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#6-9 An Italian software infrastructure for the safe use and tracking of HASS and their use and management

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In recent years, the management of radioactive materials, especially High Activity Sealed Sources (HASS), has come under increased scrutiny due to heightened concerns regarding radiation safety and regulatory compliance. These sources, which have a wide array of applications in industry, medicine, and research, require strict control mechanisms to ensure their safe use and handling. To address these needs and comply with the new Italian regulation DGLS 101/2020, CAEN, in collaboration with the University of Bologna, has developed a robust software infrastructure that integrates seamlessly with the Italian national ISIN STRIMS portal for the management and tracking of radioactive materials with a handheld gamma spectroscopy system, the Rad-Hand to associate the source information to the HASS database. This solution provides an all-encompassing framework for ensuring both safety and compliance in the management of HASS while improving operational efficiency.

The regulation mandates rigorous protocols for the management of radioactive sources, including real-time reporting to the national authorities via the STRIMS portal. This platform is designed to ensure full transparency and traceability of radioactive materials within Italy. A central feature of the software is its integration with the STRIMS portal. This integration significantly reduces the administrative burden on organizations by automating the process of submitting information to national authorities, ensuring that all required data is accurately reported in real time. In addition to compliance with STRIMS, the system includes not only the registration of radioactive materials, but also the control of their movements, and detailed logging of their use using the RadHand system and RFID tags associated to sources, containers and users. A key innovation is the use of RFID technology for identifying both operators and the radioactive sources they are working with. Each source is equipped with an RFID tag that allows for its unique identification, while operators are also equipped with RFID badges that identify them within the system. This dual-identification mechanism ensures that only authorized and qualified personnel are allowed to handle radioactive materials. Another critical feature of the software is its ability to track not only the radioactive sources but also the activities and locations in which these sources are being used thanks to the RadHand that, in parallel to provide physical information allows the user to work safely providing dose rate and spectroscopic information. In addition to real-time tracking and safety features, the software infrastructure also stores all collected data in a secure, centralized database. This database not only facilitates the generation of the required outputs for STRIMS but also serves as a repository for historical data on the use of radioactive sources. Organizations can use this database for internal audits, performance reviews, and future planning. The availability of historical data also aids in identifying trends in the use of radioactive materials, allowing organizations to improve their operational procedures over time.

In conclusion, the infrastructure developed by CAEN and the University of Bologna represents a significant advancement in the management of High Activity Sealed Sources. By integrating real-time tracking, automated regulatory reporting, comprehensive safety features, and a complete database, this solution offers a robust framework for the safe and efficient handling of radioactive materials. The system not only improves worker safety and operational efficiency but also simplifies the compliance process, making it easier for organizations to meet the stringent requirements of DGLS 101/2020. As the use of radioactive materials continues to grow in various industries, solutions like this will play a critical role in ensuring both safety and regulatory compliance.

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