



Theft of a Mo/Tc-99m Generator



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18th of December 2018...

11:15 am:

Phone call from a nuclear medicine centre with the following information:

« We did not found the Tc-99m generator despite the fact that it was delivered during the night »

« We already contacted the generator provider and the transport firm »

« We found an empty box (packaging) in the underground of the building »

« We informed and called the police »

=> OUPS !!



18th of December 2018... after the **OUPS ! !**

- As regulatory body the FOPH tried to gather information, and we contacted :
 - Nuclear medicine department
 - Police of the canton of Wallis
 - Transport firm
 - Generator provider
 - National Emergency Operations Centre (NEOC)
 - Federal police
 - Army
 - ...



18.12.2018, information after several phone calls

- Generator : **35 GBq Mo-99/Tc-99m**
- Generator was delivered around **3 a.m.** in a closed area in the nuclear medicine institute
- Around **7 a.m.** the radiology assistant came to work and did not find the generator and started to search in the building
- He found an **empty box** (packaging) and call directly the police
- The police went on site and search with the help of the radiology assistant in the building. **Nothing was found**
- Police was **not so sure** about the **dangerousness level** of the device
- **Federal police has no resources** for an immediate intervention
- **National Emergency Operations Centre** and the **FOPH** were ready to start investigations and to search with dedicated equipments



Dangerousness level

Closed Container with 35 GBq with a dose rate of 17 $\mu\text{Sv/h}$ in 1m.





Dangerousness level

Mo-99

Date

18.12

19.12

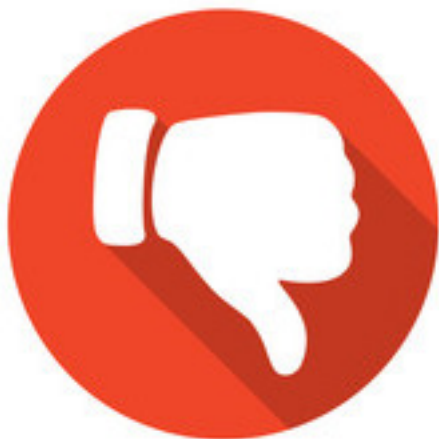
20.12

21.12

22.12

23.12

24.12



Dose rate
@ 50cm
($\mu\text{Sv/h}$)

3'360

2'609

2'027

1'574

1'222

949

737

Dose rate
@ 10cm
($\mu\text{Sv/h}$)

84'000

65'243

50'675

39'359

30'570

23'744

18'442



Simple to open the generator or to eluate the substance



Measures

**18th December
2018**

- Army was asked by the police to help and to provide resources for the search (measuring devices, persons,..)
 - Media release was issued from the police with
 - Demand for witnesses
 - Demand not to open the container if founded
-

**19th and 22th December
2018**

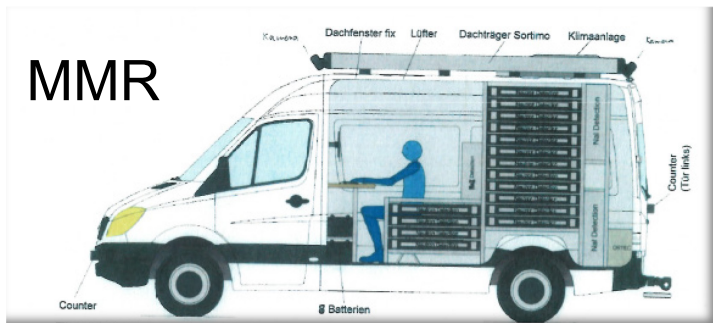
- National Emergency Operations Centre took over the coordination
 - Specialized Institutes and the FOPH went on site with additional measuring devices to check the area and try to find the generator
 - Police made some investigations on site and interviewed several persons. **No result during that period**
-

**22th of December
2018**

- Stop of the search because of lack of new evidence and new elements from the police
-



Measuring devices, regulatory body, army, police



Aero radiometry spectrometer from the army





Measurement performed at several sites

- Waste companies
- Container
- Glass recycling companies
- Metal scrap dealers...





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Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
Consumer Protection Directorate

...

What next



Result of the police investigation

15th of January 2019 (4 weeks later)

- The **robber was caught** by the police due to **DNA sample left** on the scene
- It is a homeless person known from the police for several other small delicts
- No terror or malignant purpose
- Theft by opportunity
- He gave his story which could be plausible...





History of the robbery

- **Generator** was delivered **as usual in front of the door** of the institute inside a closed area of the building
- **Lift und stairs cage** should have been locked during the night **but:**
 - The building is **only closed from 7 pm to 5 am**
 - **Building accessible to other users**
(offices and other medical services)
 - The doors were probably not closed that day because of inadvertences
 - The **robber managed to get inside** the building



History of the robbery, according to the robber

- He found **by playing with the lift and walking through the stairs** a funny box on the floor
- He took the box and went in the underground **to open it**
- He did **not pay any attention** to the **warning sign** and found the generator inside the box
- He was **curious** to see what it was
- He was however **not able to open the generator**
- As he was unsuccessful to open it, **he trough it away in a glass garbage container** in front of the building after 45 minutes





18th December 2018, localisation ...





18th December 2018, localisation...



Waste container for glass,
3 - 4 meter underground



What happened to the generator

- Early in the morning of the 18th of December, the glass container, into which the robber discarded the generator, was emptied by the usual garbage company (time unknown)
- The used glass containing the generator was transported either to:
 - a **company** dealing with glass **nearby** where a separation of glass and metal took place. The material was then transferred to a metal scrap dealer or
 - a **glass recycling company in Italy** as it is usually the case for old glasses and maybe with a stop in between and maybe somewhere else
- All the possible firms identified by the police, who might have been in contact with the generator were checked by the police with dedicated measuring teams, **but nothing was found**
- The **Italian regulatory was informed** with addresses of potential glass companies. They performed investigation on site but did **not found anything**



Measures and action taken by the FOPH

18th – 20th of December 2018	• FOPH with the help of the police, army and specialized institute made some measurements
19th of December 2018	• FOPH has informed the international partners through the INES scaling events news system and through ITDB news (Incident traffic Data Base)
5th of January 2019	• Letter send to all nuclear medicine institutes and asked them to strengthen and to review the delivery of generators and radioactive material and the security
23rd of January 2019	• Audit on site of the nuclear medicine department
10th of April 2019	• Ines final announcement: Ines scaling 1



FOPH-Audit 23rd of January 2019

- Audit of the radiation protection authorities in the nuclear medicine department
- We noticed :
 - Many changes of the responsible persons in charge of the institute
 - Inadequate collaboration with the radiology institute
 - Physician (nuclear medicine doctor), not always on site
 - Many changes of the radiation protection expert in the last years
 - Lack of coordination and no one seems to endorse the responsibility
 - Delivery location not optimal



FOPH-Audit 23rd of January 2019

- FOPH asked the nuclear medicine department to implement several corrective actions like:
 - Change of the location for the delivery of the generator
 - Change of the security concept
 - Change of the concept and time of delivery
 - Clarification of the responsibilities
 - Presence on site of the radiation protection expert
 - Optimisation of the activity and generator used
- FOPH will also check the security of the concept of delivery of generators in the other nuclear medicine institutes in a near future



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Thank you for your attention, any questions

