Order nr. 155/2.10.2003

Published in the Official Bulletin, Part I no. 873/09.12.2003

Approving the Norms on operational radiation protection for the development of the Non-Destructive Testing practice with ionising radiation

In accordance with the provisions of the:

- Law no. 111/1996 on safe deployment of nuclear activities, republished, with subsequent modifications and completions;
- Urgency Government Ordinance no. 64/2003 establishing the steps for setting-up, organization, reorganization or functioning of some structures of the Government body, ministries, other specialized authorities of the public central administration and of other public institutions,

The President of the National Commission for Nuclear Activities Control issues the following Order:

Art. 1. – Starting with the date of this Order the Norms on operational radiation protection for the development of the Non-Destructive Testing practice with ionising radiation, which are presented in the annex that is integral part of this Order, are approved.

Art. 2. – This Order shall be published in the Official Law Bulletin of Romania, Part I .

Art. 3. – The Norms mentioned in Art. 1 shall enter into force on the 1st of January 2004.

Art. 4. – Division Applications with Ionising Radiation Sources and Division Development and Resources shall fulfil the provisions of this Order.

President of the National Commission for Nuclear Activities Control,
Lucian Biro

Bucharest, 2 October 2003.
No. 155.

Attachment to the Order

NORM

of 02/10/2003
published in the Official Law Bulletin, Part I, no. 873 of 09/12/2003
on operational radiation protection for the development of the Non-Destructive Testing practice with the ionising radiation

CHAPTER I
General provisions

Art.1. – These norms are issued based on art.5 of Law no. 111/1996 on the safe deployment of nuclear activities, republished, with subsequent modifications and completions, detail and supplement the requirements for ensuring the radiological safety for the safe development of the Non-Destructive Testing practices with ionising radiation.
Art. 2. – Non – Destructive Testing practice with ionising radiation consists in using radiological installations for the control of the materials or products, through the conversion of circular measure image in visible image, and it involves the deployment of one or more activities from nuclear field (use, possession, storage, transport, decommissioning), as case.
Art. 3. - (1) The observance of the requirements of this norm is the minimum necessary condition for licensing the practice deployment and for demonstrating the conformity on inspection.
(2) If the applicant/licence holder uses other radiological safety analyses methods than those provided in these norms, he should prove that at least the radiation safety level provided in these norms is ensured.
Art. 4. – (1) These norms recommend the application of the standards adopted by the standardisation body CENELEC.
(2) The radiation safety licence for the installations bearing the sign EC shall be issued according to a simplified procedure.

CHAPTER II
Domain of application

Art. 5. These norms shall apply to the Non-Destructive Testing practices with ionising radiation, which involve the risk of exposure to ionising radiation arisen from the use of the:

a) devices that contain sealed sources;
b) x-ray generators;
c) electron accelerators.

CHAPTER III
Structure and authorization of the Non-Destructive Testing practice with ionising radiation

Art. 6. The deployment of the Non-Destructive Testing practice with ionising radiation shall be previously authorized by the National Commission for Nuclear Activities

Control, hereinafter referred to as CNCAN, in conformity with the provisions of art. 8 of Law No. 111/1996, republished with subsequent modifications and completions.

Art. 7. The practice deployment authorization shall be issued at the request of the legal person and in the authorization shall be specified the authorized activities included in practice.

Art. 8. (1) The Non-Destructive Testing practice deployment with ionising radiation shall be authorized by:

a) registration if the radiological installation is thus classified in the product radiation safety authorization issued by CNCAN;
b) authorization on realisation phases, if the radiological installation is not included in the provisions of letter a), as follows:
    i. siting
    ii. construction
    iii. use
    iv. transport
    v. decommissioning
c) licence in single phase for example in the case mentioned of the laboratory set-up on transport means or of the radioscopy/radiology cabinet.

(2) In case when the facilities are in the existent building, siting and construction phase may be authorized together.

(3) The use and the transport phases may be authorized together in the case of deploying of the Non-Destructive Testing practice with ionising radiation which involve the use of the transport means specially fitted out and authorized which transport on the public ways the radiological installations with sealed sources.

(4) The auto Non-Destructive Testing laboratory on auto transport means shall obtain the radiological safety authorization and to be used as such, exclusive for carrying out the licensed Non-Destructive Testing practice with ionising radiation.

(5) In case the radiological installations used for deploying of the Non-Destructive Testing practice with ionising radiation are in possession of the legally constituted person who requests the licence, the possession activity is authorized simultaneous with the use activity , in the framework of the practice authorization process of deploying the Non-Destructive Testing practice with ionising radiation.

(6) The property transfer of the radiological installations or of the locations for deploying of the Non-Destructive Testing practice with ionising radiation shall be authorized by CNCAN.

(7) The renting of the radiological installations shall be authorized by CNCAN.

(8) During the renting of the radiological installations, their owner shall posses a valid possession and renting authorization.

(9) For the decommissioning phase it is not necessary the authorization in the case of Non-Destructive Testing practice deployment with the radiological installations and x-rays generators, being included in the use phase.

(10) The works of the Non-Destructive Testing with the radiological installations outside the special enclosure can be executed only by the legally constituted units, which are in the ownership of a valid radiological safety authorization for the activity deployment inside and outside of the special enclosure and which have notified CNCAN about this

intention, according to the provisions of art. 117 and 118 and obtained the CNCAN agreement.

CHAPTER IV
Justification, optimisation and limitation of the doses for the Non-Destructive Testing practice deployment with ionising radiation

Justification of the practice

Art. 9. (1) According to the present knowledge is considered that the Non-Destructive Testing practice with ionising radiation is justified.
(2) Re-assessment of some particular forms of the Non-Destructive Testing practice with ionising radiation is part of the optimisation action, may be initiated and co-ordinated by CNCAN that may limit the practice extension or decide the forbiddance of some particular unjustified forms.
(3) The introduction, as regards the practice, of some new Non-Destructive Testing practice with ionising radiation techniques shall be motivated.

Optimisation of the practice

Art. 10. (1) The applicant or the authorization holder, respectively, should prove that all actions for ensuring the radiation protection optimisation are undertaken, in the sense of ensuring the necessary measures so that all exposures, including the potential exposures arising from the Non-Destructive Testing practice with ionising radiation shall be kept at the lowest possible level, taking into consideration the economic and social factors – ALARA principle.
(2) The authorization applicant shall submit to CNCAN a documentation proving that all requirements on radiation protection and radiological safety referring to the following aspects are being met:

(a) design and construction of the locations, choosing the installations and the radiation sources;
(b) the operational radiation protection system;
(c) safe use of the radioactive sources and existence of a record system thereof;
(d) training and authorization of personnel.

Limitation of doses

Art. 11 (1) The maximum admitted limit of the effective dose for the occupational exposed workers deploying Non-Destructive Testing practice with ionising radiation is provided in art. 22 of the Fundamental Norms on Radiological Safety, approved by the Order of President of the National Commission for Nuclear Activities Control No.14/2000 published in the Official Law Bulletin of Romania, Part I, No. 404 and 404 bis of August 29, 2002.

(2) The level of effective dose for occupational exposed workers is 10 mSv/year. The exceeding of this level imposes the verification of procedures and working instructions and of the operational radiation protection system by an approved radiological protection expert and the application of the necessary corrective measures.
(3) The maximum limit of the effective dose for delimiting the supervision zone is 1 mSv per year, exclusive the values of the natural fond.
(4) The calculation of the derived limits and of the thickness for the protection shields, draws up in according with BS 4094 Part 2, or, as applicable, STAS 12897 the edition in force, are exempted for the conformity demonstration with these norms requirements, when the correctness of those is established through assessment by CNCAN.

Special authorized exposures

Art. 12. (1) Under extraordinary circumstances, in which the non-execution of Non-Destructive Testing with ionising radiation could lead to the occurrence of some events which would produce lost of human life or important material damage, CNCAN may authorize the individual occupational exposure of some workers which may exceed the effective dose limit provided in art. 22 paragraph (1) of the Fundamental Norms on Radiological Safety, provided that these exposures are limited in time, restricted to some working area and included under the maximum value approved by CNCAN for the equivalent dose limits provided in paragraph (2) of the same article.
(2) In these cases the authorization holder shall act in conformity with the provisions of art. 31 and 32 of the Fundamental Norms on Radiological Safety.

