



FNS - Cloud

Food Nutrition Security

Total Diet Study training using the MCRA software

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Contribution from BfR, University of Ghent,
Wageningen Research and Premotec



FNS - Cloud

Food Nutrition Security

- Standardisation of TDS input data of three countries NL, DE and BE to ensure applicability in several countries
- Harmonized approach using codes and standard formats agreed by the European Food Safety Authority (EFSA) and EU Member States for food safety
- MCRA TDS Demonstrator available in the Azure cloud
- Training materials for users (community of practice)

Content

Lecture 1: international interest in Total Diet Studies (TDS)

Lecture 2: risk assessment based on TDS data

Lecture 3: TDS applied in Belgium for training courses of students (community of practice)

Hands-on training: how MCRA is used in a harmonized TDS approach

Lecture 1: international interest in Total Diet Studies



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Content lecture 1

- What is a Total Diet Study?
- Why is it important at the international level?
- EU project TDS-exposure
- FNS-Cloud project



EFSA – FAO – WHO guidance TDS



EFSA Journal 2011; 9(11):2450

JOINT GUIDANCE OF EFSA, FAO AND WHO

Towards a harmonised Total Diet Study approach: a guidance document¹

European Food Safety Authority (EFSA), Parma, Italy^{2, 3}

Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

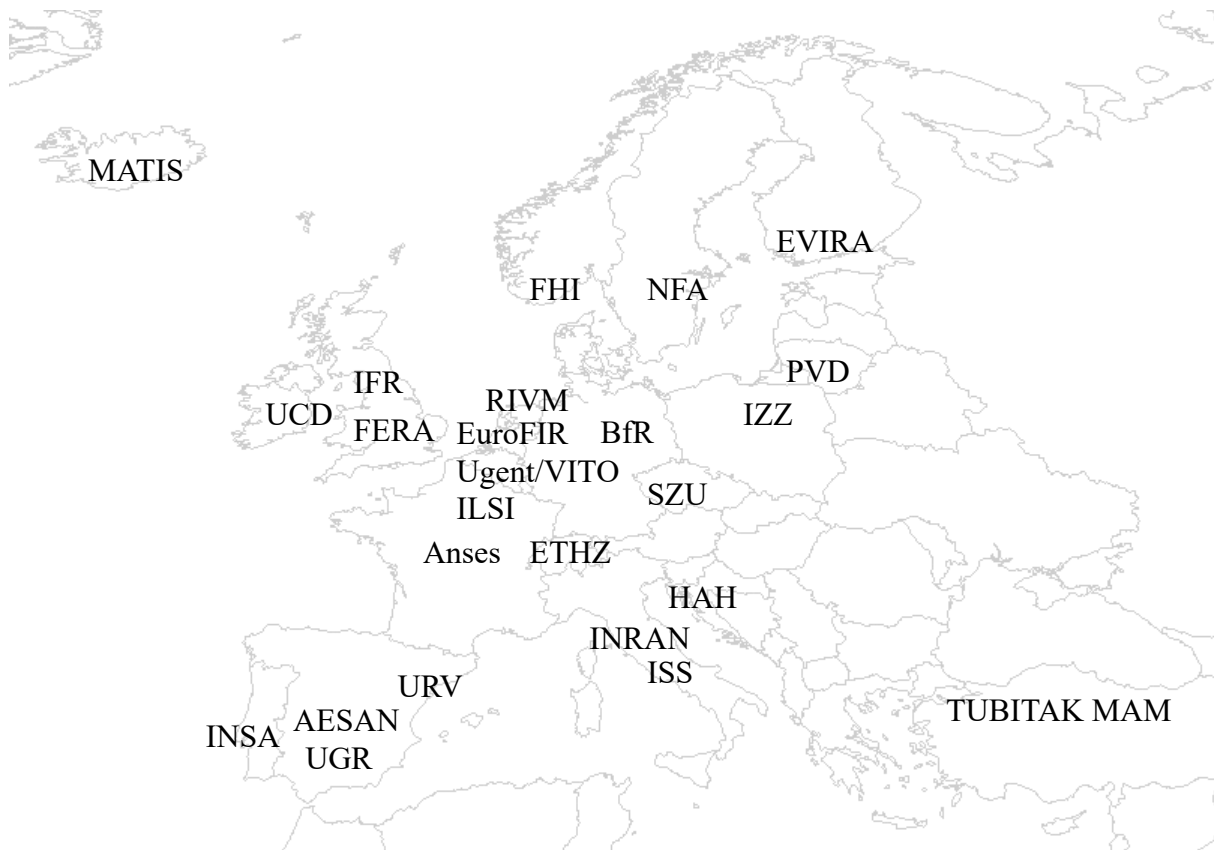
World Health Organization (WHO), Geneva, Switzerland

<https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2011.2450>

EU funded project TDS-exposure

- Collaborative 4-year research project
- Funded by European Commission within 7th Framework programme
- Conducted from 2012 – 2016
- Coordinator:
French Agency for Food, Environmental and Occupational Health & Safety (ANSES)
- <http://www.tds-exposure.eu/>

Partners



- 26 beneficiaries

- 19 European countries: Belgium, Czech Republic, Finland, France, Germany, Ireland, Italy, Latvia, The Netherlands, Poland, Portugal, Spain, Sweden, UK, Croatia, Iceland, Turkey, Norway and Switzerland.

- Different structures:
10 research centres
6 food safety agencies
5 universities
4 national institutes for public health
1 SME

Features of TDS study



Concentrations of chemicals are analysed in **pooled homogenised food samples**:

- Average levels per sample → long-term exposure

Variation in concentrations between foods may not be fully covered

- Analysed as consumed

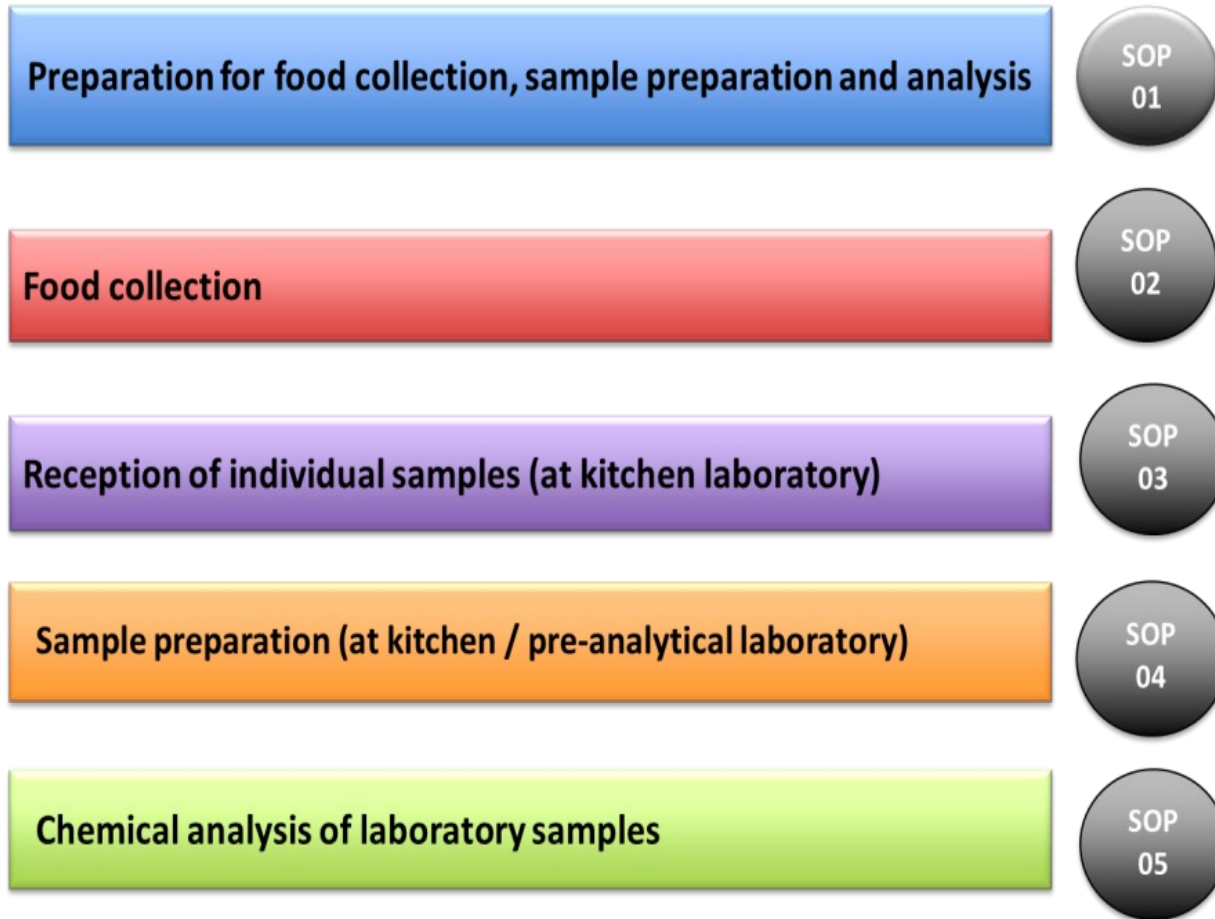
Objective: harmonisation

Harmonization of TDS method

1. Preparation of Standard Operating Procedures (**SOPs**) to assure quality and consistency of TDS
2. Testing feasibility of SOPs in practice via a **pilot study**
3. Use of the same exposure assessment software to assess the exposure to several contaminants



Standard Operating Procedures



Objective: harmonisation

Harmonization of TDS method

1. Preparation of Standard Operating Procedures (SOPs) to assure quality and consistency of TDS
2. Testing feasibility of SOPs in practice via a pilot study
3. Use of the same **exposure assessment software**



Exposure



Food classification

- Mapping of food consumption data to analytical data obtained in TDS
- Use of FoodEx
 - International coding system, EFSA
 - Loss of detail compared to national codes
 - International standards data formats

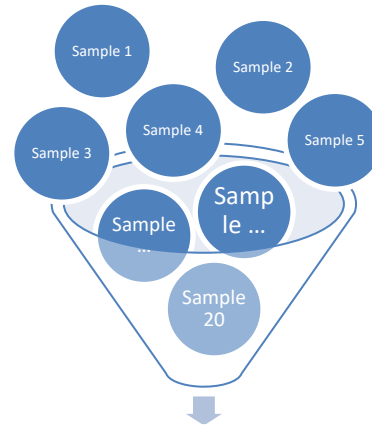
Total Diet Studies - 6th International Workshop in Berlin

Worldwide exchange on planning, implementation and experiences with TDS

The German Federal Institute for Risk Assessment (BfR) and the World Health Organization (WHO) hosted the "6th International Workshop on Total Diet Studies (TDS)" on 10 and 11 October 2022. At the conference, countries from all over the world presented results and latest developments in the field of TDS. The event was preceded by a four-day online tutorial on planning and conducting these studies, organised by 20 representatives of countries, planning to conduct their own TDS in the future took part.



