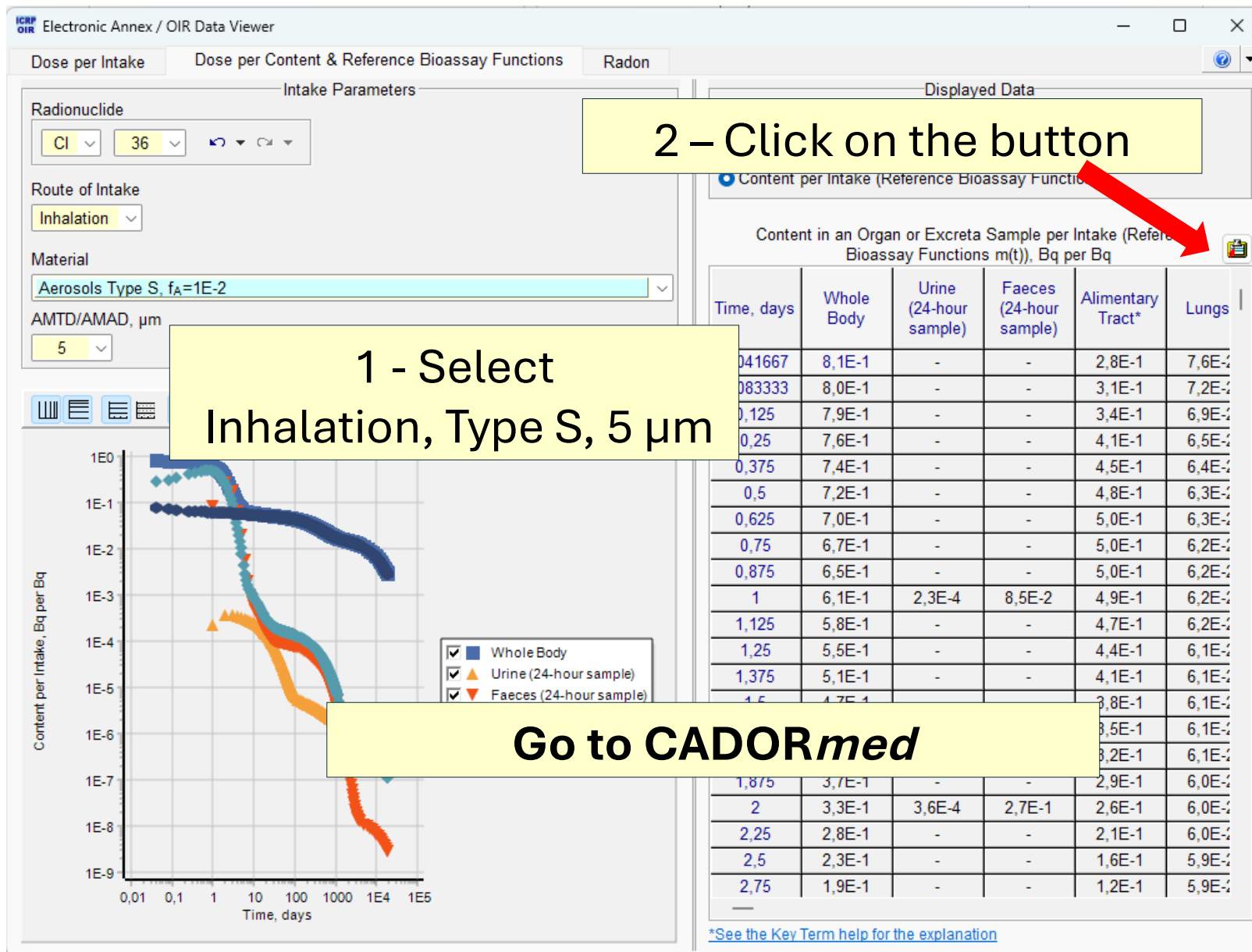
H-3

H-3
C-14
F-18
P-32
S-35
Cl-36
Cr-51
Fe-59

Reset form

Default model for occupational exposures :

