



## Protection and Safety Programme Advice – Portable Gauges

A protection and safety programme tells how the licensee will protect people and the environment. This programme should include management arrangements, procedures and equipment.

After FANR has reviewed and accepted the programme, it will become a part of the licence. That is, licensees must meet the commitments they have made in these programmes.

A portable gauge protection and safety programme should have the following:

### **1. Safety Assessment**

This is the basis for the protection and safety programme. It should deal with each type of radiation source used by the licensee, and include the licensee's equipment, procedures and operations. It should estimate the doses due to routine operations and the potential doses due to accidents. Based on this information it should specify the radiation protection equipment and procedures that the licensee needs.

A licensee that is already in operation should conduct a safety assessment to check whether any additional safety measures are needed.

### **2. Information about the licensee**

Include

- The number and types of gauges that the licensee uses, including the radionuclides used and their activities
- The number of staff who work directly with gauges
- A floor plan showing where gauges are stored

### **3. Radiation safety policies**

Provide a commitment to comply with FANR regulations and licence conditions. Include a commitment to support this protection and safety programme.

Include a procedure to notify FANR at least thirty days before any significant changes to equipment, responsible staff or radiation protection arrangements.

### **4. Management structure**

Include an organization chart showing the reporting chain. through clear lines of responsibilities and accountability. Include the duties and authorities for radiation safety of managers, supervisors and workers. Identify roles of radiation protection officers (RPO) and



their duties, authorities (supported by documented delegation) and access to managers. Include a requirement that staff must be qualified for their duties. Include a procedure for making sure that workers understand and acknowledge their duties.

## **5. Occupational Protection**

Include what will be done to keep workers' doses within your dose constraints (an occupational dose constraint of 3 mSv/year is regarded as reasonable). Include a procedure to train workers about what they should do to protect themselves from radiation.

Include how pregnant workers are encouraged to notify management and how management will adapt their working conditions to protect the foetus without excluding the women from work.

Include how persons under 18 are protected from radiation

Specify any controlled areas or supervised areas, and say why they are established. Controlled areas usually include gauge storage facilities. Include how these areas are monitored, how access is restricted and what protective measures are used.

## **6. Individual and workplace monitoring**

- a) For individual monitoring, provide written procedures for worker dose assessments. Include how workers who are monitored are identified. Include arrangements for using an approved dosimetry service and rules for returning and changing dosimeters. Include how the RPO will review doses and how accumulated doses will be recorded. Include procedures for dealing with worker overexposures and lost or damaged dosimeters. Include investigation levels. Provide procedures so that dose records contain the information FANR requires, are kept as long as FANR requires, and are made available to workers. Include a procedure for reporting worker doses to FANR every six months.

Instead of individual monitoring, licensees can provide an evaluation showing that a worker is not likely to receive more than 2 mSv/yr. This evaluation can be done on the basis of prior experience, such as doses measured by the licensee or doses measured by others in similar situations; area surveys; or a calculation, based upon source strength, distance, shielding, and time spent in the work area.

- b) For workplace monitoring, include how controlled and supervised areas are monitored for radiation and how often they are checked.

Have access to a survey meter that can measure gamma radiation from 0.1 micro Sv per hour through 0.5 mSv per hour. Have access to a meter that can measure neutron radiation.

- c) Health surveillance should include assessing workers' fitness for their tasks and detecting any occupational health issues they may have. Include preventing deterioration of workers' health, and evaluating how effective the licensee's radiation control measures are. Provide for asking whether the workplace needs to be changed to improve workers' health.



## **7. Public Protection**

Provide the licensee's procedures for keeping doses to the public below an acceptable public dose constraint of 0.1 mSv/yr. (FANR will consider a dose constraint of up to 0.3 mSv/year if the Licensee provides a reason for why a dose constraint of 0.1 mSv/year is impractical<sup>1</sup>.) Include how public exposures will be monitored and recorded to be sure these constraints are met.

## **8. Safety of gauges**

Discuss how the licensee will make sure that it buys the right gauges for its needs and how it will make sure they meet international quality standards.

Provide inspection, calibration & maintenance procedures. Discuss how equipment will be tested according to international standards. Include software. Include how the licensee has or has access to leak testing capability.

Include how the licensee will keep gauges secure, including

- Keeping an inventory of all gauges, including their descriptions, where they are located and who is assigned to keep the inventory include criteria to submitted update inventory to FANR;;
- Keeping gauges from being stolen or damaged and keeping unauthorized persons from using them either where they are used or where they are stored.

This section should also include procedures for controlling gauges, including

- Procedures to keep them from being transferred unless the receiver is authorized to have them;
- Procedures to notify FANR after receiving or transferring them;
- Procedures to notify FANR if a gauge is lost, stolen or damaged, as required by REG-24, Article (19); and
- Procedures to send FANR the licensee's inventory of gauges twice each year

## **9. Operating procedures**

These should be written procedures for workers to follow. They should be clearly displayed or easy for workers to find and should be written in all of the languages that the workers may use. Include routine operations and transport.

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<sup>1</sup> See FANR Regulatory Guide 007, 'Radiation Safety', page 11.



## **10. Employee training**

Provide the radiation safety training programme for all workers who work directly with gauges. The training should emphasize the procedures the workers must follow. Include how worker attendance at training will be recorded and how the workers will be tested to make sure the training has been effective. As well as the periodic of the retraining should be identified.

## **11. Incident reporting and investigation**

Provide procedures for reporting incidents and accidents to FANR and procedures for investigating them. Include procedures to meet the reporting requirements in of FANR-REG-24, Article (19).

## **12. Emergency Response Plan**

Begin with a list of predictable incidents and accidents and the procedures that will be followed to deal with them. Include immediate actions to minimize doses to workers and the public. Include how the public will be kept away from affected areas until conditions have been returned to normal.

Describe the duties of each person who will respond to the emergency. Include workers, radiation protection officers and responsible supervisors and managers. Include the names and complete contact information for these persons.

Provide for simple instructions to be clearly visible and for any equipment needed for emergency response. Include reporting procedures, along with the contact information needed to report accidents to all responsible authorities.

Provide for Emergency Response training that includes drills, exercises and refresher training.

## **13. Import/Export**

Provide the procedure for getting permission from FANR to import and export gauges. Licensees must ask FANR for a permit in advance of each shipment.

## **14. Transportation**

Portable gauge users will be involved in transportation as shippers, carriers and receivers. They should provide

- Procedures for ensuring that the gauges are properly constructed and labeled for transport. Include procedures for preparing transportation documents and for notifying FANR and other authorities.
- Procedures for meeting vehicle requirements; for loading and stowing gauges and for putting placards on the vehicle.



- Procedures for receiving gauges. Include procedures for surveying them, confirming their shipping documents, and notifying FANR that the packages have been received.
- Procedures for training workers who do any of the above things.

### **15. Waste management**

Include procedures to manage, store, document and dispose of gauges that are no longer used, including return to the suppliers, as appropriate supported with financial/administration security for safe disposal or return to supplier.

### **16. Quality Assurance**

Provide the licensee's Quality Assurance (QA) programme. Include a process for writing procedures, for changing them and for documenting the changes. Also include a process for confirming compliance with the procedures.

Include procedures to make sure safety equipment and safety systems are checked regularly and that problems are corrected.

Include procedures for periodically reviewing and auditing the licensee's safety performance. Include the performance of this protection and safety programme. Include corrective action procedures.