Explanation and practical steps of a TDS



Step 1

Selection of foods



Step 2

Shopping on retail level



Step 3

Preparation and processing



Step 4

Pooling and homogenisation



Step 5

Analysis



Step 6

Evaluation and exposure assessment

Image rights BfR

Lecture 2: risk assessment based on TDS data



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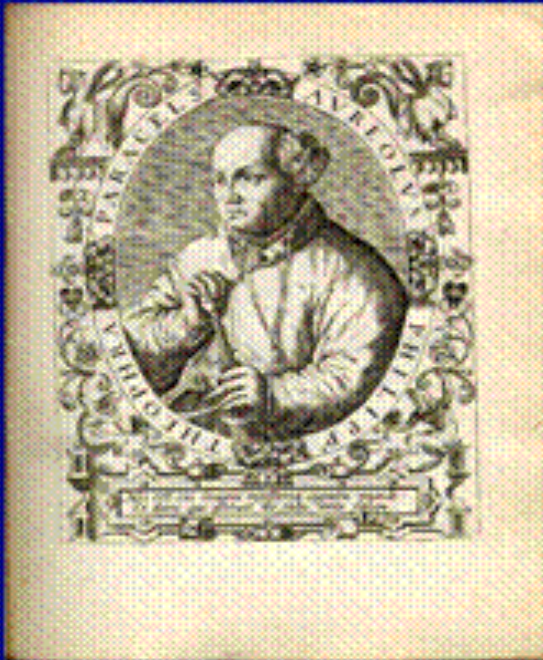
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Exposure is essential in risk assessment



Phillip(pus Theophrastus Aureolus Bombastus) von Hohenheim
(Paracelsus), 1493 - 1541
Founder of toxicology

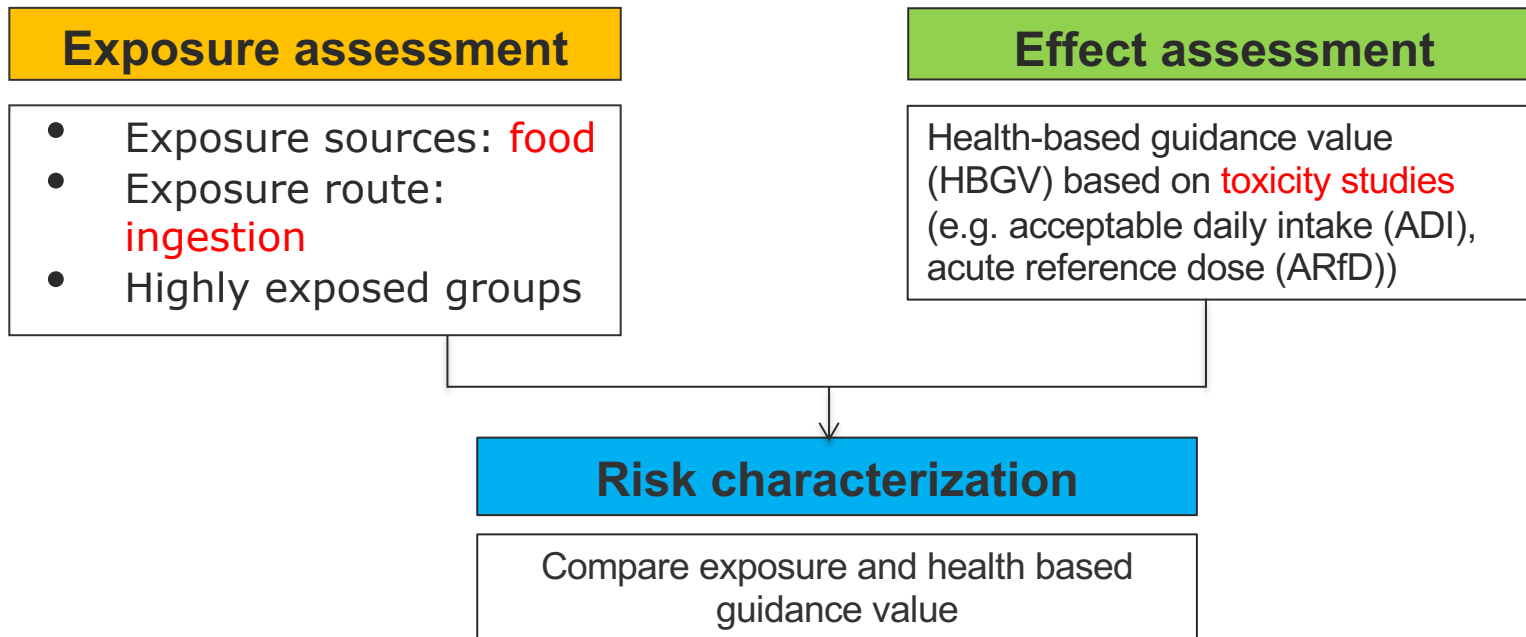
"dosis sola facit venenum"

(the dose determines whether a substance is a poison)

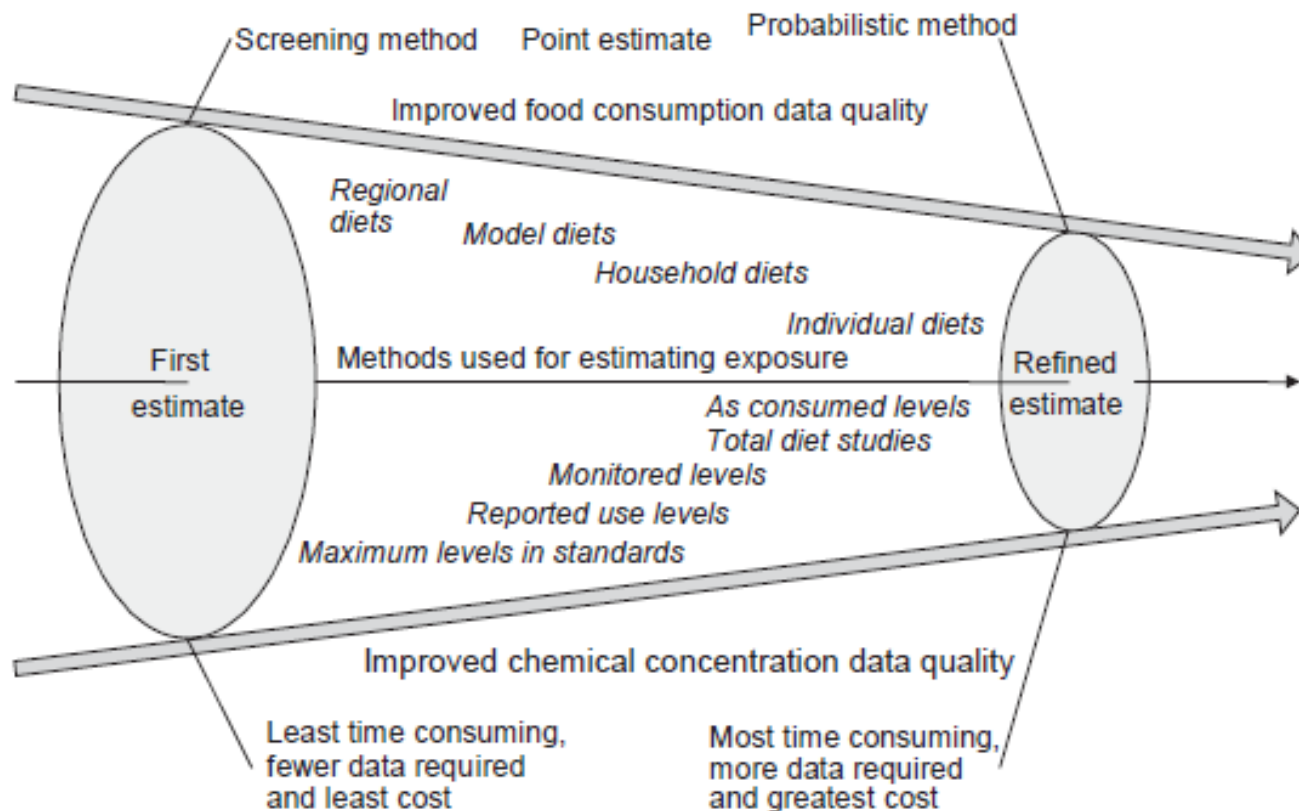
**"All things are poison and nothing is without poison,
only the dose permits something not to be poisonous"**



Risk assessment



Stepwise (tiered) approach



Which tier to use?

Tier to choose depends on:

- **Purpose** of the food safety assessment:
 - Realistic vs. screening
 - Refinement needed
- **Availability** of information
 - Data and models

General: higher tier assessments may be used when lower tiers show a possible safety concern or your aim is a realistic exposure estimate

Dietary exposure assessment

$$\text{Dietary exposure} = \frac{\Sigma (\text{Concentration of chemical in food} \times \text{Food consumption})}{\text{Body weight (kg)}}$$



Food consumption data

- National food consumption surveys
 - 2-7 days of food recalling (or recording)
 - EFSA comprehensive food consumption database (privacy sensitive data needs permission from data owner)
 - FAO/WHO Chronic individual food consumption database – Summary statistics (CIFOCCoss)
 - FAO/WHO GIFT | Global Individual Food consumption data Tool
- Others
 - Food balance sheet data (GEMS/Food)
 - Household budget surveys
 - Food frequency information



Individual data

- Body weight
 - Express exposure per kg body weight
 - Mean of a population
 - Body weight of an individual
- Age
 - Children vs adults
 - Women of child-bearing age
 - Elderly
- Other relevant variables:
 - Gender, socio-economic status, etc.



