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| Intitut für Experimental-physik, Universität Hamburg | Operating directive | Datum: 23.06.15 |
| Work category: | Valid for: | Unterschrift: |
| Experimentation and storage of radioactive materials | All persons on the grounds of the Institute for Experimental Physics | Dr. M. Tluczykont (radiation safety officer) |

DESIGNATION

Radioactive materials

Allgemeine Betriebsanweisung für den Umgang und die Lagerung radioaktiver Präparate

DANGERS FOR HUMANS AND THE ENVIRONMENT



- The effect of ionizing radiation on human beings can cause **deterministic radiation damages** (skin burn, organ damage, radiation disease, death) in case of high doses ($>1\text{Sv}$). Small radiation doses can cause **stochastic radiation damages** (Cancer, genetic damages).

RULES OF CONDUCT IN CASE OF MALFUNCTIONS



- Experimentation with radioactive materials is allowed exclusively for work related purposes.
- The basic radiation safety rules apply: justification of activity (minimization of activity), minimization of time of exposure to radioactivity, maximization of the distance to the source, optimization of the shielding.
- The following regulations apply: Radiation safety act (*Strahlenschutzverordnung, StrlSchV*, see Foyer Building 67, or internet), the presidential regulation (*Strahlenschutzverordnung des Präsidenten der Universität Hamburg*), and section 'H' of the *Sicherheitsordnung des Instituts für Experimentalphysik*.
- Each person exposed to radiations must be instructed by the radiation safety officer prior to activity.
- The attendance of yearly radiation safety instructions is mandatory.
- Transport of radioactive materials on the DESY campus is allowed exclusively in cooperation with the radiation safety officer.
- Radioactive materials must be stored in well shielded, lockable containers (safes). In addition to the safes in the main storage room for radioactive materials, safes are made available at the experimentation sites (laboratories), in order to minimize transportation.
- Radioactive sources can be issued to experimentators by the radiation safety officer exclusively for work purposes. The reception of the source must be confirmed with signature and date by the experimenter and is counter-signed by the radiation safety officer.
- The procurement of radioactive materials can only be arranged via the radiation safety officer.
- Access to controlled radiation areas (*Kontrollbereich*, with more than 2mSv/year and less than 6mSv/year) is restricted to persons wearing an official personal dosimetric device.
- Enclosed radioactive sources above a certain activity must undergo an official yearly inspection. At the time of this inspection, the sources must be handed back to the radiation safety officer.
- Facilities and constructions fulfilling the purpose of protection against radiation (shielding, Transport boxes) must not be modified.

VERHALTEN BEI STÖRUNGEN



- In case of malfunction or accidents (e.g. high radiation exposure, contamination of persons or rooms, damage or loss of radioactive sources, fire):
- Inform the radiation safety officer, coworkers, and the group leader.
- In case of starting fires: if possible without endangering oneself, fight the fire. Every fire must be reported to the technical emergency service, *Technischer Notdienst*, (5555).



- In case of serious emergencies: **emergency call 2500**:
- Evacuate persons without endangering oneself
- Small injuries can be served using the emergency kits, apply first aid.
- Inform radiation safety officer and first aid staff.

CONSEQUENCES OF NON-COMPLIANCE

- Health issues: injuries and sickness
- Contract-related consequences: „*Abmahnung, Verweis*“