CHAPTER V
SYSTEM OF PROTECTION AGAINST IONISING RADIATION

Art. 13. (1) The authorization holder shall set up and maintain an operational radiation protection system.
(2) The operational radiation protection system represents the totality of actions, procedures necessary for ensuring the Non-Destructive Testing practice deployment with ionising radiation under radiological safety conditions.
(3) The objectives of the operational radiation protection system are:

(a) defining the licensee's responsibilities on radiation protection by adopting the organisational structures and the necessary procedures;
(b) reducing at minimum the risk of exposure to radiation of the occupational exposed workers, of the other persons of population
(c) observance of the ALARA principle;
(d) setting the requirements on Quality Assurance in operation, including the checking up of the radioactive sources, radiological installations and dosimetric control installation/devices;
(e) setting the safety and physical protection measures of the radioactive sources;
(f) observance of the regulatory requirements;

(4) The operational radiation protection system implies at least the following measures:

(a) observance of the general radiation protection principles provided in art. 37 of the Fundamental Norms on Radiological Safety;
(b) elaboration and implementation of the procedures regulating the Non-Destructive Testing practice deployment with ionising radiation according to the requirements of these Norms;
(c) the use, as regards the Non-Destructive Testing practice deployment with ionising radiation, only of the persons possessing exercising permit valid for the respective activity;
(d) written assignment of the responsibilities on the radiological safety.

(5) The operational radiation protection system shall contain at least the procedures of the IV title of annex no. 1 of these norms.

Responsibilities

Art. 14. The authorization holder has the following duties:
(a) to ensure the proper spaces and endowments for Non-Destructive Testing practice deployment with ionising radiation;
(b) to ensure the adequate endowment with installations, dosimetric control equipment, accessories necessary for Non-Destructive Testing practice deployment with ionising radiation;
(c) to ensure the conditions necessary so that all used equipment are in good operational condition and properly maintained;
(d) to ensure authorized dosimetric surveillance means and dosimetric services approved by CNCAN to the occupational exposed workers of A-category;
(e) to ensure the means necessary for the radiological and working environment monitoring and to keep a record of the results;
(f) to ensure the necessary conditions so that the dosimetric control installation is in good operational condition and metrologically checked up;
(g) to prepare and to implement an operational radiation protection system which shall include the procedures and standards applicable for the use, under safety conditions, of the radiological installations by the operators;
(h) to assign at least one person responsible for radiological safety for each controlled area in order to ensure the implementation of the operational radiation protection system;
(i) to issue exercising permits for the personnel that do not possess exercising permit issued by CNCAN;
(j) to consult and to contract radiation protection qualified experts whenever necessary;
(k) to request the carrying out of radiation safety assessments for identifying the normal exposure sources and the predictable potential exposure sources, for estimating the probability and size of the doses resulted in these cases and for assessing the means and methods necessary to ensure the radiation protection and the radiological safety;
(l) to ensure that the personnel conducting Non-Destructive Testing practice deployment with ionising radiation has the necessary training in conformity with

the provisions of art. 21 and to ensure the conditions necessary for its participation at training courses in conformity with the provisions of art. 23;

(m) to ensure the proper training of the personnel involved in the practice deployment as regards the radiation protection and radiological safety, the working procedures, the regulation in the field and the intervention plan in case of incident in conformity with the provisions of art. 24 and to keep the records provided in art. 25;

(n) to organise the record of the individual monitoring results for each occupational exposed worker of A-category as a consequence of Non-Destructive Testing practice deployment with ionising radiation, as well as for all the persons subject to accidental or emergency exposure in conformity with the provisions of art. 64 of the Fundamental Norms on Radiological Safety;

(o) to prepare the intervention plan in case of radiological incident;

(p) to ensure the endowment necessary for the intervention in case of radiological installations used ionising radiation sources on approval;

(q) to ensure, the conditions for storage as radioactive waste or return to the supplier/manufacturer of the radioactive sources out of use;

(r) to ensure according to the regulation of the Ministry of Health the medical surveillance of the occupational exposed workers and a special medical surveillance of the occupational exposed workers to doses exceeding the dose limits provided in art. 22 of the Fundamental Norms on Radiological Safety;

(s) to ensure that the occupational exposed workers have the medical approval necessary for occupying the respective job position;

(t) to ensure the information of the occupational exposed workers and of the persons under training in conformity with the provisions of art. 49 of the Fundamental Norms on Radiological Safety;

(u) to notify CNCAN on any intention of authorized practice modification;

(v) to allow the designated CNCAN representatives to exercise the control mandate in conformity with the provisions applicable to Law No.111/1996, republished with subsequent modifications and completions and to ensure the participation at control of the person responsible for radiological safety or, as applicable, of the approved expert;

(w) to fulfil any other responsibilities necessary for the safety deployment of the Non-Destructive Testing practice with ionising radiation.

(2) In case of non-observance of the authorization conditions the authorization holder shall:

(a) investigate the causes, circumstances and consequences of the event;

(b) take the necessary measures for eliminating the causes and limiting the consequences, notify CNCAN and the other bodies with responsibilities, whenever necessary;

(c) decide and apply the necessary preventing and corrective measures which shall be taken to reduce the probability of occurrence of similar situations.

(d) monitor the application of the measures assigned by CNCAN;

Art. 15. (1) The responsibilities on radiation protection and radiological safety shall be clearly defined, in written, and the qualification of each person invested with responsibilities shall be proved in conformity with the provisions of art. 2.

(2) The person responsible for radiation protection shall:

(a) possess a level 1 or 2 exercising permit for the practice field and speciality;

(b) be invested with enough authority to be able to impose the observance of the conditions and to stop the work in case of non-deployment under safety conditions;

(3) The attributions and responsibilities of the person responsible for radiation protection are:

(a) to supervise that the practice is carried out under observance conditions of procedures and terms stipulated in the authorization and in the inspection reports;

(b) to ensure that only the well-trained workers conduct activities and to apply the emergency procedures;

(c) to keep the record of the metrological checking up of the dosimetric control installation and to check up its use method by the users;

(d) to organise the examination of the users and entire occupational exposed workers that do not possess an exercising permit issued by CNCAN in view of issuing by the authorization holder of the level 1-exercising permit;

(e) to draw up and to periodically review the laboratory's procedures in view of conformity with the regulation requirements;

(f) to prepare and to review the working procedures so that the radiation exposure is kept at a level as low as possible (ALARA);

(g) to ensure the installations use specifications are known by the users;

(h) to ensure the drawing up and application of the intervention plans in case of radiological emergency;

(i) to ensure the installations and the radiation sources are periodically checked up and authorized in conformity with the regulation in force;

(j) to identify and to delimit the supervised and controlled areas and to set the access control and security measures for these areas;

(k) to ensure the individual dosimetric monitoring and to keep the records;

(l) to ensure the radiological monitoring of the working environment and to keep the records;

(m)to investigate the accidents/incidents, over-exposures and to propose corrective and preventing measures;

(n) to set out the additional radiation protection measures necessary for the pregnant women;

(o) to keep daily record of the radiation sources;

(p) to conduct periodical audits on the radiological safety and to keep the records of the results and/or of the proposed corrective and preventing measures;

(p) to identify the situations in which a radiation protection expert should be consulted;

(r) to verify the solving procedure of the problems mentioned by the expert qualified in radiation protection according to its responsibilities laid down in art. 20;

(s) to inform periodically the authorization holder on the conducted activity and on the necessary corrective or preventing measures;

(t) to inform immediately the authorization holder on any event, incident/accident arisen from the Non-Destructive Testing practice deployment with ionising radiation.

(4) If more than one person is appointed responsible for radiological safety, their attributions should be clearly defined in written so as not to overlap.
(5) The radiological safety responsible shall be responsible for the content, management and archiving of the technical documentation regarding the controlled area for which he was appointed.

Art. 16. The responsibilities of the users are:

(a) to observe the work procedures and instructions;
(b) to give assistance to the persons under training;
(c) to observe the rules of radiation protection;
(d) to use correctly the dosimetry surveillance equipment which is in his possession ;
(e) to use correctly the individual and collective means of radiation protection;
(f) to report overexposure in conformity with the provisions of art. 83 of the Fundamental Norms on Radiological Safety;
(g) to inform immediately the radiological safety officer about the failures of the installations and not to use installations which do not work properly or are incorrectly maintained.
(h) to participate according to his attributions to the actions laid down in the intervention procedure in case of emergency.