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection





Back to
CADORMed III

Folders

Save

Delete

New

Report

Radionuclide



European Radiation Dosimetry Group

Analysed data

☒ WBC

E > 100 keV

☒ Urine

Normalised urine

☐ Faeces

☐ Organ

Date of intake

Date

Hour

Routine

Measurements

Route of intake

Inhalation



You must change the radionuclide
and select again Cl 36

AMTD / AMAD

Goodness of fit

Observed
Chi²

Theoretical
Chi²

Dof

-1

P-value

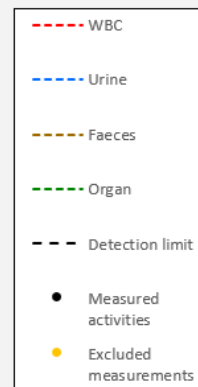
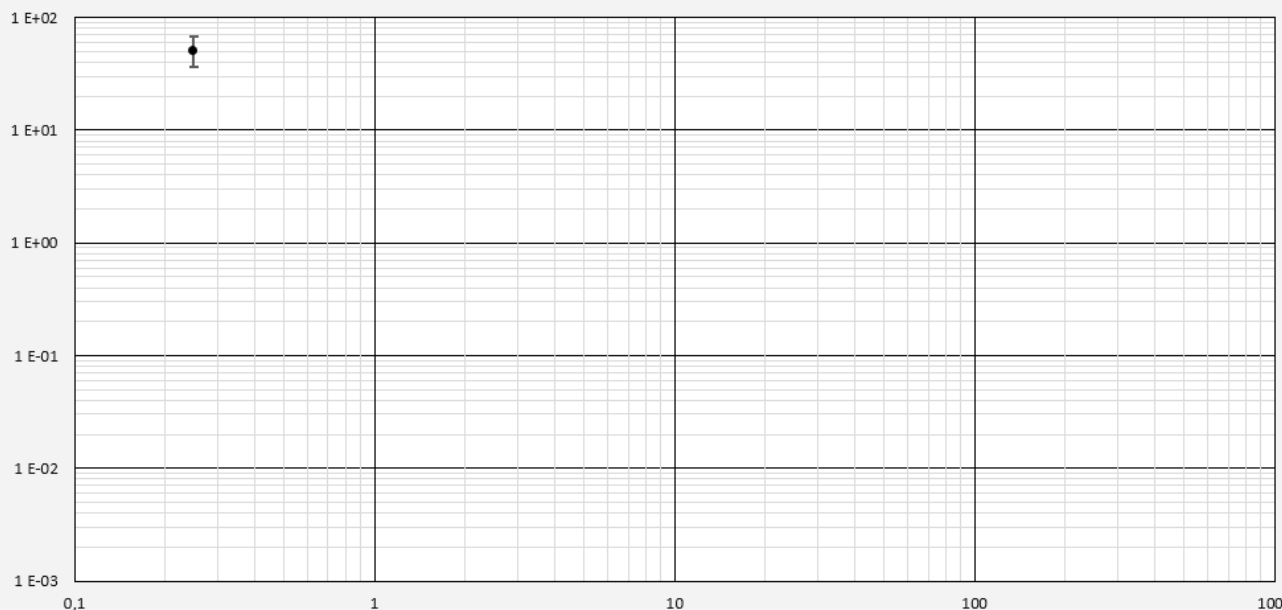
The radionuclide has been removed from
the database

0

0

0

Activities in organs or daily excreta (Bq)



3 years

Range

Scale

Calculation parameters

Radionuclide

Type

fA

Route of intake

AMAD

e(50) (Sv/Bq)

Results

Intake (Bq)

Committed
effective dose
(mSv)

☐ Radionuclides associated
with this intake



[Back to CADOR](#)