Concentration data

- Monitoring data
 - EU directives to monitor for many chemicals
 - Ad hoc surveys
 - Initiatives from sector or retailers
 - EFSA Data lake data published on Zenodo
- Use levels for additives
 - From industry
- Data from Total Diet Studies (TDS)
 - Food as eaten
 - Representativeness depending on the sample size

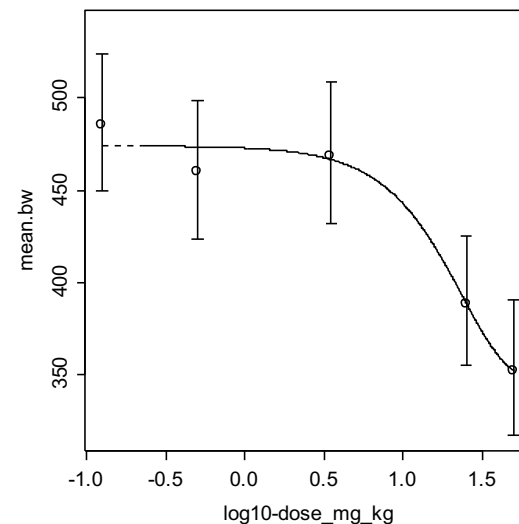


Hazard characterisation

- Derived for adverse effects for which **no** intake level can be defined below which there is a negligible effect (NO(A)EL) as point of departure for risk assessment (PODI)

E.g. loss in IQ (lead), cancer (arsenic)

- Or PODI Intake level at which there is a **predefined x% change (e.g. 5%)** in an effect which is not deemed adverse:
 - Animal / epidemiological studies
 - Dose-response modelling



Lecture 3. TDS applied in Belgium for understanding exposure to Nickel



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NICKEL ?

Relevance of Nickel as potential food safety hazard ?

- A risk assessment of EFSA in 2015 stated that the occurrence of nickel in the diet is worrying for the general European population and for Ni-sensitive individuals (EFSA, 2015)



Chemical food safety: substance: Single Hazard (Nickel)



Plant-based foods



Foods of animal origin



Drinks

Data for Nickel study

- Nickel concentration in foods → investigation conducted at Ugent → Available in EFSA format (data owner)
- Belgian Food consumption data 2014 (BNFCS) → Sciensano → purchased by University of Gent for INNIBEL project and for FNS CLOUD project (no data owner)



Food samples, sampling plan and analysis of the samples

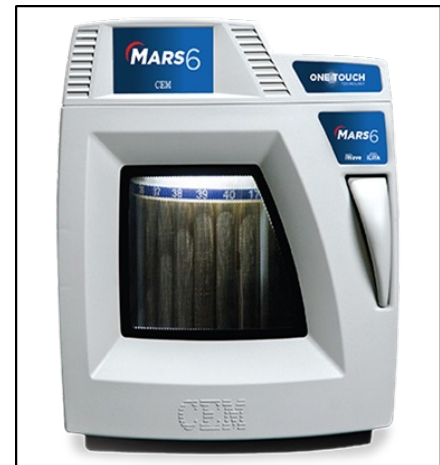
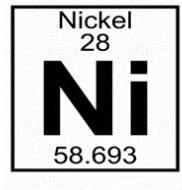
- Risk-based sampling plan

❖ In total 708 samples

❖ Three major food categories:

- Plant-based foods (N = 406)
- Foods of animal origin (N = 113)
- Drinks (N = 189)

- Microwave-assisted acid digestion, ICP-MS analysis



Individual data (consumption)

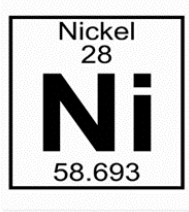
- Body weight
 - Express exposure per kg body weight
 - Body weight of an individual
- Age
 - Children, adolescents and adults



Aggregated Dietary exposure assessment

$$\text{Dietary exposure} = \frac{\Sigma (\text{Concentration of chemical in food} \times \text{Food consumption})}{\text{Body weight (kg)}}$$

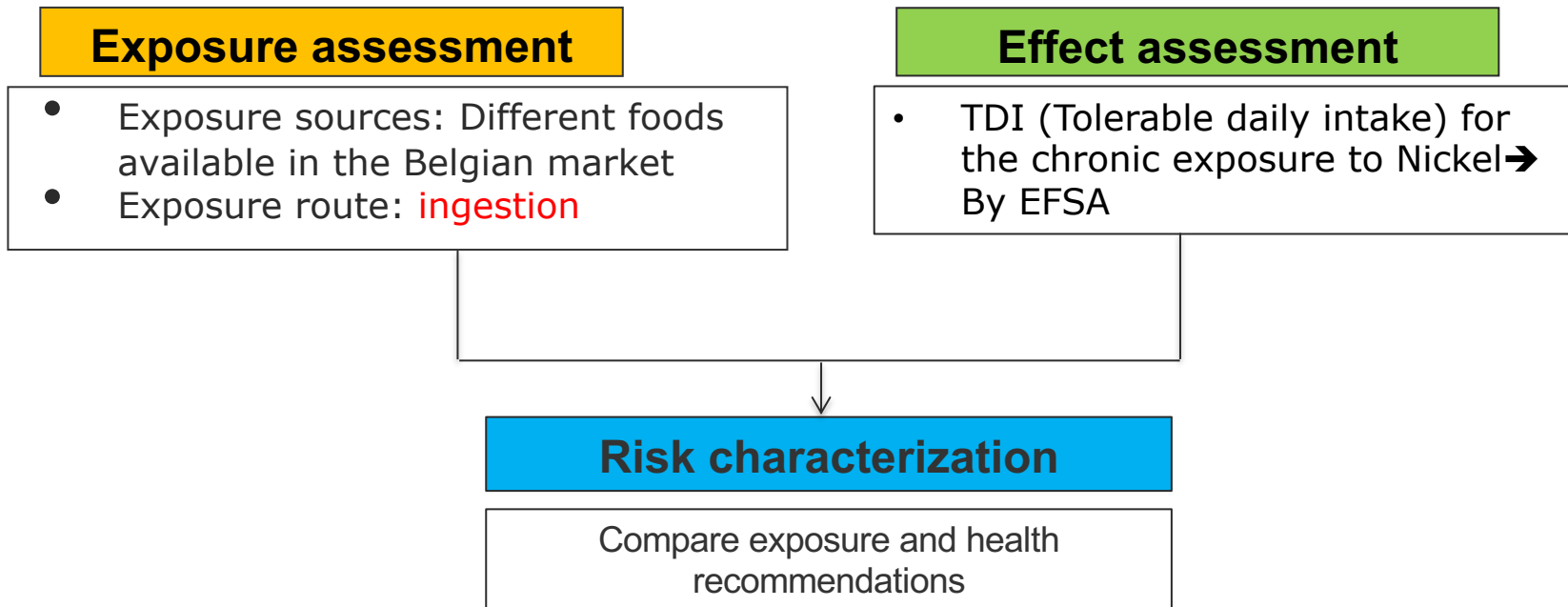




Exposure assessment (method)

- Ni screening data (main focus on foods and drinks) → every food was analyzed separately
- Belgian food consumption data 2014
- Chronic exposure (two days consumers)
 - Pooling : Food category or Food type
 - Aggregated exposure assessment
 - Simple distribution approach

Risk assessment



Risk assessment

- Comparison of calculated exposure with TDI of 13 $\mu\text{g}/\text{kg bw}/\text{day}$
- For children, adolescents and adults → no exceeding from the aforementioned reference value was observed.



Hands-on training: how MCRA is used in a harmonized TDS approach



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Learning goals

- Get familiar with MCRA
 - Create and run a standard action: TDS Belgium Nickel
 - Run a standard action: TDS Netherlands DON
 - Run a standard action: TDS Germany methylmercury
 - Understand seasonal and regional variation
 - Understand the output
 - Upload your own data
 - Documentation

MCRA

- mcra-training.rivm.nl
- MCRA training

Opening page with short explanation

NOTE: This is the **temporary MCRA Training environment**. MCRA is available at <https://mcra.rivm.nl>



Welcome to MCRA Training

Chemical exposure, hazard and risk assessment

On a daily basis, people are exposed to multiple chemicals via food intake, inhalation and dermal contact. The risk to human health resulting from this exposure depends on the effects of the different chemicals in the mixture and how they combine. MCRA stands for **Monte Carlo Risk Assessment**. It is a web-based platform containing various models that users can use to assess these health risks for specific populations in various scenarios.

In MCRA, more than 50 **modules** are available to address all major areas of risk assessment, including hazard identification, hazard characterisation, exposure assessment and risk assessment. MCRA contains models following the guidelines and regulatory methodologies of the European Commission and the European Food Safety Authority (EFSA). Besides this, it also includes novel scientific models that could improve or refine future risk assessment.

MCRA was and is being developed in multiple projects, including national funded projects, [partnership between EFSA, RIVM \(2015-2025\)](#) and EU projects [ACROPOLIS \(2010-2013\)](#), [EuroMix \(2015-2019\)](#), [FNS Cloud \(2019-2023\)](#), and [PARC \(2022-2029\)](#).



MCRA documentation



Publications and reports using MCRA

MCRA account

Use of the MCRA web-platform requires an active account. An account can be requested by filling in the registration form.





Register for an account

Do you already have an account? [Log in here.](#)

Login

Log in

 Username *

 Password *

Login

[Forgot password](#) [Create an account](#)

Create workspace (1)

- Select workspaces

Using MCRA

You can specify your models, such as a dietary exposure assessment, within **actions** that are organised in **workspaces**. Each action is of a **module type** and contains selected data and settings. After specifying data and settings, the modelling task can be started. The output report contains concise sections of main results and detailed drilldown information.

The data used in the actions is organised in the **data repository**. Users have their own private data repository for uploading data. In addition, shared repository folders are available used for sharing data among user groups.

For more information on using MCRA consult the [documentation pages](#).