Art. 17. The persons under training shall carry out their activity only with assistance given by the person responsible and, under the supervision of the radiological safety officer or of one owner of level 2 exercising permit.

Art. 18. The attributions and responsibilities of the persons under training are:

a) to work only under the supervision of the qualified user;
b) to observe the radiation protection rules;
c) to use correctly the individual dosimeter;
d) not to use failed or improperly maintained installations;
e) to inform immediately the radiological safety officer or the qualified users on any malfunction or non-conformity.

Art. 19. - The attributions and responsibilities of the car driver:

a) observance of the provisions of the Fundamental Norms on the Radioactive Materials Safety Transport, approved by the Order of the President of the National Commission for Nuclear Activities Control No. 373/2001 published in the Official Law Bulletin of Romania, Part I, No. 137 and 137 bis of February 21, 2002.
b) checking the existence of the transport documents (including the CNCAN authorization copy);
c) acknowledge of its content and the application of intervention plan in road accident case;
d) checking the existence of the placards on the transport means and of related endowments according to art. 122 letter g).

Art. 20. (1) The attributions and responsibilities of the radiation protection approved experts are:

(a) to check up the application of the ALARA principle in the practice deployment;
(b) to check up the classification of areas proposed by the authorization holder in view of confirming the compliance with the requirements on the controlled and supervised areas;

(c) to motivate the application for authorization of special exposures and of individual occupational exposure of certain workers exceeding the effective dose limit of 20 mSv/year, under exceptional situations, but that exclude the radiological emergencies;
(d) to confirm the dose assessment results arisen from the emergency or accidental exposures.

(2) The radiation protection approved expert shall give assistance for:
(a) the previous critical examination of the construction and sitting plans of the special location for Non-Destructive Testing practice deployment with ionising radiation, from the point of view of radiological safety;
(b) the previous critical examination of the use plans of the radiological installations, especially for that who are used in spaces which are not under administrative control of the authorization holder;
(c) identification, in view of use, only of the installations and radiation sources for which a radiological safety authorization exists;
(d) accepting the new and modified radiation sources which are authorized and only after their checking up from radiological safety point of view;
(e) the periodically checking up of the installations, of the radiation sources and of the efficiency of equipment, devices and the protection techniques, the labelling, the periodical checking up of the measurement devices, as well as the assessment of their proper use;
(f) setting the radiation protection system in the authorized practice;
(g) the assessment and investigation processes in case of abnormal exposures or over-exposures, in order to determine the circumstances the over-exposure occurred, to assess the received doses and to prevent the repetition of such over-exposures.

Personnel training

Art. 21. The personnel carrying out the Non-Destructive Testing practice deployment with ionising radiation shall have:
(a) sufficient general training for their job (as a rule, at least professional school);
(b) training in the field through corresponding Non-Destructive Testing with ionising radiation courses;
(c) sufficient training in the radiation protection field;
(d) knowledge on the radiation protection system;
(e) practical training regarding the Non-Destructive Testing practice deployment with ionising radiation and the radiological emergency intervention procedures;
(f) related exercising permits to conduct the Non-Destructive Testing practice deployment with ionising radiation practice.

Art. 22. (1) The schedule of the radiation protection training courses organised by the authorization holder shall observe the curriculum from the Norms on issuing the nuclear activities exercising permits and on assigning the radiological protection approved experts by approved by the Order of the President of the National Commission for Nuclear Activities Control No.202/2002 published in the Official Law Bulletin of Romania, Part I, No. 936 and 936 bis of December 20, 2002.

(2) The minimum time period of a 2-level training program in the radiation protection field shall be of 30 hours for the long-term academic graduates and 60 hours for the other cases.
(3) The minimum time period of a 1-level training program in the radiation protection field shall be of 30 hours.
Art. 23. (1) The authorization holder has the obligation to ensure the appropriate training in the field of radiological safety of the occupational exposed workers and their re-training at least once at every 5 years by a training system approved by CNCAN or in training centres authorized by CNCAN.
(2) The license holder has the obligation to train the persons under training before they use the ionising radiation sources installations.
Art. 24. The authorization holder shall ensure that the person responsible for radiological safety and the occupational exposed workers know the followings:

(a) the authorization conditions and limits;
(b) the radiation protection system drawn up at the organisation level;
(c) the use and maintenance instructions of the used equipment and installations;
(d) the risks associated to the Non-Destructive Testing practice deployment with ionising radiation;
(e) the working procedures;
(f) the radiological emergency intervention procedures.

Art. 25. (1) The authorization holder shall set up and keep records on the training of the personnel conducting Non-Destructive Testing practice deployment with ionising radiation. These records shall include at least the following information:

(a) the name and surname of the person atteding the training course;
(b) the identification data of the institution organising the course;
(c) the duration of the course;
(d) the course curriculum;
(e) the copy of the training program graduation certificate.

(2) A training plan of the personnel deploying Non-Destructive Testing practice with ionising radiation shall be drawn up every year.

Individual monitoring of the occupational exposed workers

Art. 26. (1) The authorization holder shall ensure the systematic individual monitoring of all category A occupational exposed workers.
(2) The monitoring shall be carried out by an approved individual dosimetric service.
Art. 27. (1) The authorization holder shall set up and keep a procedure on dosimetric monitoring activity deployment of the occupational exposed workers and of dose attribution. This procedure shall include at least the following information:

(a) description of the adopted dosimetric systems;
(b) person responsible for receiving-delivery of the dosimeters between the unit and the approved individual dosimetric bodies;
(c) person responsible for receiving-delivery of the dosimeters between the unit and the occupational exposed workers;
(d) person responsible for the keeping the dose records and the recording methods;

(e) place of storage of the unused dosimeters, kept away from the possibility of accidental exposure to radiation;
(f) wearing and use instructions;
(g) instructions for cases of theft, incorrect exposures, loss or other events leading to errors regarding dose registration;
(h) dosimetry for accidental exposure or intervention cases;
(i) dose attribution methods for the cases specified at letters (g);
(j) record/registration methods;
(k) sanctions/penalties.

(2) The authorization holder shall annually analyse the doses received by the occupational exposed workers and the radiation protection program application measures.

Art. 28. The occupational exposed workers shall comply with the rules of dosimeters wearing and shall protect them against theft, loss or damage.

Art. 29. The occupational exposed workers shall return the dosimeters at the end of the monitoring period and inform the radiological safety officer on any theft, loss, damage or incorrect exposure to radiation of the dosimeters (for example, as a result of leaving them in the exposure enclosure).

Art. 30. (1) The authorization holder shall ensure the endowment with the digital electronic dosimeter of the occupational exposed workers, whenever it is important to be obtain an additional information, in real time, about exposure.

(2) The authorization holder shall ensure the endowment with the digital electronic dosimeter of the occupational exposed workers in the case of Non-Destructive Testing practice deployment with ionising radiation outside the special location or in intervention. These shall be used complementary of the film or thermo-luminescent individual dosimeter.

Art. 31. All the category A occupational exposed workers, shall be warned when the dose rate exceeds a pre-established value of 20 +/- 5 μSv/h, by using of sonorous or light alarm monitoring system.

Art. 32. - In case of accidental exposures, the authorization holder shall ensure for all the persons involved the immediate assessment of the individual doses arisen from external exposure.

Art. 33. In case of emergency exposures, the authorization holder shall ensure the individual dosimetric monitoring and/or the assessment of the received doses, as applicable.

Art. 34. The authorization holder shall consult an approved expert with respect to the confirmation of the doses assessment results arisen from the accidental or emergency exposures.

Art. 35. In the case of the authorization holder who uses external workers, the task of recording the results of individual monitoring rests both with the authorization holder who used it, and the constituted legal person where those are employed.

Art. 36. (1) The authorization holder shall request at the employment of an occupational exposed worker his/her declaration on the doses previously received as occupational exposed worker.

(2) The authorization holder shall request to the last employer where the person in question has been hired the official submission of the received dose records for that person.

