

Nuclear Emergency Preparedness in Germany

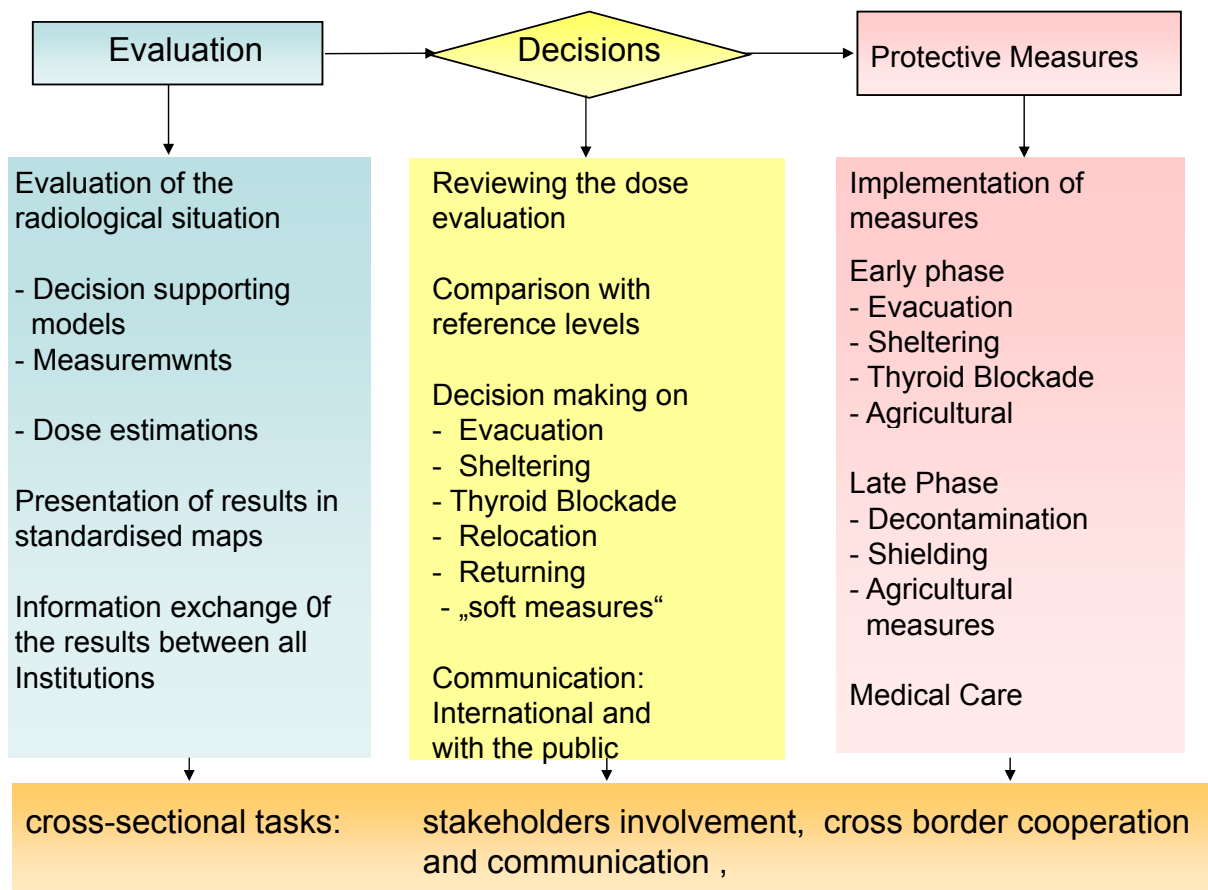
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79098 Freiburg, Germany*

IGES, Japan, July 23th/24th 2013

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Structure of External Emergency Response



Evaluation of the Radiological Situation

What must decision makers know for making decisions?
(= Information which has to be provided in any accident)

- Which areas are (will be) affected?
- Radionuclides of importance and amount of contamination
(Te-132/I131, I-131, Cs-134/137)
- Present and future doses to man in the affected areas

These are the essential information for all kind of accidents!!!!

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„Integrated Measurement and Information System (IMIS)“
was founded in Germany to evaluate the radiological situation
in the environment

IMIS is a cooperation of
about 60 Laboratories for environmental
measurements
about 20 national offices
about 20 ministries....!

