

# Radiation as a Weapon

A view from *open source* studies



# Radiation as a Weapon

- A *personal* historical review in chronological order
  - Homicides / Suicides
  - Other serious criminal acts
  - Radiological terrorism and planning
- Conclusions

# 1940s - A plan to sterilize Jews in Nazi Germany

This technique was proposed in a letter to Himmler: 'One practical method, for example, would be to have the persons to be processed step up to a window where they would be asked certain questions or have to fill out certain forms, detaining them for 2-3 minutes. The official behind the window could operate the equipment, in such a way that the switch simultaneously turned on two X-ray tubes, since exposure must be from two sides. A two-tube installation thus could sterilize 150-200 persons a day.'

# 1960 – first known radiological suicide

- 19-year-old research worker in Moscow
- Exposure to cesium-137 source
- Source was in his left pants pocket for 5 h
- Shifted around his abdomen and back for 15 h
- Whole body dose of 15 – 20 Gy
- 30 Gy to the trunk
- Symptoms of ARS within hours
- Death occurred at 15 days



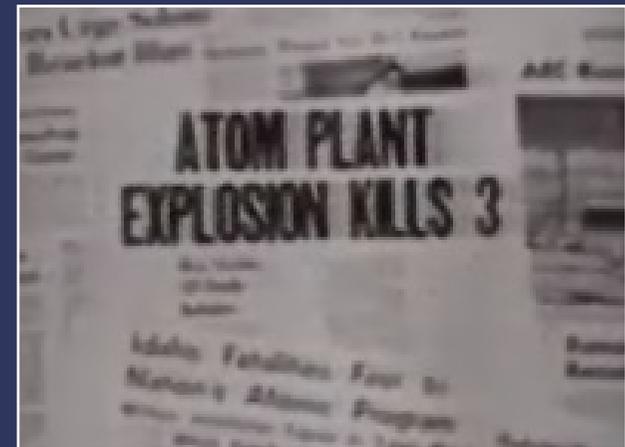
# Idaho Falls 1961 - The SL-1 reactor explosion

- ❖ SL-1 prototype reactor, 1 m in diameter
- ❖ 15 kg 91% HEU, manually operated control rods
- ❖ Three operators
- ❖ Back from 11-day shutdown for X-mas
- ❖ Explosion occurred at 9:01 PM on 3 Jan
- ❖ Central control rod was only allowed to be withdrawn 10.6 cm, but it was removed 65 cm
- ❖ Reactor became supercritical with a total energy release comparable to 30 kg of TNT producing a steam explosion



# Idaho Falls 1961 - The SL-1 reactor explosion

- ❖ The worker who extracted the rod was killed instantly together with one colleague
- ❖ Emergency responders arrived within 10 min
- ❖ High radiation readings were measured inside
- ❖ Third person, who died shortly afterwards, was removed
- ❖ Main hypothesis: Rod intentionally withdrawn in act of murder-suicide
- ❖ All three persons had to be buried in lead coffins



# Houston 1972 – Intentional Cs-137 exposure

- ❖ Divorced father with limited visitation rights
- ❖ Intentional, multiple irradiation of 11-year-old son
- ❖ Access to Cs-137 oil and gas well logging sources
- ❖ During April - October 1972 he irradiated his son on at least five occasions
- ❖ Sources in headphones, pillow, hidden in couch
- ❖ 37 GBq Cs-137 → 1 Sv/hr at 5.3 cm
- ❖ Resulted in partial hair loss, nausea, skin lesions
- ❖ In Dec 1973 a plastic surgeon diagnosed the boy's lesions as radiation-induced
- ❖ 16 operations during almost five years needed
- ❖ Irradiation also resulted in castration (permanent testosterone treatment)



1975 - 85

# Wave of attacks against nuclear power

- France
- Switzerland
- USA
- South Africa
- Spain
- Sweden

# 1976 – Arson in uranium processing facility

Sweden



Göteborgstidningen 760729

# 1976 – Bomb at bridge signal cabin at Ringhals NPP

- The 'M' group informed local newspaper GT that a bomb had been mounted at Ringhals
- Although the bomb was constructed to explode, luckily it did not



Göteborgstidningen 761128

Three more bomb attacks followed in 1977-78

Three years later, in 1981, two male activists give themselves up

GT

# TERROR-GRUPPEN

## erkände bombattentatet

Av JENS LISELL

**GÖTEBORG (GT)** – Kampen mot kärnkraften gick för långsamt.

Därför såg de två göteborgarna – 32 och 33 år gamla – våld som enda utväg att stoppa utbyggnaden.

De har nu erkänt att det var de som under täcknamnet "M" låg bakom två fullbordade attentat och tre försök runt om i Västsverige.

För ändamålet stal de 450 kilo dynamit.

Utredarna betecknar affären som den allvarligaste man utrett när det gäller den här typen av brott.