Art. 37. The authorization holder shall inform the person on his/her individual monitoring results and to ensure the access to the measurements results used for dose assessments and to the working environment radiological results used for the assessment of doses received by the person in question.
Art. 38. The authorization holder shall place at the competent physician's disposal the results of the individual dosimetric monitoring results in the view of reading the implications of radiation exposures on the health state of the exposed persons.
Art. 39. The authorization holder that ensured the individual monitoring of a category A occupational exposed worker involved in Non-Destructive Testing practice deployment with ionising radiation shall ensure, upon request, the sending of the respective individual monitoring results to the authorization holder or to the foreign bodies contracting the person in question as an occupational exposed worker.

Investigation and notification on the over-exposures and the abnormal exposures

Art. 40. (1) The authorization holder shall set up and keep a procedure on the investigation and notification regarding the over-exposures and the abnormal exposures. The procedure shall provide:

(a) the immediate notification of the affected person;
(b) the immediate notification of CNCAN, of the competent physician and of the external worker employer (if the person in question is an external worker) on the presupposed over-exposure and on the preliminary assessed doses;
(c) the drawing up of a report on the event within 10 days from the beginning of the investigation;
(d) means of contacting a radiological protection approved expert for consultancy;

(2) The report shall contain at least the following information:

(a) the results of the investigation based on which the preliminary value of the received doses was established;
(b) the circumstances in which the over-exposure occurred;
(c) the assessment of the received dose based on all the available data, including the individual dosimetric measurements results;
(d) measures taken in order to prevent recurrence of such over-exposures.

Art. 41. – Occupational exposed workers who had an over-exposure may continue to work in the controlled area if there are no medical contraindications.

Radiological monitoring of the workplace and area

Art. 42. – (1) Radiological monitoring of the workplace shall include the measurement of the dose rates due to the external exposure indicating the type and quality of those radiation.
(2) Radiological monitoring of the workplace is mandatory in the following situations:
a) when a new radiological installation is commissioned;
b) when a new repository for sources is built;

c) when the dose rate at the surface of the container which is going to be transported is verified. In this situation, the transport factor is recorded in the transport document;
d) for performing periodical measurements in the controlled and supervised areas (at least once at every three months);
e) in case of practice development outside of special equipped enclosure in order to confirm the correctness of the delineated area, where the public has no access;
f) during interventions.

(3) The results of the measurements shall be recorded during the practice development and shall be used, if necessary for estimation of the individual doses. The minimum duration for keeping the records provided under para. (1) is 10 years.

Art. 43. – The records shall contain at least the following information:
a) place where the measurements were performed;
b) data when the measurements were performed;
c) name of the person who performed the measurements;
d) type of the dosimetric control device used and its identification data (series, date of the last metrological checking);
e) data about the radiological installation and the radiation source (type, activity/ date of the measurement or the voltage and the intensity of electric power), the bundle direction;
f) drawing with the localization of the measurements points;
g) obtained values for the dose rate.

Art. 44. –Authorization holder shall elaborate and maintain a procedure for radiological monitoring of the workplace. The procedure shall contain at least the following information:
a) equipment and measurement methods;
b) measurements frequency and measurements points;
c) responsibilities;
d) recording and interpretation of the results;
e) corrective measures that shall be taken.

Art. 45. –Authorization holder shall ensure the endowment with an adequate number of dosimetric control devices, at least one device for each installation with radioactive source and at least one device for each installation used outside the special equipped enclosures.

Art. 46. –Use of a dosimetric control device is compulsory in order to verify if the radioactive source is in shielded position before and after each exposure.

Art. 47. – The used dosimetric control device shall have radiological safety authorization, to be appropriate with the type of the radiation released by the source used during the practice development, to have the scale calibrated in units of dose rate and to be able to indicate at least values between 1 μSv/h and 10 mSv/h, having an accuracy of minimum +/- 30%.

Art. 48. – (1) Dosimetric control device shall be verified at the beginning of every working shift. This verification shall include:
a) verification of the status of supply battery;
b) measurement of the radiation natural background;
c) response in case of getting near to an exposure container in case of using a test source.

(2) Performance of the verification provided under para. (1) is the responsibility of the radiological safety officer or of another person nominated in writing by this person.

Art. 49. – Dosimetric control device shall be metrological checked with the periodicity recommended by the producer, by the units designated by CNCAN as laboratories of metrological checking.

Art. 50. – Dosimetric control device shall be used whenever:

a) a radioactive source is received;
b) a radioactive source is take out from the sources repository (it is verified if the radioactive source is completely shielded);
c) a radioactive source is stored in the sources repository;
d) a radiological installation with radioactive source is charged/discharged in the means of transportation;
e) it is verified the return of the source in the storage position, after each exposure;
f) radiography is performed outside the special equipped enclosure;
g) sources are transferred between containers;
h) verification of contamination of the radiological installation components is necessary;
i) in the user manual provided by the producer of a X ray generator installation there are warnings according to which certain improper operation conditions may lead to X ray release even after the exposure time settled at the control desk is finished (at least one per day, through proper operation is verified through dosimetric measurements);
j) radiological emergency situations are in place.

Safety of radiological installations

Art. 51. – Authorization holder shall ensure the safety of radiological installations and radiation sources by complying with the following requirements:

a) radiological installations shall be all the time stored in physical protection conditions or under the supervision of a qualified person;
b) radiological installations can be transferred or rent only after receiving the authorizations provided in art. 2 and 8 of the Law 111/1996, republished, with subsequence modifications and completions;
c) preservation of radiological installations is performed only in adequate equipped places;
d) identification of potential ways of risk coming out for the loss or theft of the radiological installations and providing of preventive measures for loss or stealing.

Art. 52. – Authorization holder shall establish and maintain a procedure related to the account, movement and storage of radiological installations and of radioactive sources. The procedure shall contain at least the following information:

a) the general and operative accounting system;
b) the method and rules for removal from the storage, bringing into the storage, storage, monitoring of the using place;
c) records concerning the movement of source and/or of installation and the necessary reports;
d) responsibilities;
e) sanctions.

Storage

Art. 53. (1) – Storage of radiological installations with sealed radioactive sources is performed only in special equipped spaces, with no flooding risk and which can assure the radiological installation against mechanical degradation and dangerous action of environmental factors, being provided with:

a) appropriate system for ensuring against embezzlement and alarming. Keeping of the repository keys shall be ensured by the radiological safety officer;
b) appropriate shields against gamma radiation, so the dose rate in temporally accessible areas for other persons than occupational exposed workers (the only having access in the repository) do not exceed the value of 7,5 μSv/h;
c) appropriate systems for fire warning and protection. Radiological installations shall not be stored in areas where inflammables, corrosive, explosive or oxidizing substances are stored.

(2) Access door in the radiation sources repository and the free external walls shall be clearly marked with the symbol "Danger of radiation" and the warning "Danger-Radioactive Materials".

(3) Provisional storage for limited time in case of some works with radiological installations outside of the special equipped enclosures is allowed in spaces which:

a) ensures the radiological installations against mechanical degradation, fire, flooding and dangers actions of environmental factors;
b) are guarded or are in guarded enclosures and the guard personnel is trained with regard of their responsibilities;
c) are looked and the access control is performed by the operator responsible with the work performance;
d) for the period of storage, the access is marked with the symbol "Danger of radiation".

(4) The laboratory installed on a means of transportation is established as temporary repository during the work performance, if it is guarded or parked in guarded enclosure and the guard personnel is trained.

Radiological installations with X-ray generators

Art. 54. –The storage of radiological installations with X-ray generators shall be made only in spaces where conditions against mechanical degradation, fire, flooding, dangerous action of environmental factors, robbery and unauthorized use can be ensured, being applicable the provisions of Art. 53.

Accounting of radiological installations and radioactive sources

Art. 55. – Authorization holder shall establish and maintain an initial accounting of all radiological installations and radioactive sources which are under his possession, as follows:

For each radiological installation:

a) commercial name, model, type;
b) producer and supplier;
c) structure;

d) series and year of fabrication;
e) date of entering into accounting;
f) date of exit from accounting;

1. For each radioactive source:
a) producer and supplier of the source;
b) date of entering into accounting;
c) series of fabrication;
d) radionuclide and activity at the fabrication date;
e) storage place;
f) type and series of the source carrying rod;
g) type and series for the container;
h) verification bulletin showing the absence of the surface unfixed contamination of the source carrying rod and of the container, issued by the producer;
i) bulletin of periodical verification showing the absence of the surface unfixed contamination of the radioactive source, issued by an unit authorized by CNCAN;
j) special certificate for radioactive material, if necessary;
k) date for renting or transfer to other user authorized by CNCAN or providing for treatment to the Radioactive waste treatment station.

