



Rheinland-Pfalz

STRUKTUR- UND
GENEHMIGUNGSDIREKTION
SÜD

RADIOGRAPHY INCIDENT IN GERMANY

INDUSTRIAL RADIOGRAPHY

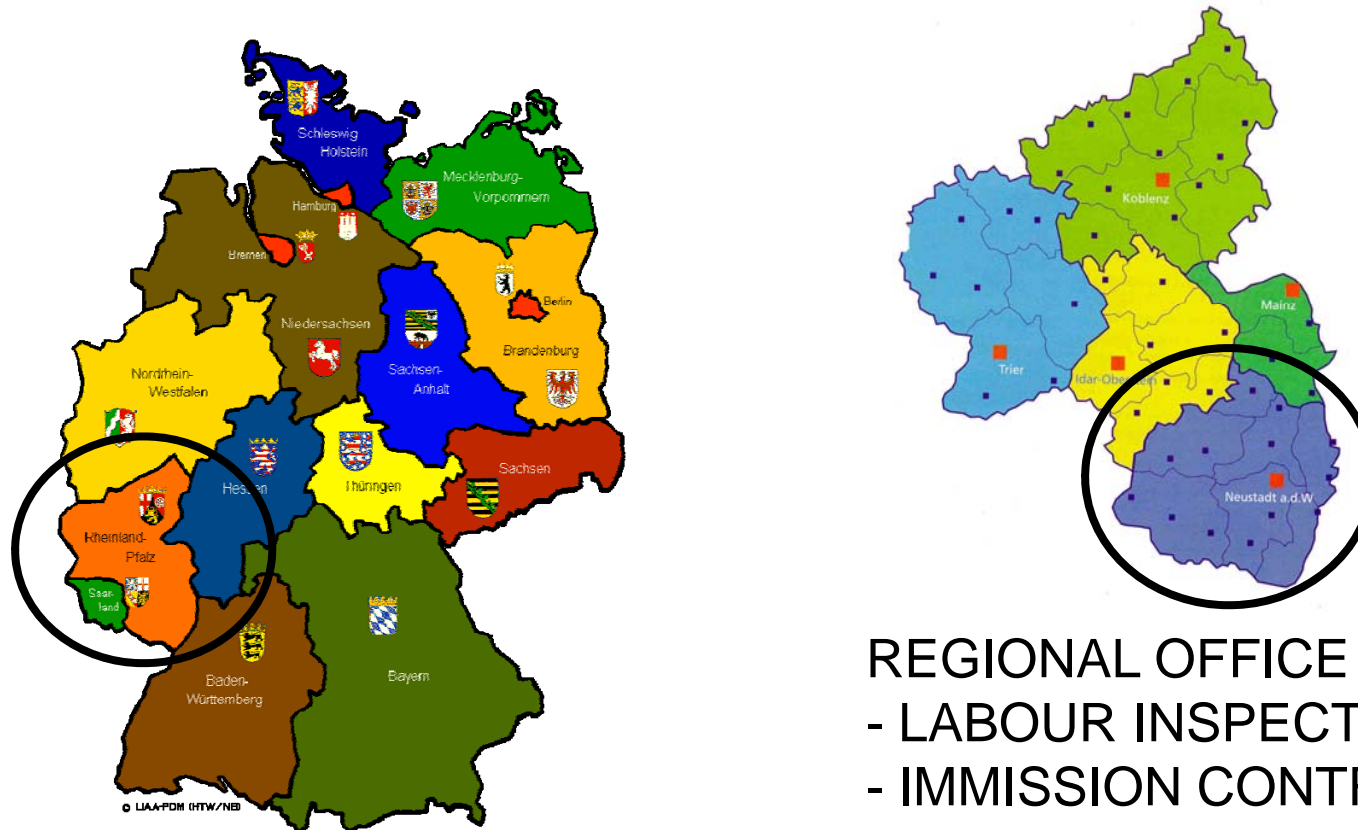
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Struktur- und Genehmigungsdirektion Süd

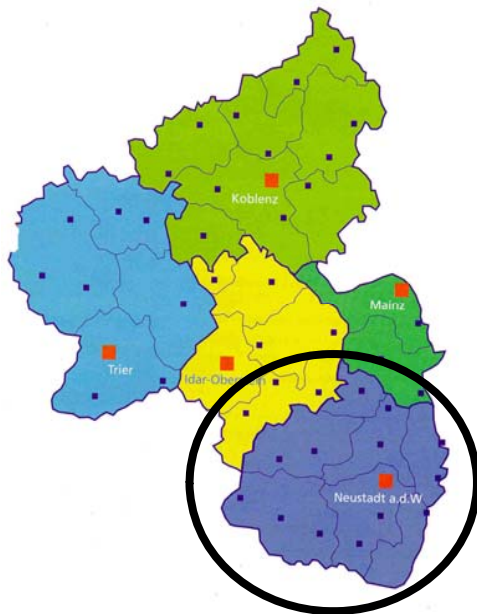


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- REGIONAL OFFICE FOR
- LABOUR INSPECTION
- IMMISSION CONTROL
- RADIATION PROTECTION
- ...