Report

ur

Radionuclide

Cr-51

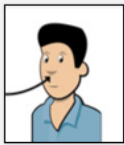
Analysed data

☒ WBC
E > 100 keV

☒ Urine
Normalised ur

Route of intake

Inhalation



Chemical form

Aerosols Type M, fA=2E-3

Type M

AMTD / AMAD

5 µm

Goodness of fit

Observed Chi²

Theoretical Chi²

Dof

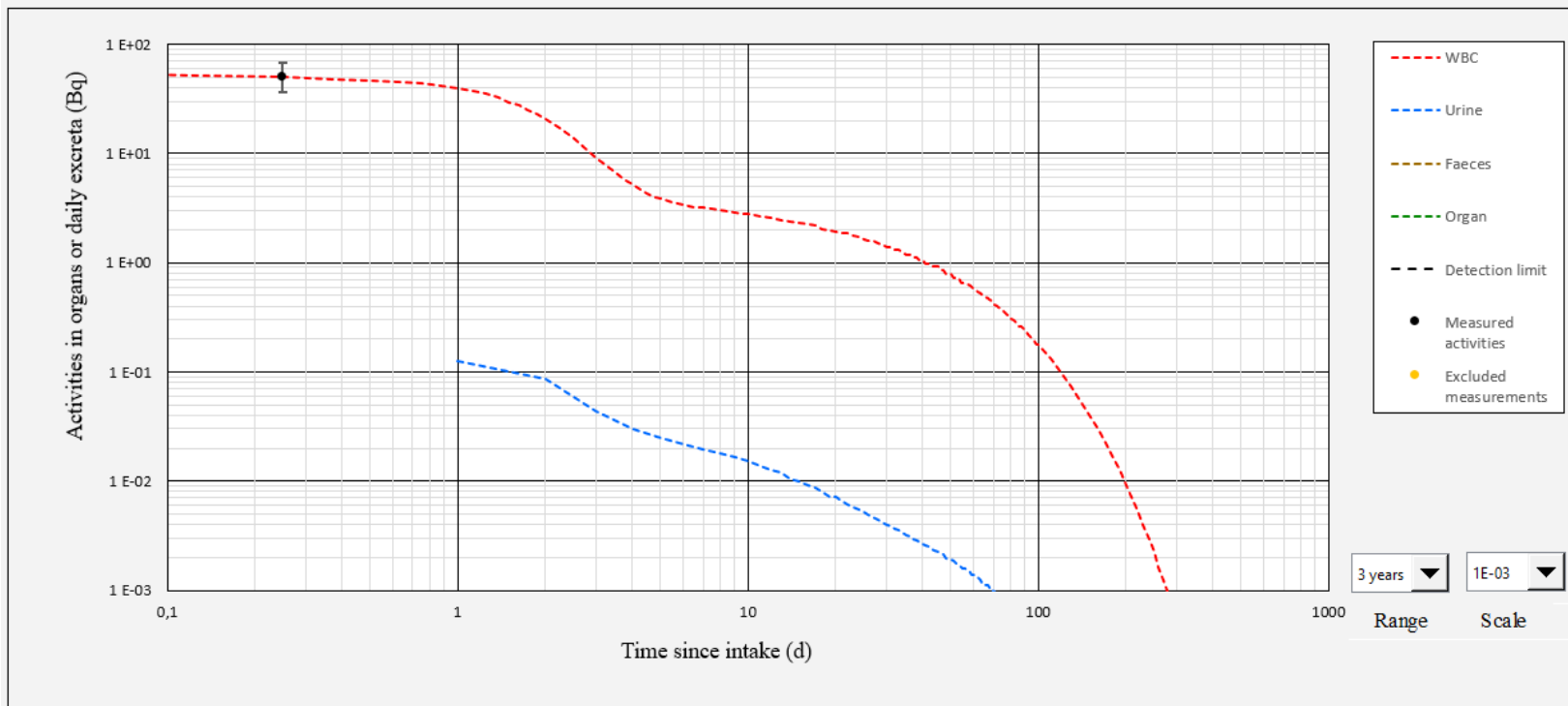
P-value

Chi² test requires at least 2 values

0

0

0



Calculation parameters

Radionuclide: Cr-51

Type: M fA: 2,00E-03

Route of intake: Inhalation

AMAD: 5 µm

e(50) (Sv/Bq): 2,40E-11

Results

Intake (Bq): 6,58E+01

Committed effective dose (mSv): 1,58E-06

☐ Radionuclides associated with this intake



[Back to CADORMed III](#)