For each container:
a) details about the supplier ;
b) data of entering into accounting;
c) series and the fabrication year;
d) type or model of the container;
e) type of package (if necessary, i.e.: type A, type B), in accordance with the provisions of Fundamental norms for safe transport of radioactive materials;
f) type and maximum activity of radioactive source which can be loaded with;
g) quantity of depleted uranium, if necessary, contained by the radiation protection elements of the installation (including that contained in the irradiation heads);
h) date of renting or transfer to other user authorized by CNCAN or of storage with the view of treatment to the Radioactive Waste Treatment Station.

Art.56. – (1) Authorization holder shall establish and maintain an operative accounting of the movement and use for each mobile or portable installation, as follows:
a) name, identification code, series;
b) radionuclide (i.e., cobalt-60, iridium-192) or maximum parameters for radiation generators;
c) date and hour for removal from the repository;
d) name and signature of the operator who takes and uses the installation;
e) place of use;
f) date and hour when the installation return into the storage;
g) name and the signature of the operator who stored the installation or of the radiological safety officer.

(2) Handing over – receiving of installations with radioactive sources is made verifying, through measurement, the existence of the source.

Art. 57. – Records concerning the movement of sources shall be kept at least 10 years.

Requirements for the radiological sources

Radiological installations with sealed radioactive sources

Art. 58. – Sealed radioactive sources used for Non-Destructive Testing shall be:

a) designed, manufactured and tested in accordance with the requirements of specific standards from annex 3 and in accordance with Fundamental norms on safe transport of radioactive materials;
b) qualified in accordance with the requirements of reference standards from annex 3, at least C 43313, in case the sources are used in installations of type provided in art. 60, para. a), and at least C43515 in case of those used in installations of types provided in art. 60, para.b).

Art. 59. – Before the first use, each source shall fulfil the requirements for leakage test of the reference standards from annex no.3.

Art. 60. – Industrial gammagraphy installation are split into two categories:

a) category I, known as obturator type, are the installations in which the radioactive source remains inside the container during the exposure. The exposure is performed through opening of the obturator or through bringing the radioactive source in front of a slit of container. The solid angle of the useful beam is no more than 60^{o} and may be used collimators for limiting the beam;
b) category II, known as projector type, are the installations in which the radioactive source is designed (transferred) between the container and the irradiation head through a guiding tube (of transfer) by an operator situated at distance from the container and the irradiation head.

Art. 61. – (1) Containers containing depleted uranium are considered as nuclear materials even they are not containing the radioactive source.

(2) Transfer between material accounting areas of containers containing depleted uranium is performed in accordance with the provisions of the Norms on safeguards in nuclear field, approved by Order No. 363/2001of CNCAN President, published in the Official Law Bulletin, Part I, No. 766 and 766 bis on November 30^{th}, 2001.

Art. 62. – (1) Gammagraphy installations shall fulfil the requirements provided in the reference standards from annex 3.

(2) Gammagraphy installations that are not in line with the requirements provided in para. (1) shall be replaced or reconditioned until January 1^{st}, 2007.

Art. 63. – Any container of a gammagraphy installation shall be labelled with an additional label that shall contain the following:

a) symbol “Danger of radiation”;
b) identification of the contained radionuclides (i.e., cobalt-60, iridium-192);
c) maximum allowed activity for container loading;
d) type and series;
e) name and address of the authorization holder;

Art. 64. – The gammagraphy installations shall comply with the following requirements:

a) the coupling between the source assembly and the remote control cable (Bowden cable) shall be designed in such a way to not allow the disconnection when this coupling by accidentally came, through remote control, outside the guiding tube (of transfer);

b) the container shall have a device for blocking assurance of the radioactive source after this source has been removed into the container, in the position of total shielding. This device shall operate in such a manner to not allow again the release of the source without deliberately performing an action on the release mechanism;
c) all the connection devices (fittings) shall be endowed with protection caps or plugs which shall be installed during storage or transport in order to prevent the dirt and other undesirable materials penetration;
d) the guidance (transfer) tubes shall be used each time when the transfer of source is performed from category II container to irradiation head. Also, the irradiation head shall be coupled to the transfer tube adjacent to it and the remote control cable (Bowden cable) shall have sufficient length in order to allow the transfer of source in the correct position from the irradiation head;
e) the dose rate on external surface of an exposure container shall not exceed 2 mSv/h and the for portable installations shall not exceed 0,02 mSv/h, at 1 m distance from this surface, 0,05 mSv/h for mobile installations and respectively 0,1 mSv/h for fixed installations;
f) the compatibility with the exposure container of all its additional components shall be tested before using the installation.

Art. 65. – During the use of radiological installations, the following measures shall be taken, as applicable:
a) to be used collimators, additional masks and shields, for example pieces of lead when the radiography technique allows. In this way, the level of radiation dose during the exposure is reduced, there will be benefits consisting in reducing the dose for occupational exposed workers, reducing the dimensions of the controlled area and improvements of the control of access in the controlled area, receiving a smaller dose by an unauthorized person who may enter accidentally into the controlled area and a high quality of the radiography image;
b) the cables and guidance tubes shall be protected through adequate means against their accidentally buckling or collapsing and to be positioned on routes with a radius of curvature as long as possible.

Art. 66. – The ancillary equipment and the gammagraphy installations components shall comply with the requirements of the reference standards from Annex 3.

Art. 67. – (1) Any new source shall be accompanied by a certificate for verification of an unfixed surface contamination.

(2) The verification of an unfixed surface contamination shall be performed at a 6 months period.

Radiological installations with X-ray generators

Art. 68. - Radiological installations with X-ray generators shall comply with the following requirements:
a) directional and panoramic generators shall be endowed with collimators adequate for the exposure geometry;
b) X-ray generators equipment shall be in accordance with IEC 204.

Art. 69. – The control desk of X-ray generators shall comply with the following requirements:

a) to be provided with safe key against unauthorized use. The key shall be removed only from the position “OFF” or “STAND BY”. The key positions shall be clearly marked;
b) to have light warning system (preferable having also electrical safety role) with appropriate labelling showing that the installation emits/does not emit X-ray;
c) to be provided with device with which exposure time is set up and controlled;
d) to be provided with numeric display for high radiogene voltage and for the electric power through radiogene tubes.

Art. 70. – Whenever it is possible to be practically realized, the radiogene tube assembly shall be fixed into a device designed in order to not allow the movements of the radiogene tube assembly during the exposure.

Art. 71. – The dose rate leakage radiation at 1 m from the anode of the radiogene tube shall be limited to a maximum value of:

a) 1 mSv/h for high voltages up to 150 kV;
b) 2,5 mSv/h for maximum high voltages from 150kV to 200kV;
c) 5 mSv/h for maximum high voltage over 200 kV.

Radiological installations for Non-Destructive Testing for special applications

Art. 72. - Radiological installations for Non-Destructive Testing for sub-aquatic applications shall comply with the following requirements:

a) additionally to the specific standards which shall be complied with by the conventional radiological installations, the sub-aquatic radiography equipment shall be designed, produced and tested in order to resist to the pressures and conditions from sub-aquatic environment, being supplementary provided with the following:
   (i) adequate waterproof tightness;
   (ii) waterproof auxiliary equipment;
   (iii) equipment for radiation warning or other radiation detectors;

b) radiological installations for sub-aquatic applications shall be marked with the value of maximum depth at which they can be safely used. Other additional restrictions shall be specified in the user and maintenance manual.

Art. 73. – Remote-controlled radiological installations for Non-Destructive Testing, for the pipes control, shall comply with at least the following requirements:

a) to accomplish with the minimum applicable standards for radioactive sources or X-ray generators, specified in this document;
b) additionally to the conventional installations, remote-controlled equipment for the pipes control shall be endowed with a radioactive source with low activity, which shall be installed in a positioning device. This positioning device is not necessary to comply with standards for industrial equipment for conventional radiography, but it is necessary to demonstrate that it is adequate for the respective purpose and that ensures the source safety.