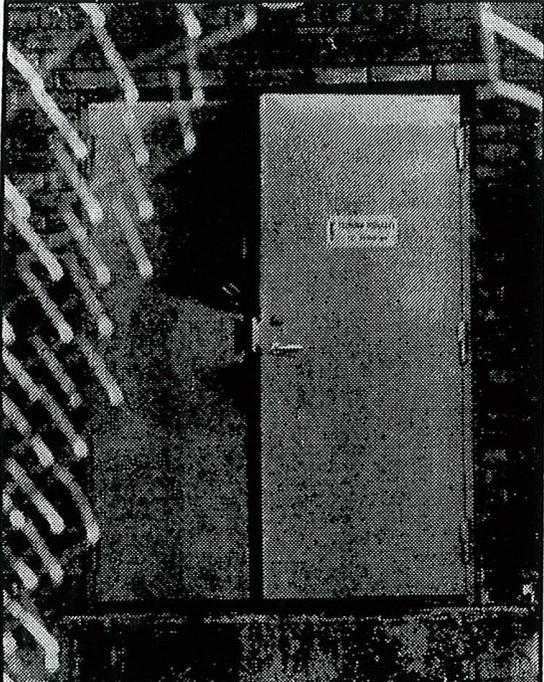
- Männens verksamhet hade kunnat få katastrofala följder, konstaterar kammaråklagare Gunnar Wieslander.
- De tekniska undersökningarna visar att det var rena turen att laddningarna inte gick av också vid Ringhals, i Lärje och utanför moderathögkvarteret i Göteborg.

Gunnar Wieslander lämnade i går in häktningsframställningarna.

### MORDBRAND

Rubriceringen är grov mordbrand, grov allmänfarlig ödeläggelse och grov stöld. Brott för vilka männen kan räkna med ett långvarigt fängelsestraff.

De anmälde sig själv hos göteborgspolisens



Det var här i ställverket vid LKAB:s urananläggning på Billingen männen bröt sig in i och antände eld. De ville på det sättet försöka hindra

20 cm diameter.

d. Jul- Bland jultall- i präg- nerna meter. er och motiv t hant- klusiv tallrik ohäng- silver

e jul- läger. gt lag-

Göteborgstidningen 811030

# 1982 – Five rockets fired at Superphénix

- ❖ Superphénix – a fast breeder reactor in Creys-Malville near the Swiss border was attacked on a January morning
- ❖ The attack created some physical damage
- ❖ In 2002, a Swiss activist, Chaïm Nissim, claimed responsibility for the attack twenty years earlier

# 1977-82 Six ETA attacks on Lemoniz

- Bilbao, Basque
- Five employees were killed in four attacks
- Lemoniz remains unloaded at an estimated cost of 3.4 Billion Euros

**Basques Strike to Protest  
Murder by Rebel Group**

**NY Times Feb 10, 1981**

# 1985 – Pu contamination of NYC tap water?

- Anonymously letter to NYC Mayor on April 1 1985 threatening to contaminate the water supply with Pu unless all criminal charges against Bernhard Goetz were dropped
- Environmental Monitoring Laboratory was requested to analyse a 175-l drinking water sample on April 16
- Concentration measured was 0.8 mBq/l, a factor of 100 greater than previous results and with unusual mass isotopic content
- Additional samples collected 1-3 months later much lower and comparable to earlier data of EML
- Impossible to conclude whether the threat to contaminate the NYC water supply was actually carried out or whether the sample was contaminated prior to receipt at EML

# 1993 – The Vladimir Kaplun murder

- Kaplun was director of Kartontara packing company in Moscow
- In March 1993, someone planted a powerful radiation source in his chair
- He died in hospital from acute radiation sickness after several weeks of exposure
- According to media reports, radiation levels in the building were “off-scale” (1.2 – 2.0 Gy / h)
- First known homicide with radioactive material



June 26, 1995 – Teenager David Hahn's home-built breeder reactor is dismantled

- ❖ Fearless of radiation effects, 'the radioactive boy scout' repeated many classical experiments and aimed to collect all PS elements
- ❖ Combining radium, beryllium, and thorium, he succeeded to construct a small "breeder reactor" in his mother's garden shed

'The  
radioactive  
boy scout'

## 2003 – China

- ❖ Dr. Gu and the victim had an argument over a collaboration on a laser treatment clinic
- ❖ Falsifying papers, Gu bought an Ir-192 source
- ❖ With the aid of an associate, the source was placed in the ceiling of Liu's office
- ❖ 74 in addition to Liu showed ARS symptoms
- ❖ Dr. Gu was given a suspended death sentence

### **news in brief**

**Researcher faces life in prison for revenge radiation poisoning**

# Dhiren Barot's master plan

- ❖ Barot was inspired by an incident in 1999 when a truck carrying 900 smoke detectors, paint, oil and alcohol was destroyed by accidental fire in Eastern France
- ❖ The overall Am-241 activity was 4 MBq. Not until several weeks later it was revealed that the cargo was radioactive
- ❖ Barot's plan involved 10 000 smoke detectors

## 2006 - Alexander Litvinenko is poisoned with Po-210

- ❖ On 1 Nov, Litvinenko received a massive dose of Po-210 (2 GBq / 10 micrograms)
- ❖ Hospital treatment without effect
- ❖ Litvinenko died on 23 Nov
- ❖ Andrei Lugovoy was later pointed out by British authorities as a likely perpetrator, but Russia refused to extradite him

# Conclusions

- ❖ Intentional radiation poisoning still is a rare event
- ❖ Particularly during the years 1975-1985, radiological terrorism existed as phenomenon, but the aim was not to cause radioactive release
- ❖ Reality shows that you have to be prepared for everything to happen!