

TRAINING COURSE ON RADIATION SAFETY ASPECTS OF NUCLEONIC GAUGES (NG)

Purpose:

Nucleonic gauges find many non-destructive applications in industry for in situ determination of thickness, density and composition of materials, measurement and control of processed materials in closed containers, analysis of ores and minerals, well logging and in agricultural field for determination of moisture content in the soil etc. It is mandatory for the institutions handling nucleonic gauges, particularly those which are in possession of gamma and neutron sources, to have personnel trained in radiological safety and duly approved by the competent authority. Training course on Radiation Safety Aspects of Nucleonic Gauges (NG) provide necessary training to the sponsored personnel for this purpose.

Eligibility : Degree in science or Degree/Diploma in engineering. Each candidate be sponsored by the institution

Duration : Six working days

Frequency : This programme is conducted on need-basis at Mumbai. The training programme is normally scheduled when sufficient applications (30-35) are received.

Venue : It is normally conducted at Centre for Training & Certification in Radiological Safety (CT & CRS), Anushaktinagar, Mumbai-400 094. It may also be conducted outside Mumbai, at the site of institution on request, if there is good number of participants (at least 25) for the training.

Syllabus :

A. Lectures

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| 1. Basic Radiation Physics | (1 Lecture) |
| 2. Interaction of Radiation with Matter | (1 Lecture) |
| 3. Radiation Quantities and Units | (1 Lecture) |
| 4. Biological Effects of Radiation | (1 Lecture) |
| 5. Operational Limits | (1 Lecture) |
| 6. Radiation Detection & Measurement
(Work Place & Individual Monitoring) | (3 Lectures) |
| 7. Nucleonic Gauges | (2 Lectures) |
| 8. Radiation Hazard Evaluation & Control | (3 Lectures) |
| 9. Transport of Radiation Sources | (1 Lecture) |
| 10. Waste Disposal Procedures | (1 Lecture) |
| 11. Regulatory Aspects | (1 Lecture) |
| 12. Safety & Security of Sources | (1 Lecture) |
| 13. Safety Standards for Ionizing Gauging Devices | (1 Lecture) |

B. Practical Demonstrations

1. Radiation Detectors & Properties of Radiation
2. Types of Nucleonic Gauging

Examination : Written and viva-voce examinations will be conducted towards the end of the course. For qualifying the examination, a candidate has to score minimum 40% marks in each examination and 50% in aggregate.

Course fee : The course fee is charged at the rate of Rs 7500/- + Rs 773/- (Service Tax @ 10.3%) per candidate and it should be paid by Demand Draft, payable at Mumbai and issued in favour of 'IARP Training Course'. It can also be paid by Cheque at par.

If the training is to be organised outside Mumbai at the site of institution, a consolidated fee of Rs. 1,70,000/- (Rupees One Lac Seventy Thousand only) plus Service Tax as per the Gazette Notification, is to be paid. The fee is worked out on the

basis of the man-hours and the official grade of officers being deputed for conducting the course.

Formalities to be completed by the institution if training is to be conducted at their site:

Each participant of the training has to submit an application form to GCTC, IARP, in advance. The format of application is enclosed herewith for reference.

The institution has to ensure the submission of application form before the start of training. The set of applications, complete in all respects, may be sent to 'Course Coordinator, IARP, C/o RP&AD, CT&CRS, Anushaktinagar, Mumbai – 400 094'. Before forwarding the applications, it should be ensured that

1. Applicants have basic qualification as referred above.
2. Self attested copies of qualifying educational certificates are attached with each application.
3. Applications are duly signed and stamped by the sponsoring authority.

(Incomplete applications will be rejected)

*** For arranging the training course at the site of institution, the institution should pay 30% of the fee in advance to the organising body of training* (i.e. to IARP). Apart from the course fee, the institution has to bear the TA/DA for three/four visiting officials as applicable to Central Government employees. Details about TA/DA are given below.**

In addition to this, the institution has to provide teaching facilities e.g. lecture hall, LCD projector, white/black board, scribbling pad, laser pointer, monitoring-survey instruments and arrangement for practical demonstration at the venue of training

The rates of TA/DA for Institution each officer would be as follows:

1. Hotel Tariff for stay (per day) : Rs 4500/-
2. DA varies as per the class of city.
 - A1 city : Rs 550/- per day
 - A2 city : Rs 400/- per day
 - B1 city : Rs 350/- per day, and
 - B2 city : Rs 250/- per day
3. Taxi fare to travel every day from hotel to the venue of training and return.
4. To & fro Air Fare to travel from Mumbai to nearest air port of the city of institution.
5. Contingency expanses i.e. two sides taxi fare for travel to air-port in Mumbai

If the institution provides free boarding, lodging and local travel; each officer is entitled 30% of DA mentioned above.

Government of India
Bhabha Atomic Research Centre
RADIOLOGICAL PHYSICS & ADVISORY DIVISION

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CT & CRS
Anushaktinagar
Mumbai-400 094.

**APPLICATION FOR THE TRAINING COURSE ON
RADIATION SAFETY ASPECTS OF NUCLEONIC GAUGES**

1. Name in full :
(in block letters)

2. Date of birth :

3. Father's Name :

4. Permanent address :
(with PIN code)

5. Official address :
(with PIN code)

Affix recent ID card
size photograph

Fax No.

e-mail address for communication:

6. Educational qualification (Use additional sheets if required. Attested copies of educational certificates to be attached)

Degree/Diploma examinations passed	Name of University /Institution	Year	Class & Marks	Subjects

6. Experience in handling Nucleonic Gauges: ----- Years.

8. Details of training in radiation safety :
(if attended in the past)

9. Personnel monitoring services No., if any :

10. Particulars of nucleonic gauges in use (existing/proposed)

Make & Model Of gauge	Radiation Sources	Activity	No. of Sources	Existing Proposed

11. List of persons already trained in the above course

Name	Year of training	Details of present duties

Certified that above information is correct to the best of my knowledge

Place :

Date:

Signature of candidate

Shri/Smt./Kum.----- is an employee of this institution. On successful completion of the course , he/she will be provided with all the facilities to carry out his/her duties as Radiological Safety Officer.

Signature & Seal of the sponsoring authority

Name, designation & address of sponsoring authority

Note: Enclose one stamp size photograph with application. Mail the duly filled application at the address - `Course Coordinator, IARP, C/O RP&AD, CT&CRS, Anushaktinagar, Mumbai – 400 094.