Radioscopy/radiography cabinets

Art. 74. –Radioscopy/radiography cabinets shall comply with the following requirements:

a) use of radiological installation at the maximum value of working parameters shall not produce an equivalent dose rate higher than 5 μSv/h in any point situated on the accessible surface of installation or in the accessible places during operation. In case of X-ray generators with operate in pulsatory regime, the equivalent dose rate shall be defined as equivalent dose measured during an hour, under the conditions of maximum value of pulses rate;
b) to be designed and built so that, by its construction the exposure of some part of human body to an equivalent dose rate higher than 2 mSv/h to be impossible;
c) do not allow the operator to introduce some part of his/her body into useful radiation beam;
d) to be provided with two independent means of warning for the X-rays generating;
e) to be provided with two systems of inter-blocking up which could allow the uncoupling of the generator from the electric power supply when, accidentally during the installation operation, an access trap is opened;
f) to be labelled with at least the following information;
   (i) the maximum voltage and the filtration;
   (ii) the direction of beam radiation;
   (iii) special warning, if the radiogene tube is provided with a beryllium window;
g) to be provided with instructions for use in radiological safety conditions, written in Romanian language .

Verifications

Art. 75. – (1) Authorization holder shall set up and maintain a verification and maintenance programme which shall take into account the recommendations of producer and supplier.
(2) The set-up verification and maintenance programme shall contain:
a) The routine verifications which are performed at the beginning of work programme. These verifications are performed by the operators. Any failure detected during operation of the installation shall be notified to the radiological safety officer.
b) Periodical verifications performed through units authorized by CNCAN.
(3) Periodical verifications are annually performed for radiological installations with an age under 10 years, and for six-months period for the other cases.
Art. 76. – (1) Any inadequate equipment shall be out of order, labelled as non-conformity and shall be used only after repairing by the authorized units in accordance with the provisions of Law no. 111/1996, republished, with the subsequent modifications and completions.
(2) Verification is mandatory after each repairing or intervention on installation before using.
(3) Accounting of all verifications performed in accordance with the provisions of articles 75-83 shall be kept.
Art. 77. – Daily verifications of the radiological installations with sealed radioactive sources which shall be performed by the operator or the radiological safety officer, shall include:
a) Verification of the operating status of the system for closing and obturation radiation beam;

b) Visual verification of the accessible screw and nut status;
c) Verification of status of coupling system between source assembly and the remote control cable (the Bowden cable);
d) Verification of connections between the guide tubes and, respectively, between the container and control panel;
e) Measurement of the dose rate to the wall of container;
f) Other verifications recommended by the producer in the maintenance instructions for the installation.

Art. 78. –Periodical verifications of radiological installations with sealed radioactive sources which shall be performed by the authorized units, in accordance with the provisions of Law no.111/1996, republished, with the subsequent modifications and completions, shall include at least:
a) Verification of equipment integrity (without cracks, missing parts, deterioration);
b) Verification of the safety of connections of the carrying source assembly;
c) Verification of the status of the carrying source road;
d) Verification of the free movement of the carrying source on the entrance/exit channel of the container;
e) Verification of closing mechanisms (locking);
f) Lubrication of the mechanisms as it is recommended by the producer;
g) Verification after the reassembling;
h) Performing measurements of dose rate to the wall of the container;
i) Verification of label condition and of the existence of symbol "Danger of radiation";
j) Verification of the status of all fixing devices (tightening collars) and of the adequate values for the tightening couples;
k) Other verifications recommended by the producer in the maintenance instructions of the installation.

Art. 79. – Daily verifications performed by the operator or the radiological safety officer for the ancillary equipment of the radiological installations with radioactive sources are:
a) Verification of the remote control cable and its unhampered movement;
b) Verification of the existence of some excessive folding or deteriorations of the guide tubes (of transfer), which shall not present obturation, as well as safety of their couplers;
c) Verification of the collimators.

Art. 80. – Periodic verifications of the ancillary equipment performed by authorized units in accordance with the provisions of Law no. 111/1996, republished, with subsequent modifications and completions, shall include at least:
a) Disassembling and cleaning of the remote control cable, the inspections concerning the degree of corrosion, wear or unweaving, folding or strokes;
b) Lubrication of the remote control cable in accordance with the recommendations of the producer;
c) Verification of all the devices for coupling, tightening or stopping of radioactive source. These shall be able to be safely fixed, not to present visible deteriorations, cracks or excessive wear;
d) Verification of all the devices of threading coupling, which shall not present deteriorations; if it is necessary, they will be replaced;
e) Other verifications recommended by the producer.

Art. 81. – The operator or the radiological safety officer shall daily verify:
a) The operation of the closing systems (locking);
b) The safety of the couplings of guiding tubes (of transfer);
c) The status of the guiding tubes (of transfer).
These shall not present obturations.
Art. 82. – The operator or the radiological safety officer shall daily verify the radiological installations with X-ray generators, in order to ensure that:
a) There are no deteriorations of the equipment;
b) The cables are not cut-off, twisted and the couplings are not cracked;
c) The cooling system is in operating condition;
d) All the inter-conditionings are functional;
e) The warning signs are readable;
f) All warning systems are in operating condition;
g) The fixing devices are safe and the couplings by threading are without deteriorations;
h) All other verifications recommended by the producer in the maintenance instructions of the installation have been performed.
Art. 83. - Verifications of the radiological installations with X-ray generators performed by authorized units in accordance with the provisions of the Law No 111/1996, republished, with subsequent modifications and completions, shall include at least:
a) Verifications of electric safety, included earth connection;
b) Cleaning/replacement of the filters of the cooling circuit;
c) Verification of focal spot;
d) Verification of the flow of leakage radiation;
e) Verification of cables status. These shall not present cracks or unweaving parts or without electric insulation;
f) Verification of circuits of inter-conditioning and the status of emergency switches;
g) Verification of radiation detectors mounted inside the exposure enclosure;
h) Verification of the warning systems installed inside the exposure enclosure;
i) Other verifications and maintenance operations recommended by the producer in the maintenance instructions of the installation.

Requirements for the equipment of enclosures for performing of Non-Destructive Testing practice with ionizing radiation

Art. 84. – (1) Whenever it is possible, the Non-Destructive Testing practice with ionizing radiation which involves the use of radiological installations subject to license, shall be performed in shielded enclosures, specially equipped.
(2) The shielded enclosure, specially equipped shall be adequately ventilated (two shifts of air/hour) and shall be provided with the following areas:
a) irradiation enclosure adequately sized for the dimensions of pieces or controlled objects;
b) separate, adjacent enclosure for the control panels of the radiological installations;
c) sources storage adequately sized.
(3) For performing of Non-Destructive Testing practice with ionizing radiation in good conditions, changing rooms with sanitary installations and shower, recording of

radiographies, a deposit for non-exposed films, processing of films, interpretation and of work for operators shall be also provided. These shall be adequately sized to the working volume and number of personnel and shall ensure functional and adequate circuit.
(4) Spaces mentioned under para. (3) may be used by one or more enclosures only in case of equipping designated for the use of radiological installations with X-ray generators subject to licensing. In case of using radiological installations with radioactive source, subject to the licensing, each controlled area shall be provided with the rooms provided under para. (3).
Art. 85. -The shielded enclosures, specially equipped, shall be thus designed and used so that during performing the Non-Destructive Testing practice with ionizing radiation, to ensure protection against normal or accidental exposures, by the existence of more in-depth barriers of radiological safety (so that the failure of a barrier to compensated by the operation of the following one). The enclosures shall be equipped with:
a) adequate shields for the protection of people from the vicinity;
b) adequate shield for the non-homogeneities from the passage of cables, pipes, doors etc;
c) safety systems (for example, locking or inter-conditioned action) designed to act with a view of safety improvement, in case of failure;
d) warning systems designed to have a safety role, in case of failure;
e) adequate ventilation systems (suction up and draining off down), which shall ensure two shifts of air per hour, in case of using of radiological installations with radioactive source or X-ray generators with a voltage more than 300kV, subject to licensing;
f) adequate light systems which shall ensure a light of 500 lux in the radiography area;
g) adequate warming systems which shall ensure at least 16^0 C during winter.
(2) In case of using of radiological installations with radioactive source subject to the licensing, for the protection of individuals which could remain by accident inside the exposure enclosure, equipping with a communication means which immediately allows the notification of any incident and the assistance requirement and the compliance with at least of one of the following conditions, shall be ensured:
a) exit through which they can leave the exposure enclosure without delay;
b) means for the fast shielding of the source;
c) a shield behind of which the involved individual can stay until his/her release from the enclosure.
Art. 86. – (1) The enclosures shall have various sizes according to the type of pieces which is going to be subject to be examined. Sizes can vary from those from a small surgery to sizes which can ensure the possibility of examination of pieces with very large sizes. .
(2) Enclosures designed for examination of pieces with very large sizes can not be provided with a roof, in case of using of radiological installations with a voltage equal with at most 120 kV.
Art. 87. – (1) Design of enclosures shall be based on in-depth protection, taking into account:
a) type of radiation source (nature, energy);
b) exposure geometry (panoramic, with collimate beam, with directional beam);

c) identification of the primary and secondary shields and the adequate calculus of their thickness;
d) access allowed in neighbouring areas of special equipped enclosure;
e) degree of occupation of neighbouring areas;
f) access points for the personnel involved and/or pieces subject to examination.

