

## **Training & Certification Course for RSO for 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 those 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 the said purpose.

### **Eligibility**

The candidate should possess Degree in science or Degree/Diploma in engineering. Sponsored candidates are given preference for admission to the course.

### **Duration**

It is 9 days programme including Saturday and Sunday which contains 18 lectures on different topics related to radiation safety and two practical demonstrations.

### **Frequency**

Training programme are conducted on need-basis. It is normally scheduled if sufficient applications (about 30-35) are received.

### **Venue**

Training programme is conducted normally at Radiological Physics & Advisory Division (RP&AD), Centre for Training & Certification in Radiological Safety (CT & CRS), Anushaktinagar, Mumbai-400 094. *Depending upon the availability of facilities and adequate number of participants, this training can be arranged at user institution on request.*

### **TOPICS THAT ARE COVERED DURING THE TRAINING COURSE**

#### **Topic**

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|--|-------|
| 1. Basic Radiation Physics                         | : 1 h |
| 2. Interaction of Ionising Radiation with Matter   | : 1 h |
| 3. Radiation Quantities & Units                    | : 1 h |
| 4. Principles of Radiation Detection               | : 2 h |
| 5. Radiation Monitoring Instruments & Measurements | : 1 h |

6. Biological Effects of Ionising Radiation	: 1 h
7. Operational Limits	: 1 h
8. Radiation Hazard Evaluation & Control	: 3 h
9. Types of Nucleonic Gauges	: 2 h
10. Safety Standards for Design of Nucleonic Gauges	: 1 h
11. Regulatory Aspects of Radiation Safety	: 2 h
12. Unusual Occurrences in Nucleonic Gauges	: 1 h
13. Procedure of Trans of Radioactive Sources	: 1 h
Group Discussion	

### **Demonstration**

1. Nucleonic Gauges & Leakage testing
2. Radiation Monitoring Instruments

### **Examination**

Written examination and viva-voce will be conducted towards the end of the course. To be successful in the training one has to score minimum 50% in written and viva-voce each and 60% in aggregate. The successful candidates would be issued qualifying certificate. In case a candidate could not succeed in first attempt, he/she shall be given two more attempts for reappearing in examination. A gap of minimum three months between the examinations is necessary for re-appearance.

### **Course fee**

Course fee is revised time to time. Rs.7500/- (Rupees Seven thousand five hundred only) + Service Tax (ST) on fee @ the rate notified by Union Government. Each candidate has to pay total (fee+ST) before registering in the training programme. The sum is to be paid by crossed **Demand Draft (DD)** or **Multi-City cheque payable at par** in Mumbai. The DD or cheque should be drawn in favour of '**IARP Training Course**', payable at Mumbai.

### **How to apply for admission to the course**

A candidate has to fill up an application form in a particular format. The format is available on this web site. It may be down loaded and used for the registration purpose. The duly filled form must be forwarded by the Head of institution. The application along with course fee may be posted at the address '**Course Coordinator, IARP, C/O Radiological Physics & Advisory Division, CT&CRS, Anushaktinagar, Mumbai – 400 094**'.

Each application must necessarily be forwarded by the Head of the institution. While forwarding the application it should be ensured that the application is complete in following respects:

1. Self-attested copies of the certificates in support of educational qualification are enclosed.
2. Application is duly signed and stamped by the sponsoring authority.

### **Instructions to the Candidate and Sponsoring authority**

The candidates are admitted for training on the conditions listed below. Once the candidate confirms the participation in training, she/he and the sponsoring authorities have to agree and abide by these conditions and rules. The sponsors and/or candidates would be responsible for any violation of these conditions.

1. Duly filled in application form with a self-attested copy of final qualification certificate.
2. The course fee is non-refundable, if the candidate withdraws from the training or remains unsuccessful in examination.
3. No candidate would be permitted to participate in the training without payment of course fee & Service Tax in advance.
4. Participants will have to make their own arrangement for boarding, lodging and travel during the entire training period.
5. Participants will compulsorily be present physically all days during the entire training period.
6. The participants are required to abide by the rules and regulations stipulated / prevailing at the course venue. They will required to display the temporary I-card, issued to them during their movement in and around the venue of training.
7. **Medical care** of the candidate will be sole responsibility of the candidate or sponsoring authority during the entire training course.
8. At the end of the course participant would participate in written and viva-voce examination(s) conducted by Radiological Physics & Advisory Division, Bhabha Atomic Research Centre, Trombay, Mumbai – 400 085 and successful candidates would be issued qualifying certificate.
9. Wherever possible e-mail ID / contact number of the participant / Fax number of sponsoring agency may be given for speedy communication.
10. Completed form in all respects must reach IARP office at '**Course Coordinator, IARP, C/O Radiological Physics & Advisory Division, CT&CRS, Anushaktinagar, Mumbai – 400 094**', for scrutiny at least 15 days prior to the commencement of training.
11. Once a candidate receives admission letter or intimation from organisor, she/he will have to confirm the willingness of participation before the last date mentioned therein. In the absence of receipt of willingness from admitted candidate, it would be presumed that she/he is not willing in participation and her/his candidature would be cancelled. The next candidate in waiting list would be admitted in her/his place.

**Kindly note, that incomplete applications are subjected to be rejected.**

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

Telephone: 2551 5040/4625/4384/4452 Extn.213  
Fax: 25519209

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)  
e-mail address :

2. Date of birth :

3. Father's Name :

4. Permanent address :  
(with PIN code)

5. Address of institution :  
(with PIN code)

Fax No. of Institution:

5. Educational qualification

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

Affix recent ID  
card size  
photograph

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:

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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 of the sponsoring authority

Name, designation & address of sponsoring authority

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- Note :
1. Enclose one more copy of the photograph of the candidate with the application.
  2. Attested copies of the certificates in support of educational qualification are enclosed.
  3. Application is duly signed and stamped by the sponsoring authority.
  4. Attach DD drawn in favour of 'IARP Training Course', payable at Mumbai, towards course fee.
  5. Incomplete applications in any respect are subjected to be rejected.
  6. This application may be posted to: **Course Coordinator, IARP, C/O RP&AD, CT&CRS, Anushaktinagar Mumbai – 400 094.**