Non-destructive testing in Palatinate

- 13 operating organizations (headquarter or depot)
- approx. 90 mobile gamma radiography devices
- approx. 60 mobile X-ray radiography units

IAEA Events



On 14 September 2013 an employee of a company for non-destructive material testing was exposed to high radiation in a refinery in Lower Saxony. The evaluation of the employee's official dosimeter showed a radiation exposure of about four times the statutory annual dose limit for occupationally exposed persons. The affected employee had a whole body exposure of 75 mSv (statutory annual dose limit for occupationally exposed workers is 20 mSv). In addition on the left hand considerable skin redness and burns have occurred. These are signs of exceeding threshold limit for hand and skin at least for a factor 10. According to estimates a skin dose of 10 - 30 Sv (statutory limit 0.5 Sv) is probably.

According to the current state of knowledge, there was a defect in the used gamma radiography device (Ir-192, 740 GBq). There was an offence against basic safety rules during fixing the defect.

Furthermore, there were significant delays in reporting the incident to the relevant authorities and the medical care of the employee.

Incident 14th September 2013



INCIDENT

- refinery in Lower Saxony
- employee belong to a company based in Rhineland-Palatinate
- inspection of two repaired weldseam
- platform at 20 meter
- Ir – 192 source, 740 GBq
- slotted time
- can't lock the container
- cross-threaded source

Incident



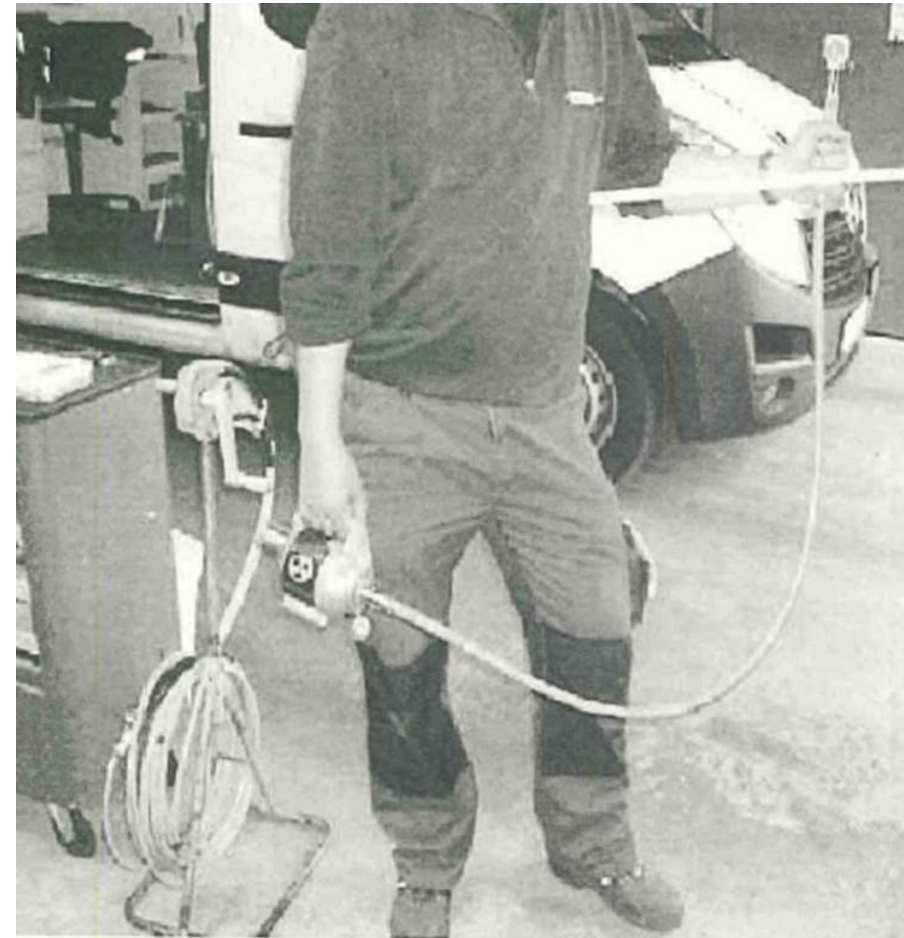
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Result

- Radiographer Nr. 1**
- 10 Gy Finger / skin (deterministic damage)
- 75 mSv whole body
- ...

- Radiographer Nr. 2 and 3**
- lower than 1 mSv



Human error 1



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not used?

Damaged?

Electronic Personal Dosimeter (EPD)



Not heard?

- speaker damaged?
- speaker manipulated?

Human error 2



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Human error 3



released problems



wrong decision



distance



time



Human error 3

Didn't he know the risk?

- special training before starting work as radiographer
- work experience as radiographer
- short refresher every year
- longer refreshing course after 5 years

Prevention 1



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EPD user-optimized
- different sounds and
loudness



Prevention 2



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Control by office and company



Prevention 3

Simple language / pictures

EXAMPLES

Radiographer source
- very high dose rate

1 min on skin
skin **destroyed**

Emergency action response plan

**Hands off,
go away,
think!**



Thank you

Any questions?