(2) Project of special equipped enclosure represents a component of the technical documentation in order to obtain the construction authorization from CNCAN.

Art. 88. – (1) Enclosures shall be designed so that dose rate does not exceed:
a) 15 mSv/year at the working place of the operator;
b) 1mSv/year in the areas where the individuals from population may have access.

(2) Shields, others that the walls of enclosures, shall be designed so that dose rate does not exceed 60μSv/hour.

Art. 89. – Calculus of protection shields shall take into account at least of following:
a) all possible directions of irradiation;
b) radiation penetrated through the roof and the probability of the presence of some persons on the roof or surrounding of the enclosure;
c) radiation scattered outside the walls of enclosure by the air on its top;
d) design of the routes of cables, pipes and access doors by ensuring the endowment necessary for the prevention of leakage of direct or scattered radiation.

Art. 90. -Enclosures where radiological installations for which the dose rate is higher than 2 mSv/min at 1 m are used shall be supplementary endowed with the following radiological safety systems:
a) inter-conditionings which shall exclude the possibility to perform the exposures with the door of enclosure opened and which shall interrupt the exposure when the door is opening. These inter-conditionings shall be performed so that by the closing of the door to not activate the exposure;
b) switches or other shutdown systems in case of emergency through which the exposure can be stopped in case of the accidental presence of an individual within the exposure enclosure.

Art. 91. - Enclosures where the of Non-Destructive Testing practice with ionizing radiation is performed, shall be equipped with the following warning systems:
c) sound warning system which inform beforehand about the exposure of individuals placed within and outside the enclosure;
d) distinctive light warning systems during exposure. These shall be mounted within and outside the enclosure as lamps with intermittent light;
e) light warning systems on the roof, in case where the probability of the presence of some individuals in this area exists;
f) the sign "Danger of radiation" mounted on the access doors in enclosure and on the free walls;
g) written and posted instructions related to the significance of warning systems which shall be posted to all the access points and within the enclosure;
h) written and posted instructions related to the rules that shall be observed by operators (for the example, the limitation of radiation beam of by using collimators or the diaphragms, the restrictions on establishing the irradiation direction);
i) warning signal with threshold for radiation, fixed within the enclosure.

Art. 92. - For the opened enclosures which complies with the requirements provided under art. 86, para. (2) and above which cranes pass, the following additional measures are mandatory:

a) sound warning system which inform beforehand and during the exposure, the individuals situated within the crane;
b) the exposure shall be performed only with the beam directed from top to bottom.

Art. 93. - Any modification of the project which has been authorized shall be subject to the licensing and shall be performed only after obtaining a new authorization from CNCAN, through the modification of the initial one.

Requirements for the zoning

Art. 94. - The exposure enclosure and the sources storage shall be classified as controlled areas. (The auto-laboratory enclosure is considered as a controlled area).

Art. 95. – (1) The area situated around the controlled area is considered as supervised area. The supervised area shall be described and drawn in the design.

(2) The supervised area includes all laboratory spaces, except those mentioned under art. 94.

Art. 96. - In case of performing of Non-Destructive Testing practice outside the special equipped enclosure:

a) controlled area is the delimited and isolated one, at the limit to which the dose rate has the maximum value of 60 μSvh;
b) supervised area is extended up to the limit to which the dose rate decreases to the value of 7,5 μSv/h, with the condition of limiting the access in the supervised area of the individuals from population, at the transit with the shortest possible duration.

Art. 97. - The legal regime of controlled/ supervised areas shall allow to the authorization holder the fulfilment of the obligations provided in these norms.

(2) In the controlled/ supervised areas, the safe performance of the Non-Destructive Testing practice with ionizing radiations is the responsibility of the authorization holder.

Art. 98. – Warning signs mounted at all access points shall clearly indicate the delimitation of the controlled area.

Art. 99. – (1) Access and works performance in controlled area are allowed, except during the exposure periods, for the following categories of individuals:

a) occupational exposed workers involved in performing the Non-Destructive Testing practice with ionizing radiation;

b) outside workers, nominated in writing, only after they acquire the specific working instructions.

(2) Standing in supervised area is allowed for the categories of personnel specified under para. (1), with the recommendation for working where the dose rate does not exceed the value of 20 μSvh.

Art. 100. – (1) Access and standing in the controlled area of other individuals than those referred to at art. 99 are allowed only if, due to their working tasks, these individuals have to work in the controlled area only for a limited period of time and only if there is a written procedure establishing access and standing conditions, so that to demonstrate that the involved individuals shall not be exposed to higher doses than those allowed for the public.

(2) Access into the laboratory for Non-Destructive Testing with radiological installations shall be normally close, with remote controlled opening and intercom or with TV system for access and control visualization.

Art. 101. – Working conditions in the controlled and supervised areas shall be periodically checked and, whenever necessary, they shall be revised by the authorization holder.

Art. 102. – In order to comply with the requirements for the controlled and supervised areas, the authorization holder shall consult an approved expert in radiological protection, who shall certify the proposed zoning.

Requirements for the endowment of the means of transportation

Art. 103. – (1) Vehicle for automotive transport of radiological installations with radioactive sources shall have at least the following endowment:

a) fire-extinguisher for motor and fire-extinguisher for tyres;
b) headlight for fog;
c) yellow flashing light;
d) tools for snow removal and non-skidding chains;
e) ADR kit;
f) first-aid kit;
g) double closing system;
h) system for fixing the transport box of the radiological installation by the coachwork;
i) alarming system;

(2) Vehicle for automotive transport shall be subject to the periodical technical inspection at periods of maximum 8 months.

(3) It is recommended the endowment with Global Positioning System (GPS).

Procedures and working rules

Art. 104. – (1) Non-Destructive Testing practice with ionizing radiation shall be performed in accordance with a system of procedures and rules which represents the operational radiation protection system which has to be installed and maintained by the authorization holder.

(2) Operational radiation protection system is based on a general procedure for performing the Non-Destructive Testing practice with ionizing radiation, which shall establish:

a) organization and ways to perform the practice;
b) controlled and supervised areas;
c) duties and responsibilities of all the involved factors;
d) administrative relations among the involved factors;
e) system documents, keeping, recording, distribution, withdrawal;
f) necessary accounting;
g) sanctions.

(3) Operational radiation protection system shall be provided with at least the following operational procedures and rules, as applicable:

a) procedure on individual dosimetric monitoring;

b) procedure on radiological monitoring;
c) procedure on accounting, movement and storage of radiological installations and radiation sources;
d) procedure on verifying activities performance;
e) procedure on establishing the controlled and supervised areas and for the access control into the controlled area;
f) procedure for the internal transport and on the public roads of radiological installations;
g) procedure on the installation use;
h) procedure on intervention in case of radiological emergency;
i) using instructions of radiological installations and of dosimetric monitoring devices;

(4) Procedures shall ensure the transposition of the requirements of regulations from the nuclear field to the specific conditions for the performing of Non-Destructive Testing practice with ionizing radiation.

Commissioning and obtaining the utilization authorization

Art. 105. – Prior to the performance of Non-Destructive Testing practice with ionizing radiation, the applicant shall obtain the authorization for the performance of activity/activities in nuclear field which are not included in the practice performance.