Workspaces




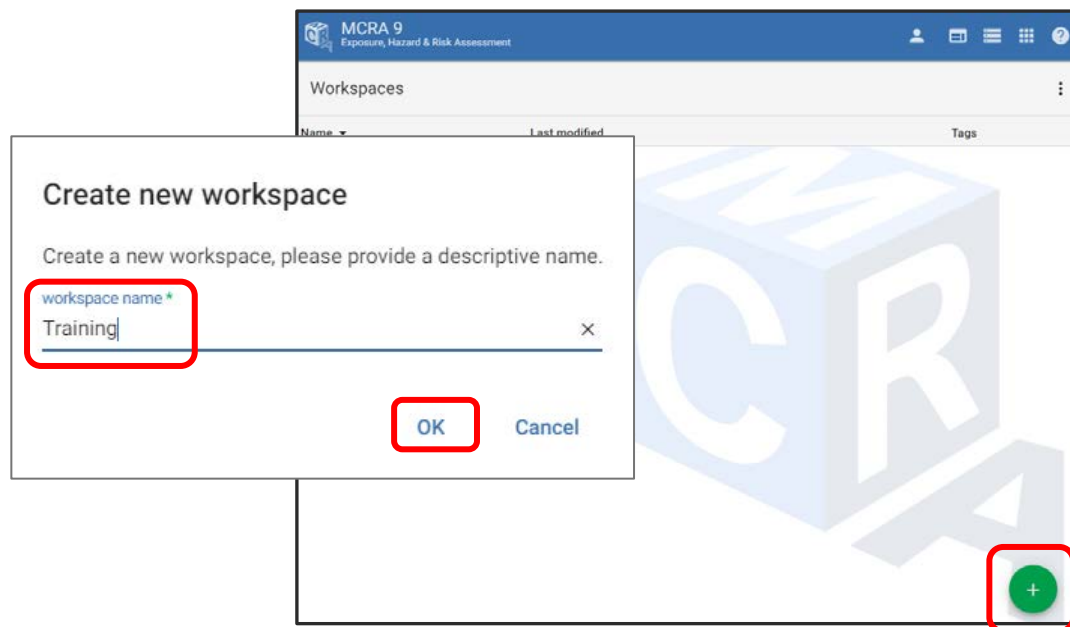
Data

Contact: MCRA Support, National Institute for Public Health and the Environment (RIVM).

MCRA is developed by Wageningen University & Research, Biometris for RIVM and EFSA (2007 - 2023)

Create workspace (2)

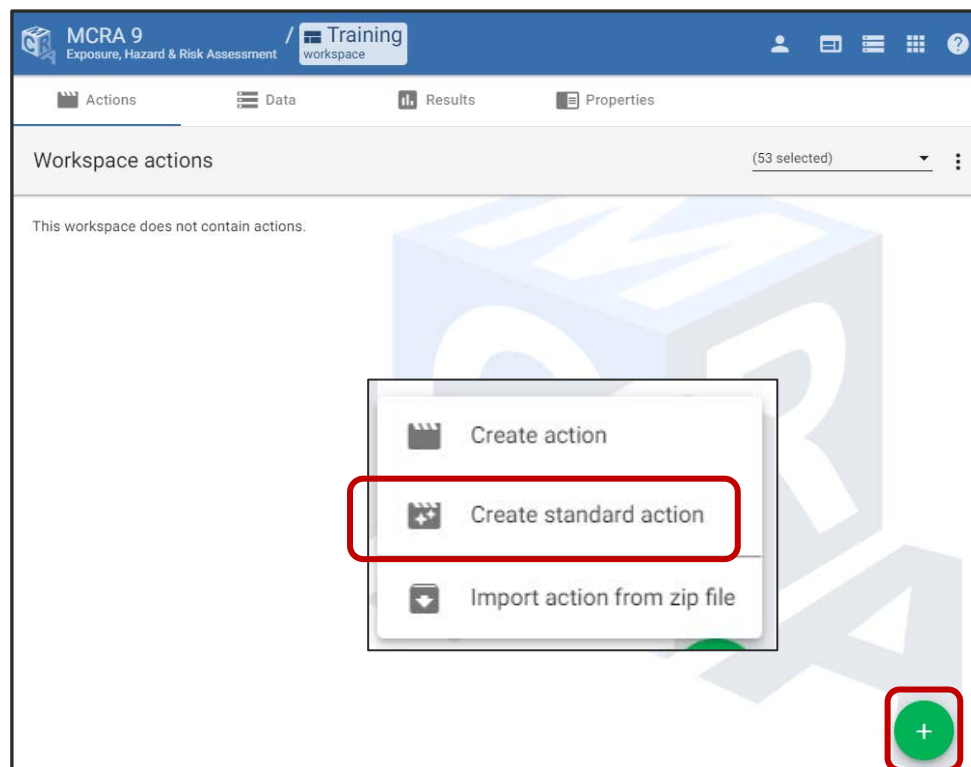
- Create workspace by clicking 
- Give the workspace a name and click on 'OK'



Create standard action (1)

Create a standard action by clicking 

Select create standard action




Create standard action (2)

Select 'TDS-based long term dietary exposure and risk assessment'

Create new standard action

Select standard action type

 **TDS-based long term dietary exposure and risk assessment**
This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.

Create standard action (3)

Select 'Create'

Create new standard action

×

Specify name/description

General

Name

TDS-based long term dietary exposure and risk assessment

Tags

Description

Back

Create

Inspect settings

- Select TDS Nickel BE Population 2014
- Press **Save Changes**

TDS-based long term dietary exposure and risk assessment

This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.

[Go to documentation](#)

Assessment settings

Total diet study

TDS Nickel BE Population 2014

TDS DON NL Children 2016

TDS demo MeHg DE Children 2001-2002

TDS Nickel BE Population 2014

AgeGroup

General population

☐ Restrict population to consumers only

Censored value handling method

By zero (lower bound)

By zero (lower bound)

By limit of reporting (upper bound)

Uncertainty analysis

No uncertainty analysis

No uncertainty analysis

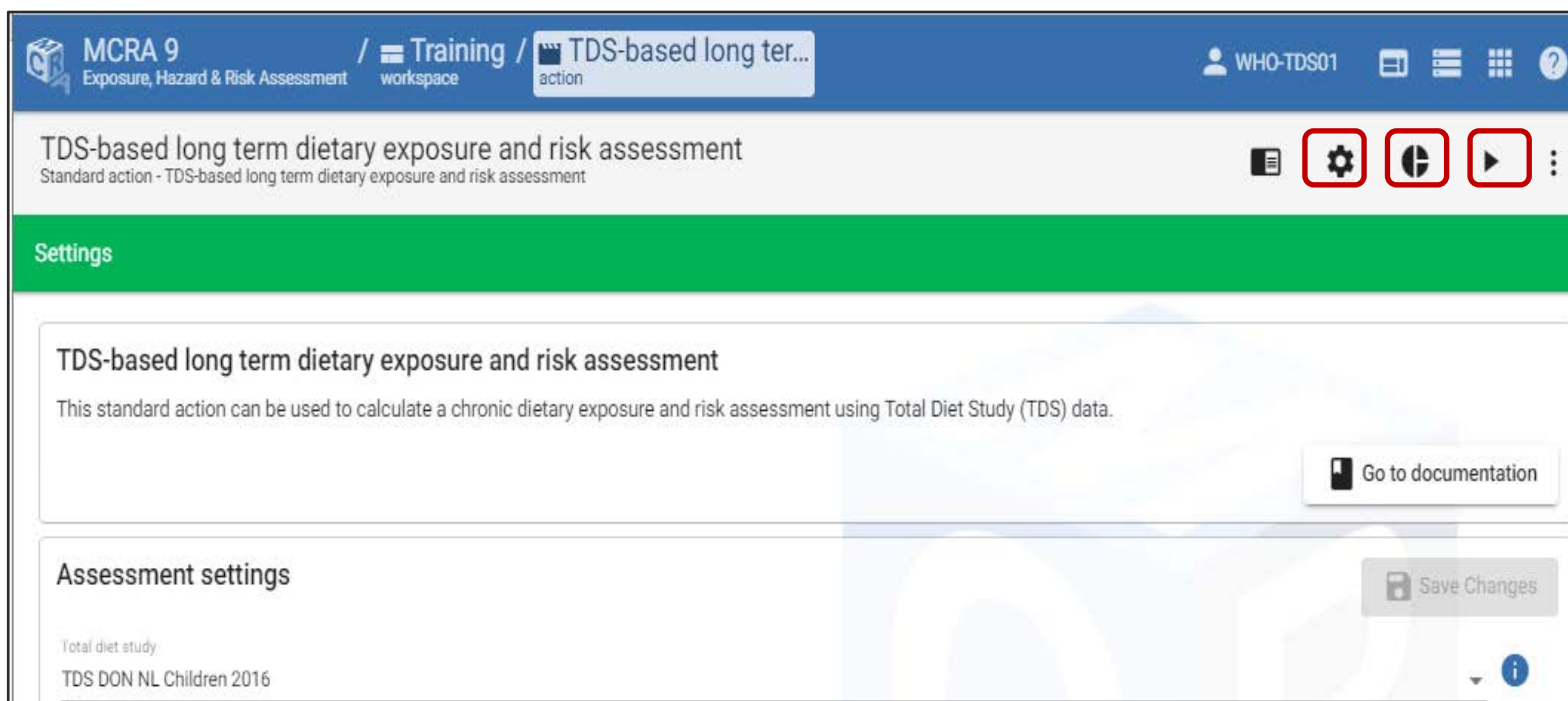
Uncertainty analysis: 10 bootstrap cycles of 10.000 Monte Carlo iterations (for testing / demo)

Uncertainty analysis: 100 bootstrap cycles of 100.000 Monte Carlo iterations

Save Changes

Navigation pane exercise

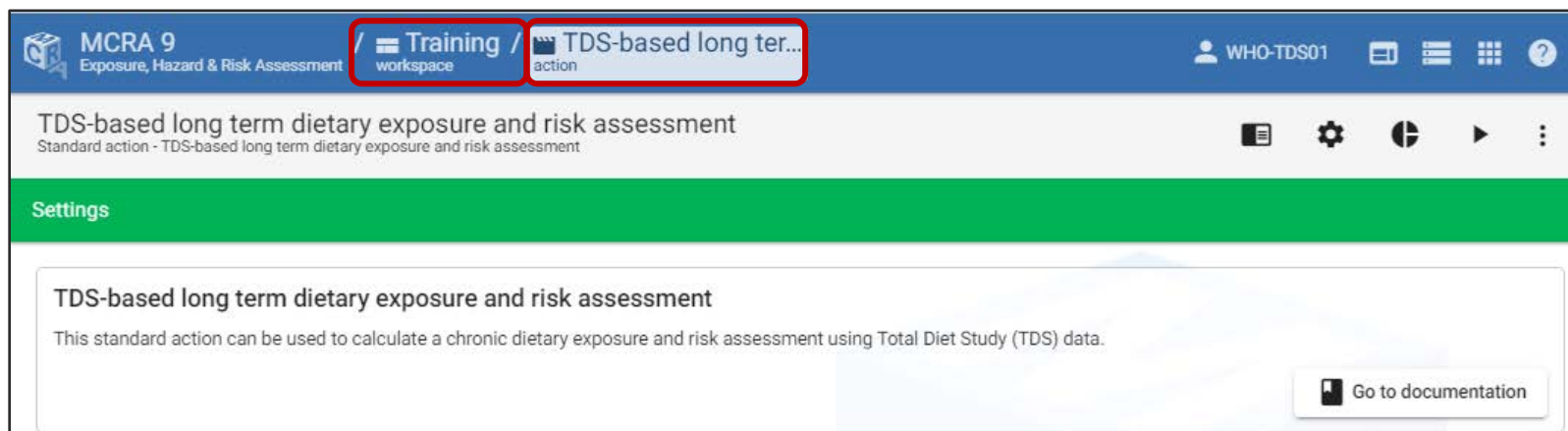
- Go to 'Settings'
- Go to 'Results'
- Run an action



