Occupational radiation protection of employees in industrial irradiation facility in Serbia - Risk Analysis ID:152

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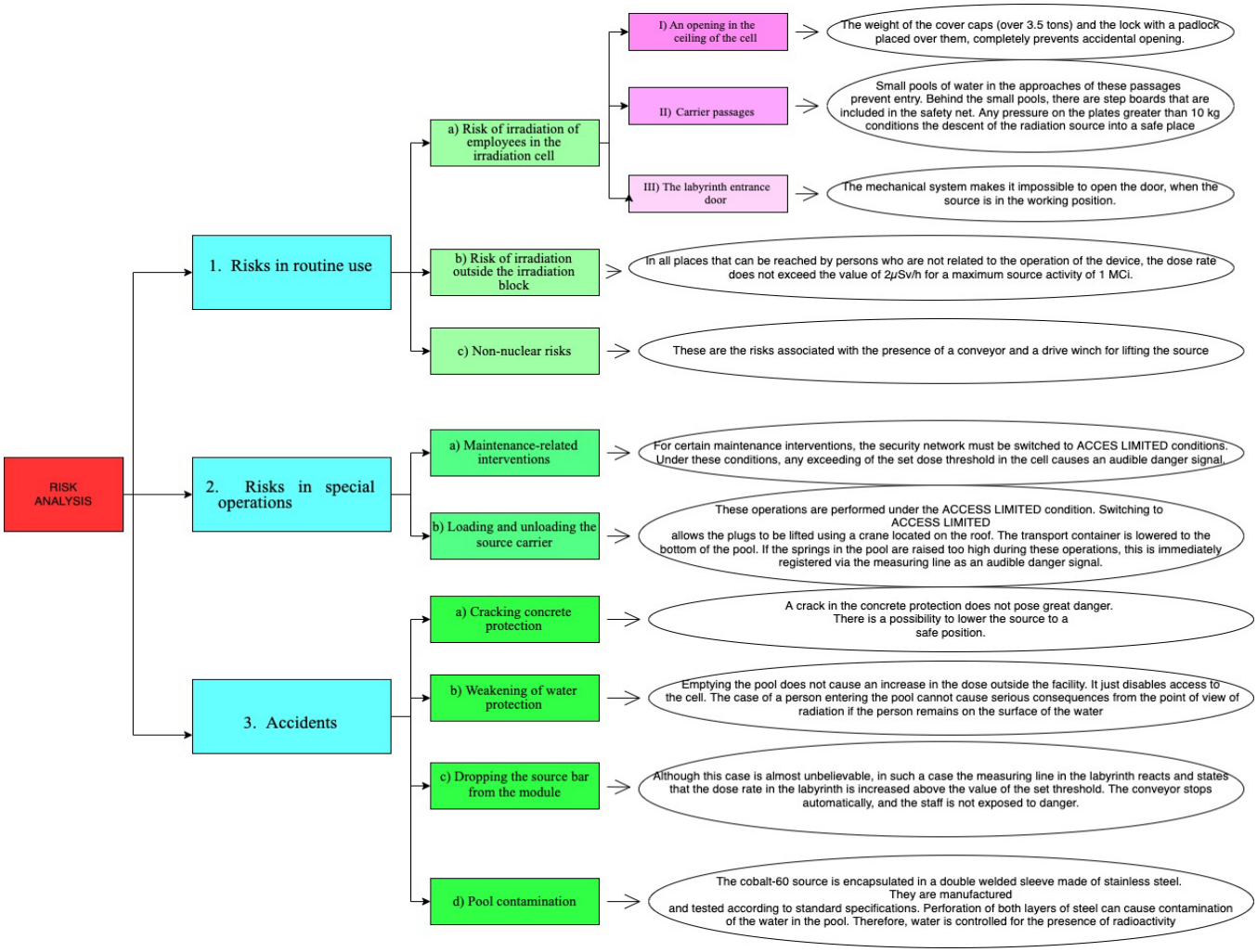
. Introduction

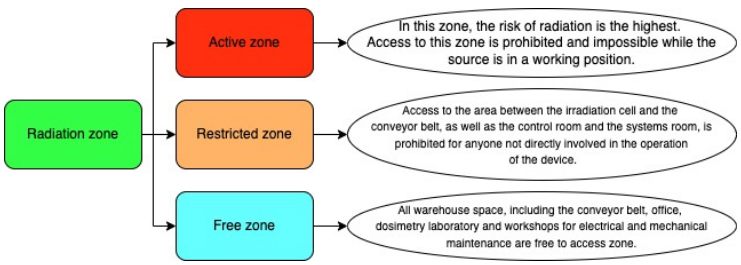
ıdustrial gamma irradiators are usually designed to deliver high gamma radiation doses. Therefore, they must include many engineering features to protect people from irradiation xposure. They are designed to be used indoors and protected from changes in weather, temperature, and humidity. When the radiator is used in accordance with the ıanufacturer's declaration, there is less risk to radiation safety. Improper maintenance can lead to damage or failure of the radiator and to high exposure rates in the vicinity of the ıdiator. Unauthorized access to the radiator can be dangerous. Therefore, operational procedures should address access control and accountability.

. Risk analysis

ːisk analysis describes all unplanned situations risks that may occur during the operation of the Radiation Facility. All risks in the Radiation Facility can be defined as follows:



. Risks depending on the radiation zone



DECONTAMINATION

In case of contamination, the following operations should be performed:

- The sources are packed in a shipping container and removed.
- The water from the pool is allowed to circulate through the demineralizer, which is replaced from time to time with the ion exchange resin. The time to replace the resin is determined by monitoring its radioactivity during operation.
- When the level of radioactivity in the water drops below the permitted value, it should be poured into the sewer.
- The surface decontamination of the source holders and the metal walls of the pool is carried out. A specialized decontamination team performed this.

. Conclusions and Acknowledgements

The radiation processing industry in Serbia, has been operating safely for over 50 years, using gamma radiation. The annual radiation dose for personnel inside the facility usually does not exceed the natural radiation dose of cosmic and terrestrial radiation. Irradiation facility operates in accordance with international, national, and regional standards and regulations. Risk analysis is the process of identifying and analysing potential problems that could negatively affect the operation of the radiation facility, the safety and health of employees, and the impact on the environment.
This paper presents an analysis of all risks in the Radiation Unit of the Vinca Institute of Nuclear Sciences in Belgrade, Serbia.
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