**IMIS is operated by the Federal Office for Radiation
Protection**

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Basic Components of IMIS

- Decision supporting models (RODOS)
- Monitoring systems
- Central data bank
- Tools for presentation of results
- Electronic situation display

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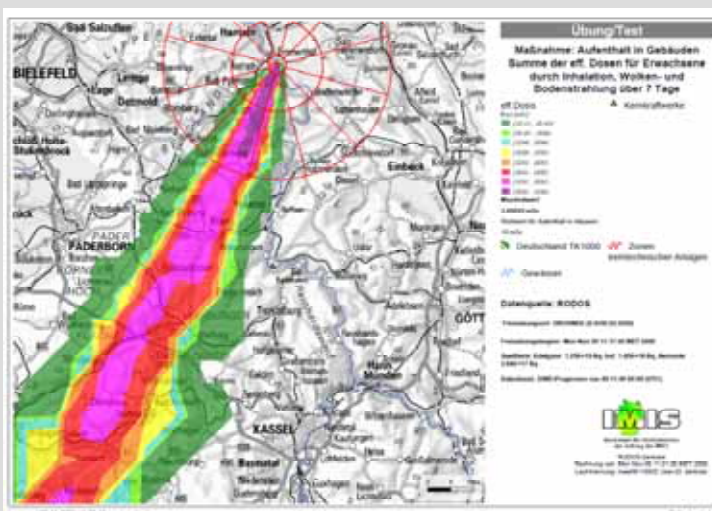
Decision Supporting Model - RODOS

Input data:

Weather parameter (*German weather service*)

Source term (*Licensee or institute for reactor safety GRS*)

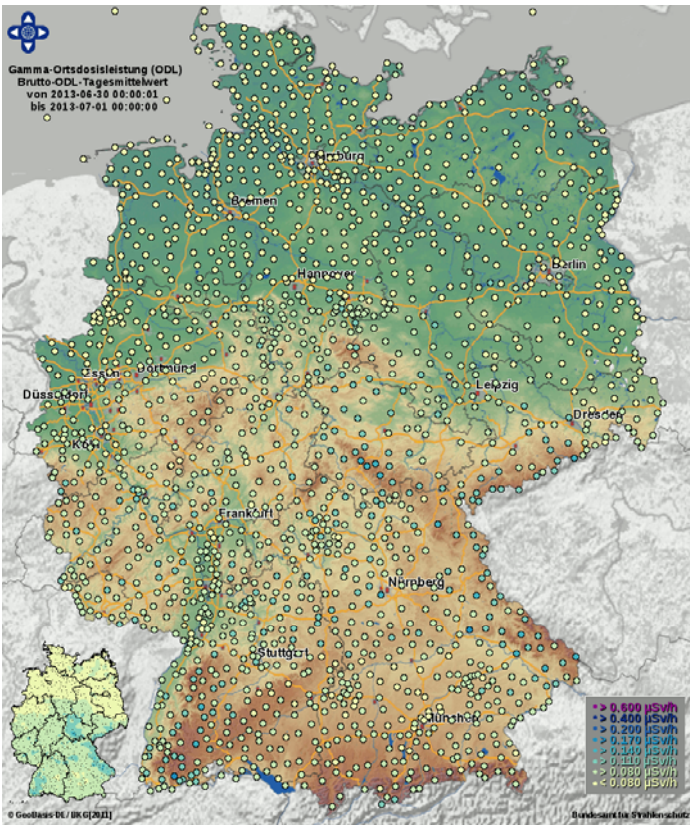
Measured data for data assimilation (*e.g. ambient dose rates*)



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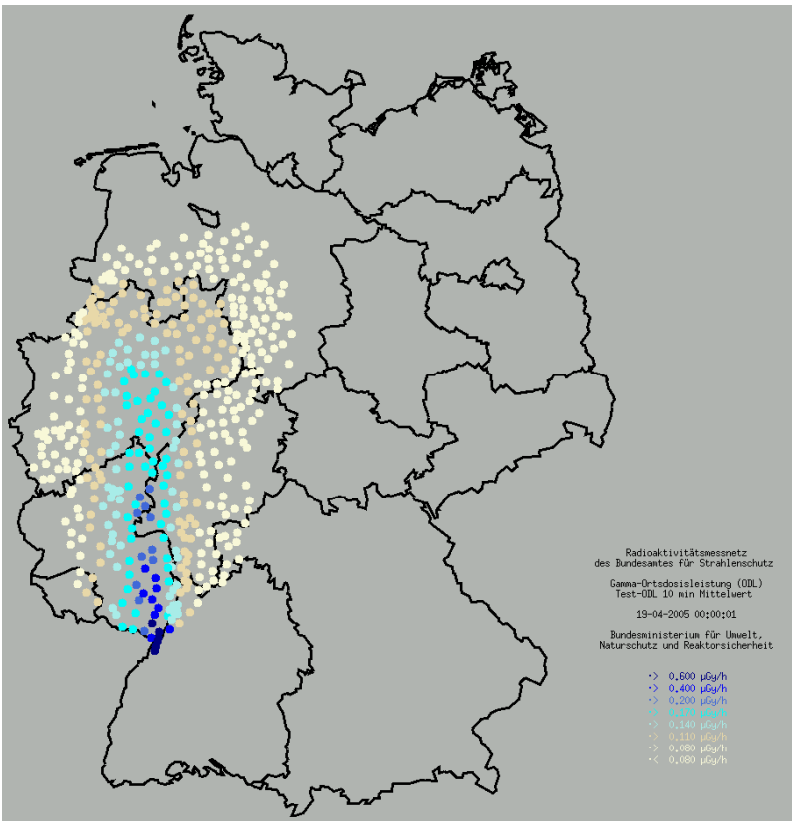
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Monitoring systems