The screenshot displays the FNS-Cloud interface. The top navigation bar includes the MCRA 9 logo, the text 'Exposure, Hazard & Risk Assessment', and a breadcrumb trail: '/ Training / workspace / TDS-based long ter... action'. The user 'WHO-TDS01' is logged in. Below the navigation bar, the main content area shows the title 'TDS-based long term dietary exposure and risk assessment' with a subtitle 'Standard action - TDS-based long term dietary exposure and risk assessment'. To the right of the title are three icons: a document, a gear (Settings), and a pie chart (Results), all highlighted with red boxes. Below this is a green 'Settings' header. The main content area contains the title 'TDS-based long term dietary exposure and risk assessment' and a description: 'This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.' A 'Go to documentation' button is visible. Below this is the 'Assessment settings' section, which shows 'Total diet study' and 'TDS DON NL Children 2016'. A 'Save Changes' button is at the bottom right.

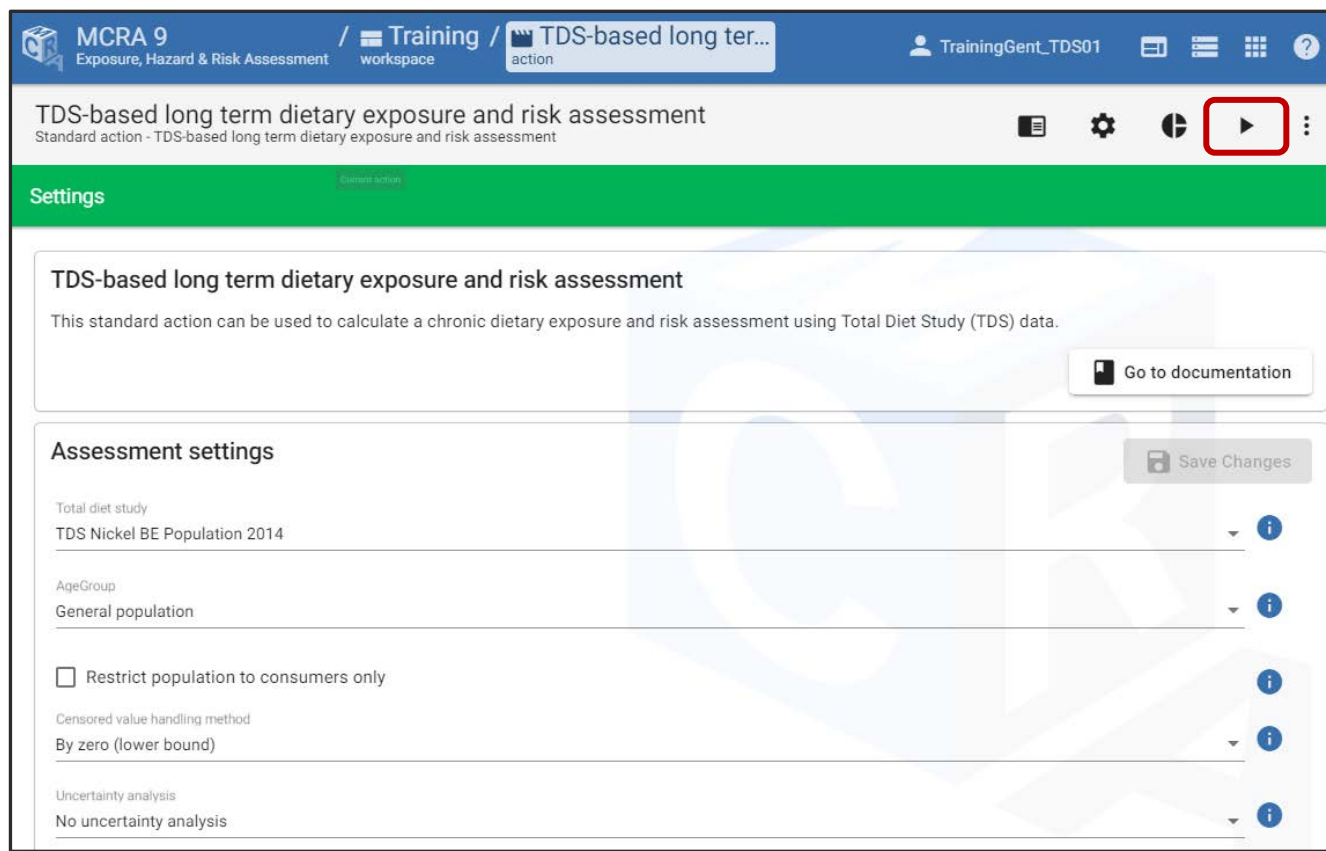
Navigation pane exercise

- Go to 'action'
- Go to 'Workspace'
- Go to action again



Press run

Press run

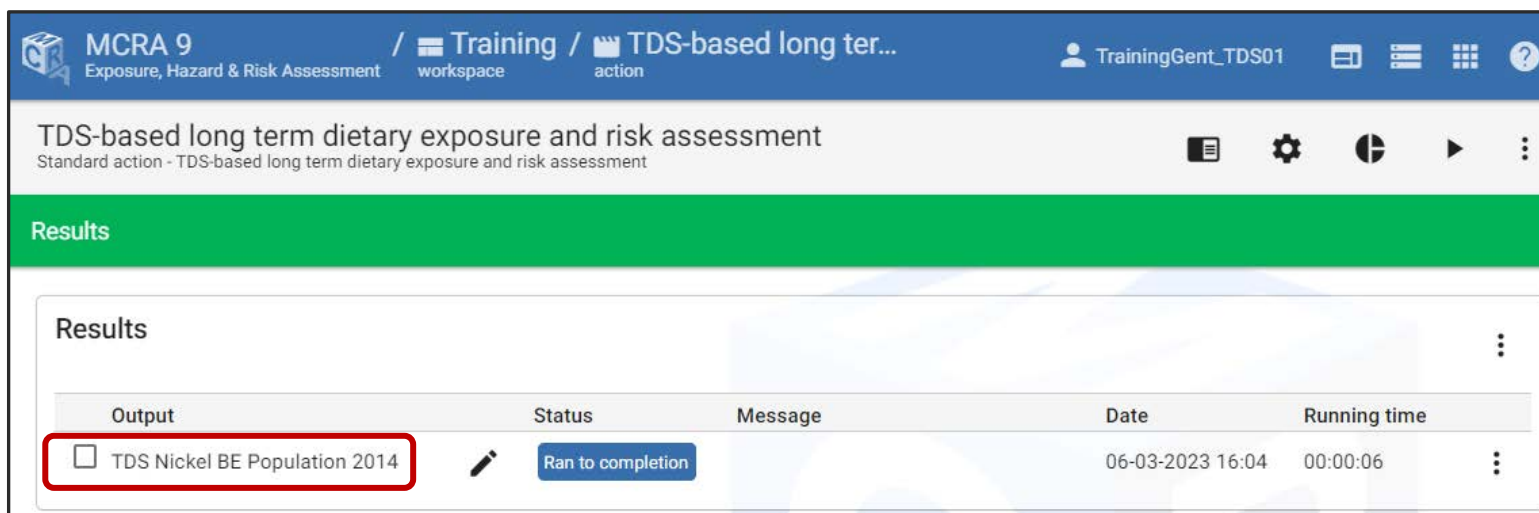


The screenshot shows the FNS-Cloud web interface. The top navigation bar includes 'MCRA 9 Exposure, Hazard & Risk Assessment', 'Training / workspace', and 'TDS-based long ter... action'. The user is logged in as 'TrainingGent_TDS01'. The main title is 'TDS-based long term dietary exposure and risk assessment' with a subtitle 'Standard action - TDS-based long term dietary exposure and risk assessment'. A red rectangle highlights a play button icon in the top right of the main content area. Below this is a green 'Settings' bar. The main content area contains a description of the standard action and a 'Go to documentation' button. The 'Assessment settings' section includes dropdown menus for 'Total diet study' (TDS Nickel BE Population 2014), 'AgeGroup' (General population), 'Censored value handling method' (By zero (lower bound)), and 'Uncertainty analysis' (No uncertainty analysis). There is also a checkbox for 'Restrict population to consumers only'.

Wait for completion and open the report

Wait until the job has finished · [Ran to completion](#)

Open report by clicking on the name of the output



MCRA 9
Exposure, Hazard & Risk Assessment / Training / TDS-based long ter...
workspace action

TrainingGent_TDS01

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

Results

Results

Output	Status	Message	Date	Running time
<input type="checkbox"/> TDS Nickel BE Population 2014	Ran to completion		06-03-2023 16:04	00:00:06

Browse through the report

- Browse through the report

MCRA 9
Exposure, Hazard & Risk Assessment

/ Training / TDS-based long ter...
workspace action

TrainingGent_TDS01

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

Results / TDS Nickel BE Population 2014 [Show detailed report](#)

Results Settings

✓ Results chronic risk assessment

✓ Settings

Setting name	Value
Total diet study	TDS Nickel BE Population 2014
AgeGroup	General population
Restrict population to consumers only	False
Censored value handling method	By zero (lower bound)
Uncertainty analysis	No uncertainty analysis

✓ Exposures and risks

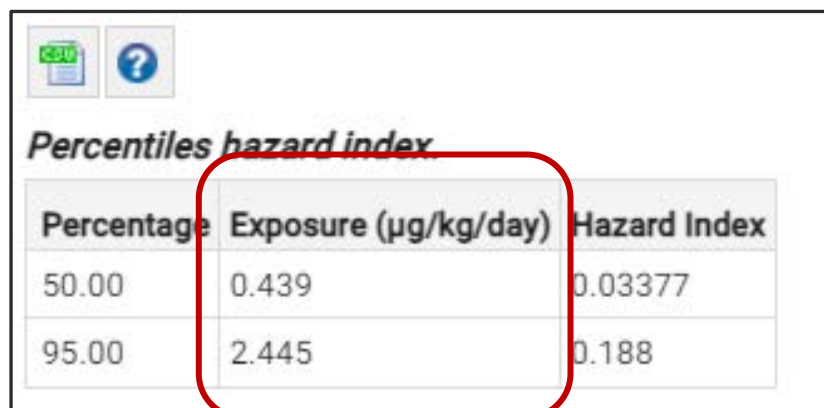
✓ Percentiles

Reference substance	Nickel (Ni) (RF-00000182-CHE)
Hazard characterisation (µg/kg/day)	13
Mean exposure (µg/kg/day)	0.742

Exercise E1

- Report the exposure at the 50- and 95-percentile.
- Which foods are contributing most to the dietary exposure?