Folders

Radionuclide
 Cl-36

Analysed data
☒ WBC
 E > 100 keV

☒ Urine
 Normalised urine

☐ Faeces

☐ Organ
 Alimenta

Date of intake
 Date Hour

Routine

Measurements

Route of intake
 Inhalation



Aerosols Type S, fA=1E-2

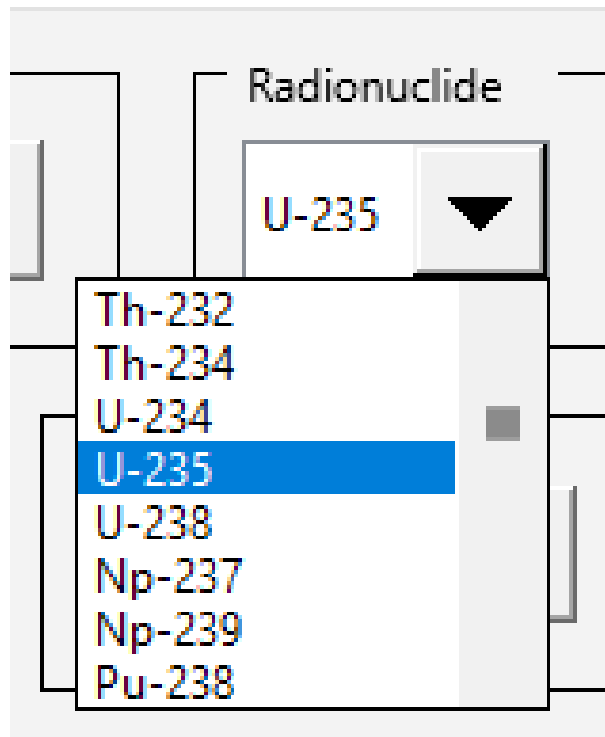
Type S

AMTD / AMAD
 5 µm

Goodness of fit
 Observed Chi² Theoretical Chi²
 Dof P-value
 Chi² test requires at least 2 values

Select again Cl-36





There are 51 radionuclides
in CADORmed III database

Back to CADORmed III

ICRP

EURADOS
European Radiation Dosimetry Group

OIR Data Viewer import **Radionuclide** **U-235**

1 - Dose coefficients

2 - Retention and excretion fractions

3 - Add to database

Retrieve data

U-235

Remove from the database

Reset form

Chemical form	Biokinetic models										
	0,001 µm	0,003 µm	0,01 µm	0,03 µm	0,1 µm	0,3 µm	1 µm	3 µm	5 µm	10 µm	20 µm
Injection											
Ingestion, Soluble forms, fA=2E-2											
Ingestion, Relatively insoluble forms, fA=2E-3											
Inhalation											
Aerosols Type F, Uranium hexafluoride, uranyl tributyl-phos											
Aerosols Type M, Uranyl acetylacetonate; depleted uranium											
Aerosols Type S, fA=2E-4											
Aerosols Intermediate Type F/M: Uranyl nitrate, uranium pe											
Aerosols Intermediate Type M/S: Uranium octoxide, uranium											
Aerosols Uranium aluminide, fA=2E-3											

Default model for occupational exposures :

Use of OIR Data Viewer with the permission of International Commission on Radiological Protection

With for each, all the chemical forms
and particle size from 0,1 µm to 10 µm

