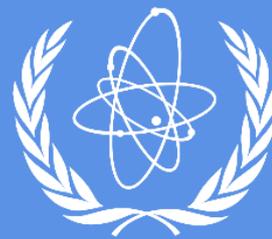


*Tired of all regulations for
nuclear sources?*



REGULATIONS FOR NUCLEAR GAUGES
WHITEPAPER

INTRODUCTION

Are you struggling with regulations for your radiation source? You are not the only one. End-users in different industries are tired of all regulations for radiation-based gauges.

This whitepaper describes issues of nuclear regulations followed by a conclusion and a solution to solve these issues.



WHY REGULATIONS?

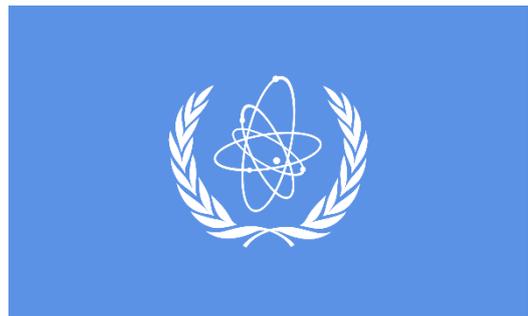
Governments are implementing new rules for the use of radioactive sources and existing rules are getting stricter. They have agreements with the International Atomic Energy Agency (IAEA). This is the world's centre for cooperation in the nuclear field. They seek to promote safe, secure and peaceful use of nuclear technologies. About 170 countries are member of this agency.

Member states have local nuclear agencies or commissions who are mandated by the governments to implement IAEA guidelines and regulations as part of an agreement signed by them. Not only governments, but also more and more companies are taking their responsibility by implementing new 'green' policies with more care for the environment and safe working conditions.

The following five topics are highlighting common regulations and the related issues.

1: LICENSES AND APPLICATION

In most countries companies need to have a license for the use of nuclear sources. Local governments or nuclear agencies are responsible for publishing and maintaining a list with licensees, including details about the company, the location, the number of registered sources and the expiry date of the license. The license application brings an administration workload and costs. Without a license, it is hard to start using radiation based measuring instruments.



2: RULES FOR DISPOSAL

What am I going to do with the old source? Most countries have companies which are offering disposal services. Also, most if not all countries with nuclear capabilities have signed treaties that say in part, if they manufacture Radioactive Material (RAM) they must also take responsibility for the disposal of it. This means that radioactive sources must be returned to the country of origin.

This regulation helps to stop dumping of radioactive material and it means that the RAM manufacturer must be prepared to have the radioactive material returned to them for disposal.

Transportation can be an issue if the source manufacturer is located in another country.

3: SOURCE DISPOSAL COSTS

Only authorized companies can help with the disposal of the source. Some licensees do not know where to go for disposal of the source and need to search for an authorized company or responsible authority to carry out the work. This could result in high costs, for example: between 2,000 – 7,000 US\$ in the United States. This is only if there are no additional costs to solve safety problems with the radiation protection shielding. The company will check the sealing first to make sure that there is no leakage of RAM.

Local disposal can lead to great expenses, therefore usually the industry is searching for a local RAM manufacturer with a good reputation and with capabilities to dispose of RAM that they manufacture.

4: RULES FOR INSPECTIONS

Some countries mandate users of radiation sources to hire authorized companies to periodically inspect the outside of the source for radioactivity leakage.

A certified company takes samples from the radiation protection shield and shares the results with the client and local authorities. This inspection is called a wipe test or a leak test. First the surface of the protection shielding is covered and cleaned with an ethanol solution, then a cotton swab is used to check for surface contamination (e.g. with a cobalt-60 radioactive isotope).

Records are reviewed and approved by inspectors and are kept for a certain period (e.g. three years).

5: RSO CERTIFICATION

Governments, agencies or commissions are responsible for conducting Radiation Safety Officer (RSO) courses. These regulations are part of IAEA guidelines and agreements.

Employees have to be trained to handle radiation sources and safety procedures at site. They attend RSO training courses periodically which are paid by the company.

When an RSO leaves the company, a new employee has to be trained. At least one radiation safety officer needs to be on-site. If an RSO employee is temporarily unable to work, this could result in difficult situations.



CONCLUSION

There are a lot of regulations for companies who want to work with radiation sources. Before buying a radiation density gauge, the buyer should be informed by knowledgeable parties for selection of RMA manufacturers with a good reputation to decrease the risks for high costs at the end.

MORE INFORMATION?

Please contact us if you have any questions about this whitepaper or if you recognize any of these regulation issues. We are always happy to offer assistance. Rhosonics helps the industry to eliminate costs and risks associated with the radiation source by offering 'green' solutions.

ACKNOWLEDGEMENT

Information of this whitepaper is based on descriptions on the official IAEA website, local radiation safety institute websites. We would like to thank the Canadian radiation service providers and end-users in the mineral processing industry who helped to write this paper by sharing their expertise with us.

NOTICE

Please note that the regulations can be different for each industry and region, depending on the restrictions of local governments. There are certainly more regulations and issues to mention and not all are included in this list.



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ABOUT US

Rhosonics is based in the Netherlands. We design, produce, and supply state of the art ultrasonic instruments for different industries, such as the dredging industry, mineral processing industry and the flat panel display industry. The company cooperates with distributors and system-integrators to offer the best technology solutions for specific applications.

Rhosonics was founded in 1992. Since then, the company has grown to a major player in offering sustainable measuring instruments in slurry applications.