Exposure at p50- and p95



Percentiles hazard index

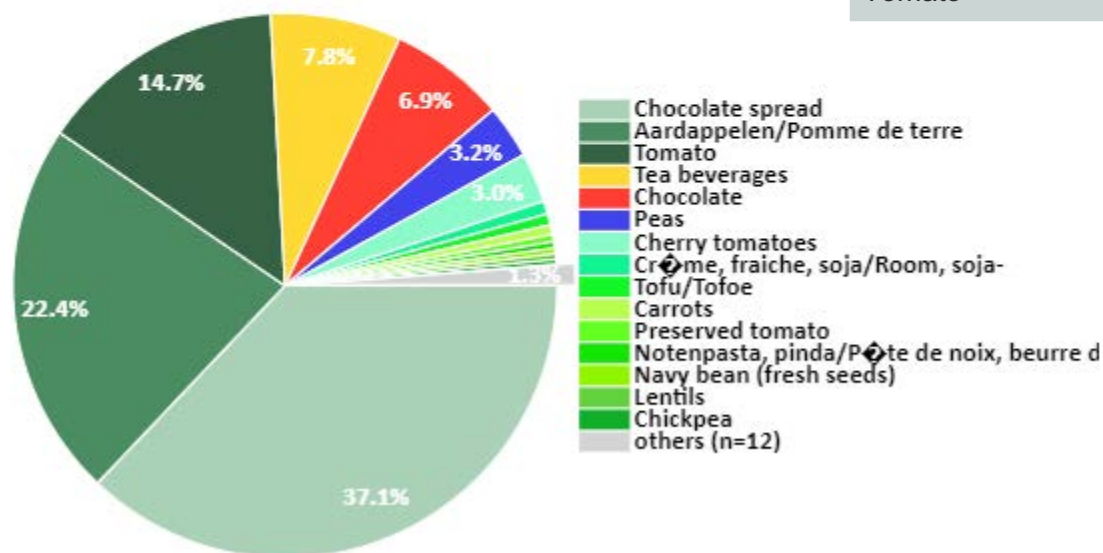
Percentage	Exposure (µg/kg/day)	Hazard Index
50.00	0.439	0.03377
95.00	2.445	0.188

Foods contributing the most

✓ Exposures by modelled food (total distribution)

Total 37 modelled foods.

Contribution to total exposure distribution for modelled foods.



Food	Contribution (%)
Chocolate spread	37.1
Aardappelen/pomme de terre	22.4
Tomato	14.7

TDS Netherlands

- Go to Settings



MCRA 9 Exposure, Hazard & Risk Assessment / Training / TDS-based long ter... workspace action TrainingGent_TDS01

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

Results / TDS Nickel BE Population 2014 Show detailed report

Results Settings

Results chronic risk assessment

Settings

Setting name	Value
Total diet study	TDS Nickel BE Population 2014
AgeGroup	General population

Inspect settings

- Select TDS DON NL Children 2016
- Press **Save Changes**

The screenshot shows the MCRA 9 software interface. The top navigation bar includes 'MCRA 9 Exposure, Hazard & Risk Assessment', 'Training workspace', and 'TDS-based long term dietary exposure and risk assessment'. The main title is 'TDS-based long term dietary exposure and risk assessment' with a subtitle 'Standard action - TDS-based long term dietary exposure and risk assessment'. Below this is a green 'Settings' bar. The main content area is titled 'TDS-based long term dietary exposure and risk assessment' and includes a description: 'This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.' A 'Go to documentation' button is present. The 'Assessment settings' section is expanded, showing a dropdown menu with 'TDS DON NL Children 2016' selected. Other options in the dropdown are 'TDS demo MeHg DE Children 2001-2002' and 'TDS Nickel BE Population 2014'. Below the dropdown, there are checkboxes for 'Restrict population to consumers only' and 'Censored value handling method' (set to 'By zero (lower bound)'). The 'Uncertainty analysis' section is set to 'No uncertainty analysis'. A red box highlights the 'Save Changes' button.

Press run

Press run



MCRA 9 Exposure, Hazard & Risk Assessment / Training / workspace / TDS-based long ter... action TrainingGent_TDS01

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

Settings

TDS-based long term dietary exposure and risk assessment
This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.

[Go to documentation](#)

Assessment settings

Total diet study
TDS DON NL Children 2016

☐ Restrict population to consumers only

Censored value handling method
By zero (lower bound)

Uncertainty analysis
No uncertainty analysis

[Save Changes](#)

Wait for completion and open the report

Wait until the job has finished →

Ran to completion

Open report by clicking on the name of the output

MCRA 9
Exposure, Hazard & Risk Assessment

/ Training / TDS-based long ter...
workspace action

TrainingGent_TDS01

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

Results

Current action

Results

Type filter text here

Output	Status	Message	Date	Running time
<input type="checkbox"/> TDS Nickel BE Population 2014	Ran to completion		06-03-2023 16:04	00:00:06
<input type="checkbox"/> TDS DON NL Children 2016	Ran to completion		07-03-2023 10:27	00:00:07

Browse through the report

MCRA 9
Exposure, Hazard & Risk Assessment

/ Training / TDS-based long ter...
workspace action

TrainingGent_TDS01

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

Results / TDS DON NL Children 2016

Show detailed report

Results Settings

✓ Results chronic risk assessment

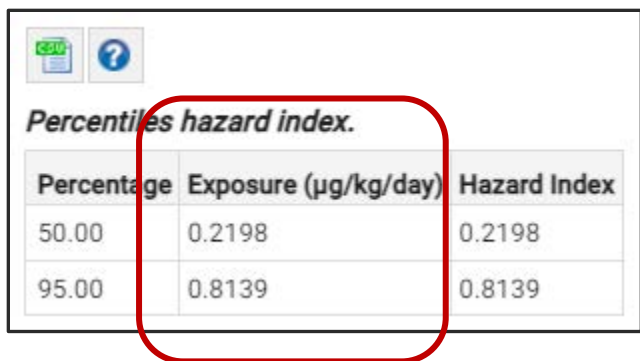
✓ Settings

Setting name	Value
Total diet study	TDS DON NL Children 2016
Restrict population to consumers only	False
Censored value handling method	By zero (lower bound)

Exercise E2

- Report the exposure at the 50- and 95-percentile.
- Which foods are contributing most to the dietary exposure at main level?
- Which foods are contributing most to the dietary exposure at level 1?

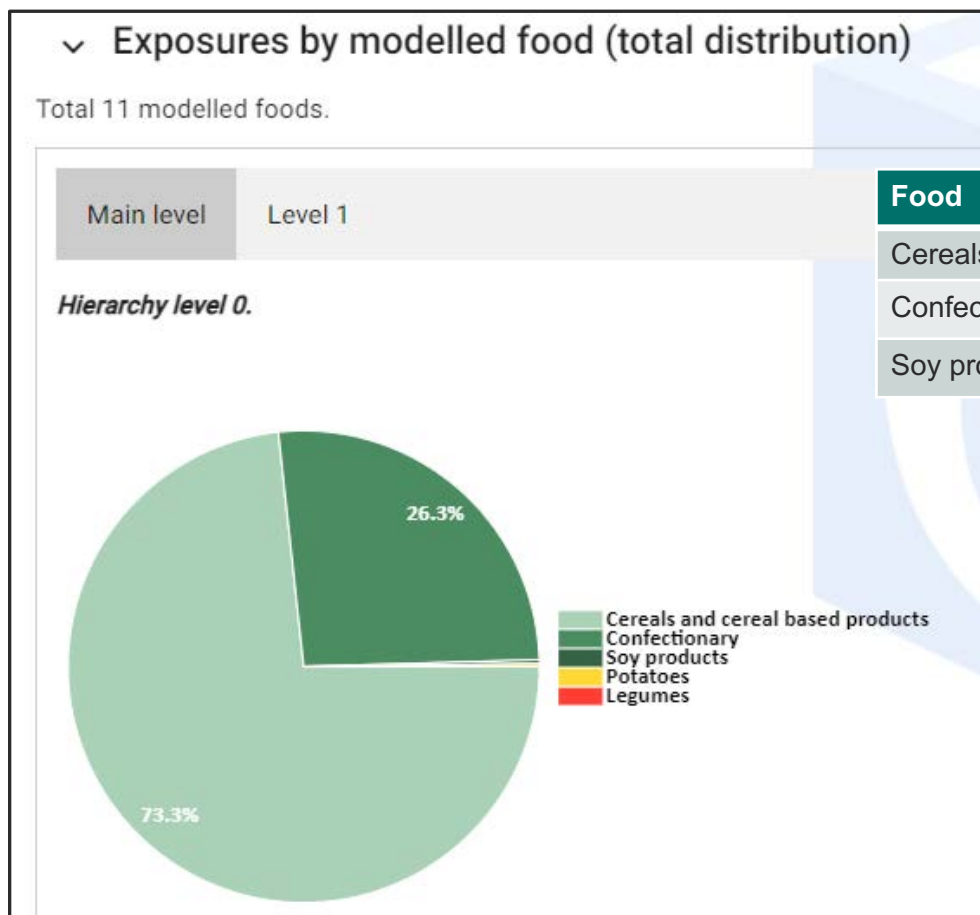
Exposure at p50- and p95



Percentiles hazard index.