Automatic systems

Ambient dose rate
 (1800 stations)
<http://odlinfo.bfs.de/>

Radionuclides in
 1. Air (52 stations)
 2. Rivers (40 stations)
 3. Sea (13 stations)



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Ambient dose rate

1800 stations

Frequenz: 10min

Dispersion of the cloud
 on line



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In-situ-
Messfahrzeug

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Measurement strategy - summarised

Time scale	Objective of measurements	Measurements	Benefit
Before releases	Affected areas (+dose to man)	Meteorological parameters (+source term)	Affected areas (+dose to man)
During cloud's passage	Observe dispersion, contaminated area	Automatic, ambient dose rate 10 min	Ambient dose rate map, 1st review on protective measures
	Radionuclide spectrum, amount of RN	RN conc. in air, automatic systems	Inhalation dose, review of protective measures, thyroid blockade

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Measurement strategy summarised

Time scale	Objective	Measurements	Benefit
After the passage of a cloud	To identify contaminated areas	Ambient dose rate (Network, helicopter, vehicles)	Ambient dose rate maps
	Nuclide-specific contamination pattern	In-situ Measurements	ODL + in-situ Contamination maps
	Contamination of food and feed	Nuclidspecific α -, β and γ -measurements in laboratories	contamination maps of food and feed, decisions on food and feed banning

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What to do with the measurement data?

- A nation wide central data bank
- data are proofed, verified, compiled and documented
- documents in forms of tables and maps are created precise and easy understandable also for non experts

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Nation wide central data bank

Standards

unique data formate,

unique units

data base model to be established

transfer procedere to be established

Import / export tools: web services or ftp file transfer

GIS - geographical information systeme

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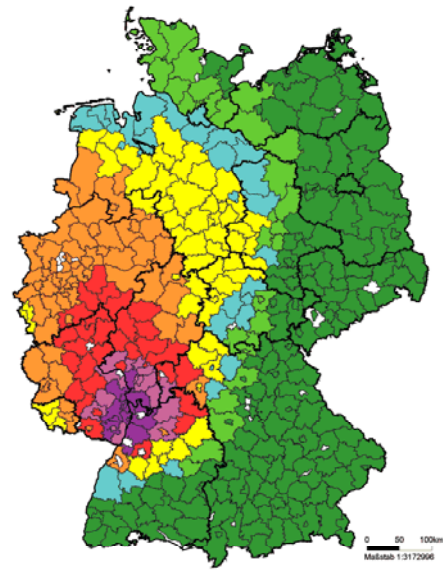


Presentation of data - Countermeasure-related

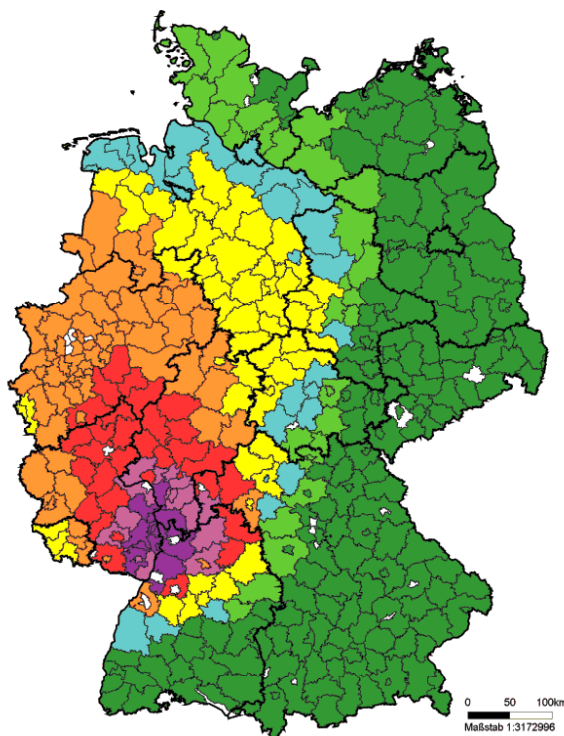
Objectivs: Presentation of measured or calculated data in maps, high-lightning affected areas where countermeasures have to be applied.

