

EMERGENCY PLAN FOR A URANIUM AND PLUTONIUM HANDLING LABORATORY

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INTRODUCTION

The Austrian "Radioprotection Law" (1)(2) requires for laboratory where open sources like Uranium and Plutonium are handled, that an emergency plan and system must be established, specifying responsibilities and the sequence of actions to be taken in the event of radiation accidents involving individuals or premises.

Radiation accident situations may be confined, i.e. limited in their effects to single individuals or to isolated locations within an establishment, or unconfined and thus having effects upon many individuals and/or many locations within an establishment and its environ.

The purpose of the emergency plan for such a laboratory is thus to establish a system of preparedness, through standing arrangements and specific working instruction by which to mitigate the consequences of any foreseeable unconfined radiation accident situation, which may occur.

SUMMARY

There are three sub-categories of unconfined radiation accident situation in this emergency plan:

a) Emergency Standby

being a situation where no actual radiological hazard exists within the laboratory, but where the potential for the development of such hazard is foreseeable.

b) Emergency Alert

being a situation where unacceptable radiological conditions exist or appear to be unavoidable, such that protective measures are to be effected without delay and the controlled evacuation of all personnel from the radiation area of the laboratory is necessary.

c) Fire in the laboratory

whilst not necessarily involving radiological hazard, is unquestionable the most serious foreseen accident condition, which may occur. For this reason a fire detection system was designed and installed to

provide automatic audible and visible annunciation throughout the laboratory in the event of an outbreak of fire. It requires urgent evacuation of all personnel from laboratory.

Detection and Announcement of Emergency Situations

A comprehensive automatic surveillance system was installed throughout the laboratory to detect and annunciate the occurrence of any abnormal condition such as, outbreak of fire, unacceptable concentration of airborne contamination, power supply failure, flooding, ventilation plant failure. The system categorises each individual alarm condition with respect to its significance to emergency situations.

Within the working time it is the responsibility of the head of the laboratory or his deputy to announce any occurrence of an emergency situation. Outside normal working hours all alarm situations are detected in the control room of the plant (reactor center Seibersdorf). A standby team who was created in order to ensure that experienced laboratory staff are available at all time, is then informed.

Emergency Teams

Inside the laboratory the responsibilities are given to different emergency teams. The overall responsibility for the supervision has the so-called Emergency Controller (who is normally the head of the laboratory). Others are the health physicist, the fire warden, the lift warden, the first aid officer, the security officer.

The different responsibilities are divided to:

Health Physicist

Provides in the event of radiation accident situation measures necessary to minimize the radiological hazard to personnel and property, conduct the necessary surveillance through which to determine the extent and degree of the radiological hazard and coordinate the necessary decontamination measures. Devise and conduct periodic exercises and training programs to ensure the continuing effectiveness of the emergency plan.

Fire Warden

In the event of fire supervises the initial fire fighting undertaken by the laboratory staff and acts as liaison officer for the plant fire brigade. Devises and conduct also periodic exercises and training programs relating specifically to actions to be taken in the event of an outbreak of fire.

Lift Warden

Supervises the technical measures necessary to rescue any individuals trapped within the lift. Conduct periodic inspections of the emergency equipment installed within the lift.

First Aid Officer

Coordinates the measures necessary to rescue any individuals trapped in the laboratory. Training of the laboratory staff in first aid together with the medical officer.

Security Officer

Maintains at all times, an accurate list of all personnel within the operational area of the laboratory.

Dependent upon the severity of an emergency situation the emergency controller may call for help from the control room of the plant, where are the complete health physics group, a decontamination group, a medical and first aid group and a fire brigade is available.

Additionally there are arrangements made to transport and to permit the treatment of injured persons at the "Unfallkrankenhaus Meidling", where in particular, basic facilities are available to deal with contamination control.

Another arrangement has been concluded with the civil fire brigades from the nearby towns for support services in the event of a serious outbreak of fire.

Emergency Equipment

In addition to the health physics monitoring equipment, routinely employed in the laboratory, equipment specifically provided for emergency utilisation is located at a special assembly point. Additionally emergency equipment is also available in the plant emergency research.

CONCLUSION

During five year operation of this uranium and plutonium handling laboratory there was no unconfined radiation accident situation.

A few exercises were organized for the training of the different emergency troops and to see if the alarm systems and the standby teams are proper working so that all than can be foreseen for a radiation accident situation is in order.

REFERENCES

1. Das Strahlenschutzgesetz, BGBl.Nr. 227/1969
vom 11. Juni 1979
2. Die Strahlenschutzverordnung, BGBl.Nr. 47/1972
vom 12. Jänner 1972.