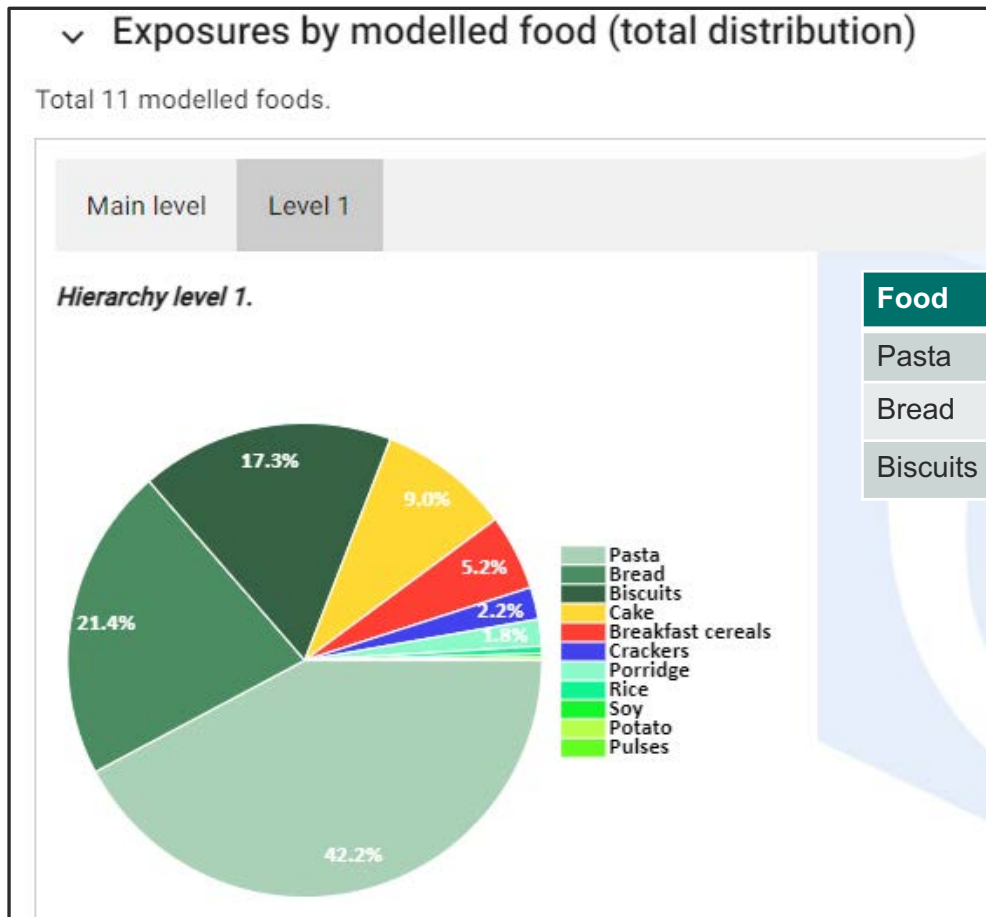
Percentage	Exposure (µg/kg/day)	Hazard Index
50.00	0.2198	0.2198
95.00	0.8139	0.8139

Foods contributing the most at main level



Food	Contribution (%)
Cereals and cereal based products	73.3
Confectionary	26.3
Soy products	0.3

Foods contributing the most at level 1



Food	Contribution (%)
Pasta	42.2
Bread	21.4
Biscuits	17.3

TDS Germany seasonal and regional

- Go to Settings



The screenshot shows the MCRA 9 software interface. The top navigation bar includes 'MCRA 9 Exposure, Hazard & Risk Assessment', 'Training / workspace', and 'TDS-based long ter... action'. The user is logged in as 'TrainingGent_TDS01'. The main title is 'TDS-based long term dietary exposure and risk assessment' with a subtitle 'Standard action - TDS-based long term dietary exposure and risk assessment'. A green bar indicates 'Results / TDS Nickel BE Population 2014' with a 'Show detailed report' button. The 'Settings' tab is selected, showing a table of settings for 'Results chronic risk assessment'.

Setting name	Value
Total diet study	TDS Nickel BE Population 2014
AgeGroup	General population

Inspect settings

- Select TDS demo MeHg Children 2021-2002
- Select Region North and Season Summer
- Press **Save Changes**

Settings

TDS-based long term dietary exposure and risk assessment
This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.

Assessment settings
Total diet study *
TDS demo MeHg DE Children 2001-2002

TDS DON NL Children 2016

TDS demo MeHg DE Children 2001-2002

TDS Nickel BE Population 2014

Region
North

Season *
Summer





Go to documentation

Save Changes

Press run

Press run 

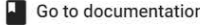
TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment



Settings



TDS-based long term dietary exposure and risk assessment


This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.



Assessment settings

Total diet study *
TDS demo MeHg DE Children 2001-2002



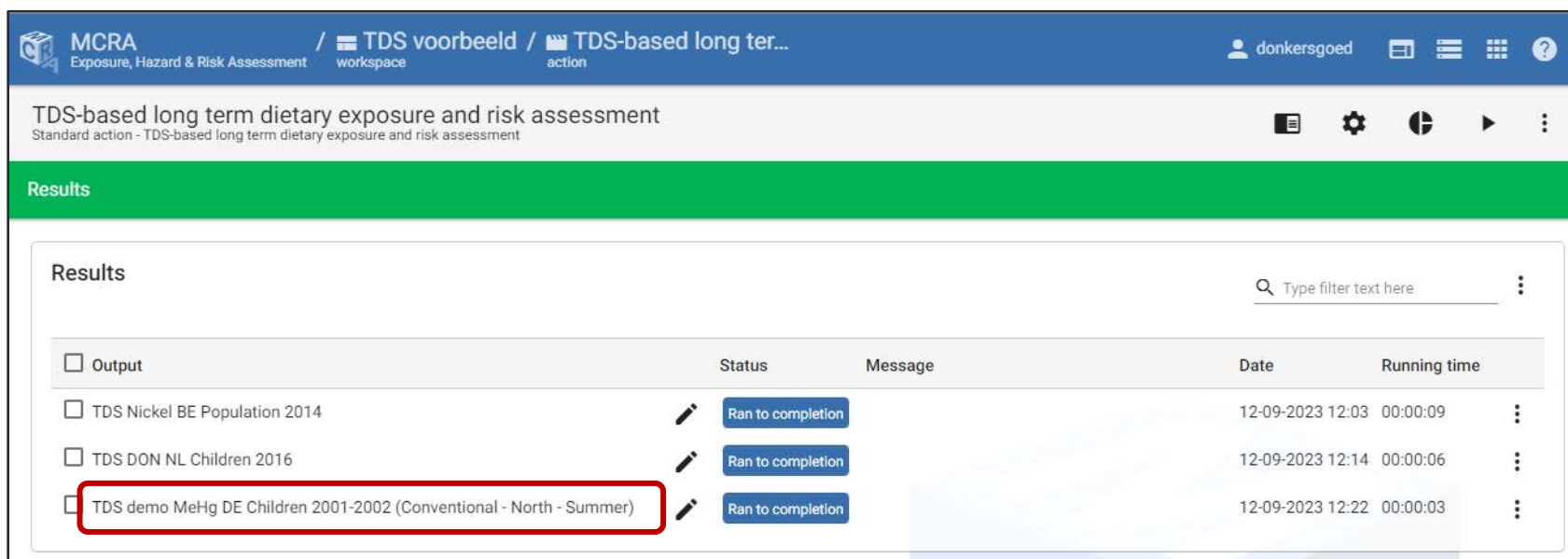


Wait for completion and open the report

Wait until the job has finished →

Ran to completion

Open report by clicking on the name of the output



MCRA Exposure, Hazard & Risk Assessment / TDS voorbeeld / TDS-based long ter... workspace action donkersgoed

TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment

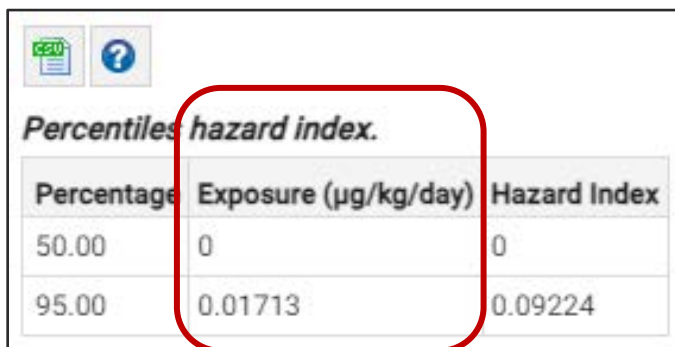
Results



Results

Type filter text here

Output	Status	Message	Date	Running time
<input type="checkbox"/> TDS Nickel BE Population 2014	Ran to completion		12-09-2023 12:03	00:00:09
<input type="checkbox"/> TDS DON NL Children 2016	Ran to completion		12-09-2023 12:14	00:00:06
<input type="checkbox"/> TDS demo MeHg DE Children 2001-2002 (Conventional - North - Summer)	Ran to completion		12-09-2023 12:22	00:00:03

Exposure at p50- and p95



Percentiles hazard index.

Percentage	Exposure ($\mu\text{g/kg/day}$)	Hazard Index
50.00	0	0
95.00	0.01713	0.09224

TDS Germany seasonal and regional

- Go to Settings



The screenshot shows the MCRA (Exposure, Hazard & Risk Assessment) software interface. The top navigation bar includes the MCRA logo, the current workspace 'TDS voorbeeld', and the action 'TDS-based long ter...'. The user 'donkersgoed' is logged in. The main title is 'TDS-based long term dietary exposure and risk assessment', with a subtitle 'Standard action - TDS-based long term dietary exposure and risk assessment'. Below this is a green bar indicating the current results: 'Results / TDS demo MeHg DE Children 2001-2002 (Conventional - North - Summer)', with a 'Show detailed report' button. The interface has two tabs: 'Results' and 'Settings'. The 'Settings' tab is active, showing a list of settings under 'Results chronic risk assessment' and 'Settings'. A table displays the current settings:

Setting name	Value
Total diet study	TDS demo MeHg DE Children 2001-2002
Region	North
Season	Summer

Inspect settings

- Select TDS demo MeHg Children 2001-2002
- Select Region South and Season Winter
- Press **Save Changes**

Settings

TDS-based long term dietary exposure and risk assessment

This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.

[Go to documentation](#)

Assessment settings

Total diet study *

TDS demo MeHg DE Children 2001-2002

Region *

South

Season *

Winter

TDS DON NL Children 2016

TDS demo MeHg DE Children 2001-2002





TDS Nickel BE Population 2014

[Save Changes](#)

Press run

Press run 


TDS-based long term dietary exposure and risk assessment
Standard action - TDS-based long term dietary exposure and risk assessment



Settings



TDS-based long term dietary exposure and risk assessment


This standard action can be used to calculate a chronic dietary exposure and risk assessment using Total Diet Study (TDS) data.