Principles:

- Comparison of the the measured or calculated data with:
- intervention levels
 - countermeasure related intervention levels



Testdaten / Übungsdaten



Protective action:
Ban of leafy vegetables

Contamination of leafy vegetables by I-131

DERL: 2000 Bq/kg

Wert der Kontamination [Bq/kg]

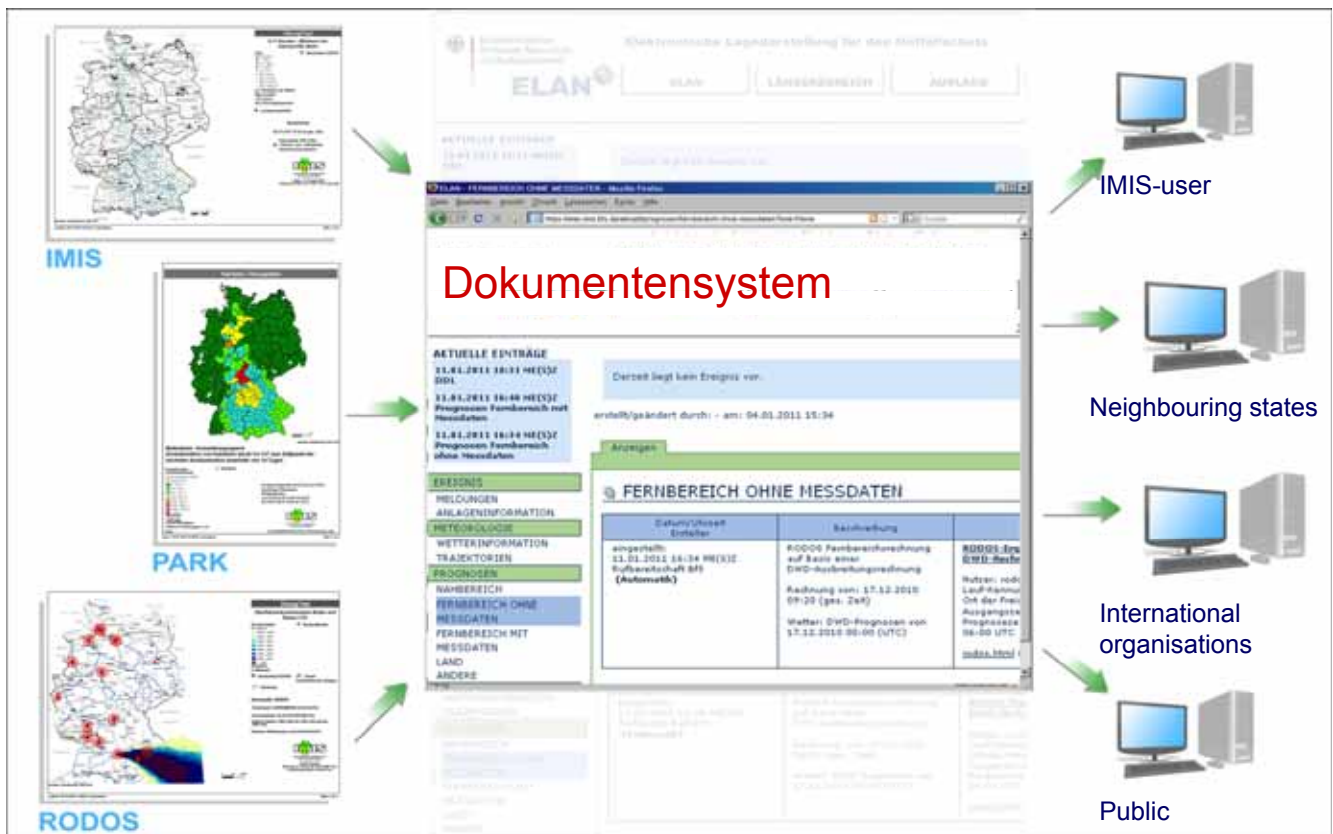
□ unclassified (29)
■ [0 ; 60) (169)
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■ [6000 ; 20000) (32)
■ [20000 ; 60000) (15)
■ >60000 (14)

Maximalwert:

1,31E05 Bq/kg
08222000 Mannheim,
Universitätsstadt

Richtwert für Vermarktungssperre:
2000 Bq/kg

Electronic Situation Display (ELAN) – Free of charge



Thank you for your attention