Assessment settings

Total diet study *
TDS demo MeHg DE Children 2001-2002





Wait for completion and open the report

Wait until the job has finished →

Ran to completion

Open report by clicking on the name of the output

Results						
Results						
Type filter text here						
Output	Status	Message	Date	Running time		
<input type="checkbox"/> TDS Nickel BE Population 2014	Ran to completion		09-09-2023 08:05	00:00:08	⋮	
<input type="checkbox"/> TDS DON NL Children 2016	Ran to completion		11-09-2023 20:17	00:00:08	⋮	
<input type="checkbox"/> TDS demo MeHg DE Children 2001-2002 (Conventional - North - Summer)	Ran to completion		11-09-2023 20:20	00:00:03	⋮	
<input type="checkbox"/> TDS demo MeHg DE Children 2001-2002 (Conventional - South - Winter)	Ran to completion		11-09-2023 20:51	00:00:08	⋮	

Exposure at p50- and p95

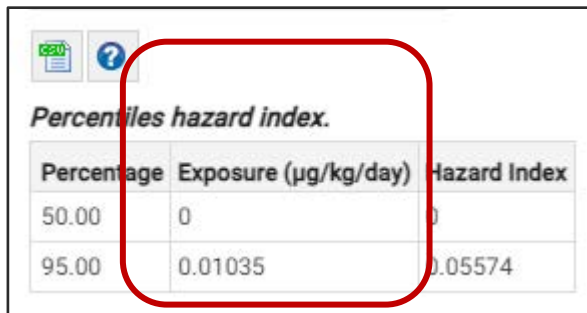
North summer



Percentiles hazard index.

Percentage	Exposure (µg/kg/day)	Hazard Index
50.00	0	0
95.00	0.01713	0.09224

South winter



Percentiles hazard index.

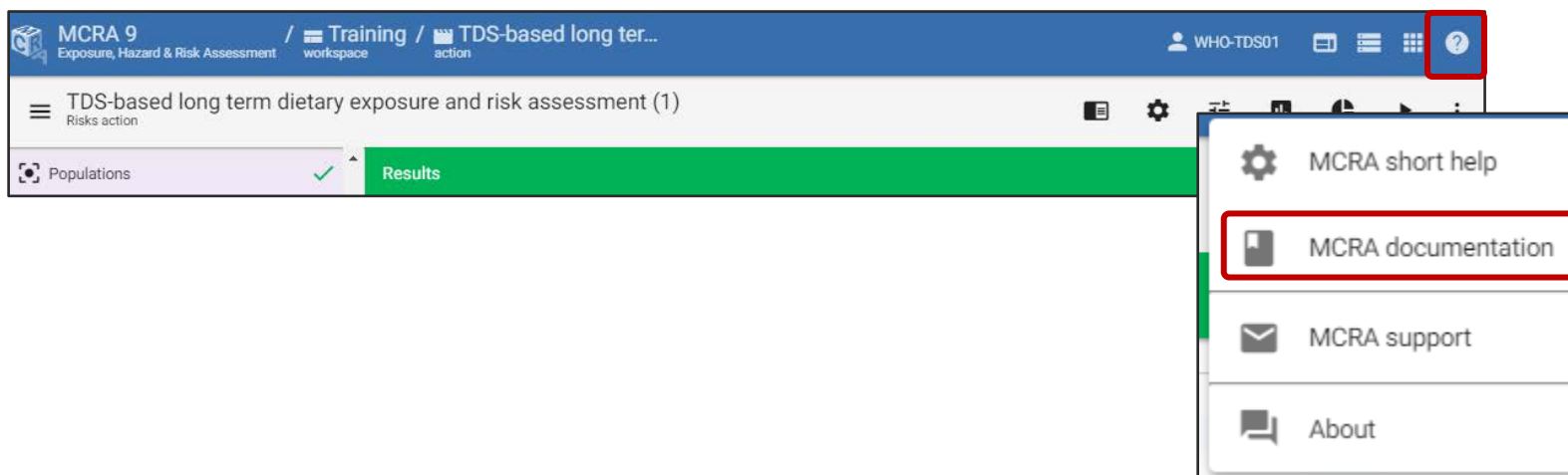
Percentage	Exposure (µg/kg/day)	Hazard Index
50.00	0	0
95.00	0.01035	0.05574

Upload own data


- It is possible to organize your own TDS data in the standard formats (relevant for TDS centers)
- Use standard templates as agreed with the European Food Safety Authority (EFSA)
- Follow-up training for TDS centers on how to upload data to MCRA, if you are interested mail to MCRA support
- More functionalities for analyzing TDS data available in MCRA in full actions

MCRA Documentation (1)

- By clicking on ? you can go to the MCRA documentation.



MCRA documentation (2)


 **MCRA Documentation**
Download as PDF

USER GUIDE
Introduction to MCRA
Examples

REFERENCE MANUAL
Modules
Standard actions
Type and Unit definitions
Application Programming Interface (API)
Appendices
Glossary

BIBLIOGRAPHY
Publications using MCRA
References
Colophon
Change Log

MCRA 9.1.48
Documentation history

 » MCRA documentation

MCRA documentation

Reference and user manual for MCRA 9 (version 9.1.48).

User guide

- [Introduction to MCRA](#)
- [Examples](#)

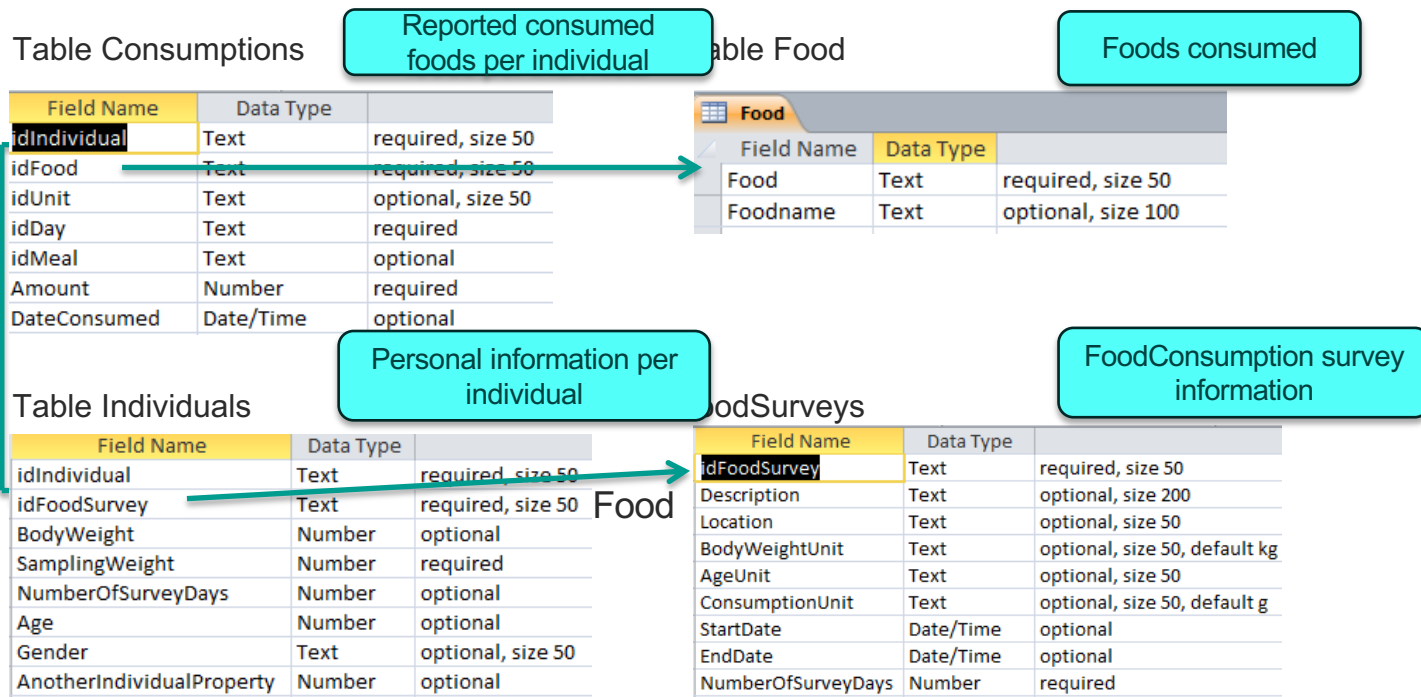
Reference Manual

- [Modules](#)
- [Standard actions](#)
- [Type and Unit definitions](#)
- [Application Programming Interface \(API\)](#)
- [Appendices](#)
- [Glossary](#)

Bibliography

- [Publications using MCRA](#)
- [References](#)
- [Colophon](#)
- [Change Log](#)

Consumptions - format



Catalogues - Foods

Table Foods (format)

Field Name	Data Type	
idFood	Text	required, size 50
Name	Text	required, size 100

Table Foods (example)

A026F	Beerwurst
A00QG	Beetroots
A00AJ	Beignets
A01DT	Berries and small fruits
MENG.CRAC.12-18	beschuit, knackebrod
A01FE	Bilberries (generic)
A00AE	Biscuit with inclusions, filling or coating
A009V	Biscuits
MENG.KOEK.24-36	Biscuits
A00AB	Biscuits, oat meal
A03RA	Biscuits, rusks and cookies for child
A009X	Biscuits, sweet, plain
A00AA	Biscuits, sweet, wheat wholemeal
A034G	Bitter chocolate

The foods table is the main table of the food definitions. Includes all food codes present in Consumptions, ConcentrationsSSD, TDSFoodSampleComposition, FoodCompositions, ReadAcrossFoodTranslations, FoodHierarchy

2. Concentrations - format

Table ConcentrationsSSD

Field Name	Data Type
labSampCode	Short Text
labSubSampCode	Short Text
sampCountry	Short Text
prodCode	Short Text
sampY	Number
sampM	Number
sampD	Number
analysisY	Number
analysisM	Number
analysisD	Number
paramCode	Short Text
resUnit	Short Text
resLOD	Number
resLOQ	Number
resVal	Number
resType	Short Text

composi

Field Name	Data Type
idTDSFood	Short Text
idFood	Short Text
PooledAmount	Number

The TDS food sample compositions table contains the descriptions of the TDS samples and specifications of the foods (with amounts) included in the TDS samples.

Concentrations data are analytical measurements of chemical substances occurring in food samples.



Thank you for your attention!

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