Art. 106. – Licensing technical documentation required for obtaining the radiological safety authorization for performing the Non-Destructive Testing practice with ionizing radiation shall include all necessary information in order to prove the compliance with the provisions of specific regulations applicable for each of the activities from nuclear field which are not parts of practice and to allow the assessment of the degree of radiological safety accomplishment.

Art. 107. – Additional to general requirements foreseen at art. 62 of Norms on Radiological Safety – Licensing Procedures, approved by the President of the National Commission for Nuclear Activities Control by Order No. 366/2001, published in the Official Law Bulletin of Romania, Part I, no. 764 bis of November 30, 2001, the submitted technical documentation shall prove that, at least, the following conditions have been complied with:

a) equipping has been made in accordance with the documentation on the basis of which the siting authorization was obtained and with the limits and conditions laid down by this authorization;
b) efficiency of the protecting shields is proved by measurements made under the most unfavourable conditions (the highest activity of source or the highest energy of radiation beam and the most unfavourable irradiation direction);
c) warning and radiological safety systems have been installed and operate in accordance with the building siting documentation;
d) operational radiation protection system is functionally.

Decommissioning

Art. 108. – (1) Decommissioning of radiological installations with radioactive sources and of accelerators requires prior licensing from CNCAN.

(2) Decommissioning of the radiological installations provided under para. (1) is performed by units authorized by CNCAN to operate such installations and sources, in accordance with the Law 111/1996, republished, with subsequent modifications and completions.
(3) The ceasing of activity is the last phase of decommissioning and the authorization holder shall prove the following, as applicable:
a) transfer of radioactive sources as radioactive waste;
b) absence of areas contamination and classification as radioactive waste of all materials founded as contaminated;
c) delivery of containers with depleted uranium, by complying with the provisions of Norms on safeguards in the nuclear field;
d) adequately labelling of containers which do not contain sources (for example, "Empty container" or "Do not contain source");
e) exit, from the authorization holder inventory, of the radiological installations equipped with radiogenic tubes, by authorized transfer or by renting for the purpose of their utilization by other authorized holder, or by quashing; exit from the inventory by quashing is allowed in case the main components for radiation generation are useless;
f) removal of warning signs.
(4) Ceasing of the activity becomes effectively under the conditions of compliance with the provisions of art. 101 from Norms on Radiological Safety – Licensing Procedures.

Requirements for performing the Non-Destructive Testing Practice with Ionizing Radiation outside the Special Equipped Enclosure

Art. 109. – Controlled area shall be delineated by physical means (ropes, posters, barriers) and marked by warning signs against radiation danger. Inside the area at least one alarming system with red intermittent light will operate during the exposure period.
Art. 110. – Demarcation of controlled area is verified through direct measurements.
Art. 111. – Exposures shall be performed only by teams made of at least 2 operators, from whom at least one is the owner of a level 2 practice permit issued by CNCAN.
Art. 112. - Operators shall permanently survey the installation from a location which permits them examination of the control panel and intervention, if necessary.
Art. 113. – Length of cable between the control panel and the exposure unit shall permit installation of the control panel inside an area in which dose rate does not exceed the value indicated at art. 96 lit. a) and shall be of at least 20 m for generators with voltage up to 300kV and at least 30 m for those with higher voltage.
Art. 114. – Main radiation beam shall be collimated at the minimum necessary size. In case the size of main beam exceeds the size of the object to be X-rayed, installation of a protection shield behind the object is mandatory.
Art. 115. – (1) Radiological installations used during performing the Non-Destructive Testing practice with ionizing radiation may be stored in the authorized means of transportation, provided that eliminating the risk of robbery.
(2) If works are developed during a period exceeding 6 months, equipping of a temporary repository at the working place is mandatory, with storage under physical protection and

radiological safety conditions or, if this way is not economic optimum, the installations shall be daily transported to and from the authorization holder.
(3) If the temporary repository is not located in areas owned by the authorization holder, an announcement with its name, address and telephone number shall be posted in order to be able to be contacted in case of emergency.
Art. 116. – Notification and documentation related to the performing of Non-Destructive Testing practice with ionizing radiation outside the special equipped enclosure shall exclusively refer to the specific works assembly which is going to be performed inside an area or a well determined place (oil well, site), during a period not allowed to exceed one year.
Art. 117. – Notification of work with radiological installations with ionizing radiation sources outside the special equipped enclosure is made by handing in or submitting a dossier to CNCAN which shall contain:
a) application, which shall be filled in according to the model presented in Annex 2 to these norms;
b) technical documentation issued in accordance with the provisions of art. 118;
c) other information considered by the applicant necessary in supporting the request.
Art. 118. – Technical documentation for performing of Non-Destructive Testing practice with ionizing radiation outside the special equipped enclosure shall contain at least the following information:
a) justification and optimization of the activity;
b) description of the used working methods;
c) description of radiation sources, indicating, for each source, the radionuclide and the maximum activity during the proposed working period or, as applicable, the type of X-ray generator (directional or panoramic), maximum parameters for X-ray generator, full filtration and beam geometry;
d) description of the used installations, indicating the identification data;
e) exposure geometry, if necessary;
f) exac demarcation of areas or places in which the activity is intended to be performed and presentation of their drawings, including important elevations for the radiological safety assessment;
g) measures ensuring the compliance with dose limits provided by the norms into force;
h) proposed measures and description of their application methods in view of forbidding public access into the area demarcated for performing the activity;
i) assessment of the exposure type, of doses, monitoring system for staff and environment, indication of the Approved individual dosimetric services and the copy of the contract concluded with this;
j) list with the used, authorized and metrologic verified dosimetric equipment;
k) used individual and collective radiation protection means;
l) measures taken to prevent sources lost or theft;
m) arrangements for authorized transport;
n) intervention plan in case of radiological emergency;
o) list of personnel involved in the activities performance;
p) proposed period for performing the activities;
q) radiological safety officer;

r) expertise and acceptance statement for this documentation issued by an approved expert.

Art. 119. – (1) The applicant may perform the activity of working with sealed radioactive sources or with X-ray generators outside the special equipped enclosure, under the conditions of complying with the applicable regulations in nuclear field and with the submitted documentation, only in case he/she obtains CNCAN approval, in writing, within 30 days from de date of documentation submittal.

(2) In case CNCAN transmits conditions, their observance is mandatory for the period of activity performance.

(3) Prior to works performing, 72 hours before starting the Non-Destructive Testing activity outside the special equipped enclosure, the authorization holder shall notify CNCAN and the Division for Public Health – Laboratory for Radiation Hygiene within the territory where these works are going to be developed, on the works to be performed.

Art. 120. – (1) In case urgent works with sealed radioactive sources or X-ray generators outside the special equipped enclosure appear, the submission by fax of the application and documentation, with at least 5 days prior to works starting and after obtaining CNCAN approval for operative starting of the related works, are accepted.

(2) Urgent notification involves paying of a specific tax and tariff, for urgency, by the applicant, in accordance with the Regulation on taxes and tariffs for the licensing and control of nuclear activities, in force.

Art. 121. – Radiological installations can be used outside the special equipped enclosure, if the following conditions are complying with:

a) there is this provision at Chapter "Conditions" of the valid authorization issued by CNCAN for performing of practice of Non-Destructive Testing with ionizing radiation;
b) CNCAN approval following the notification has been received;
c) there is a procedure on accounting, movement and storage of radiological installations;
d) there is a procedure for establishing the controlled area;
e) there are working instructions with the involved installation;
f) there are means for warning and marking the controlled area;
g) there is metrological checked dosimetric control device and digital dosimeters for the operating personnel;
h) working team is made of at least two persons, out of whom at least one has level 2 exercising permit issued by CNCAN.

Transport of radiological installations with sealed sources

Art. 122. – Transport of radiological installations with sealed sources shall be performed under the conditions of compliance with the requirements of Norms on Physical Protection in the Nuclear Field, approved by Order of the President of the National Commission for the Nuclear Activities Control No. 382/2001, published in the Romanian Official Law Bulletin, Part I, No. 766 and 766 bis from November 30, 2001 and with the requirements of Fundamental Norms for the Safe Transport of Radioactive Materials, with the applicable ones from the European Agreement on the International Carriage of Dangerous Goods by Road (ADR) and with the following conditions:

a) container to be also qualified for transport and checked. Existence of a copy of the approval/validation certificate for the package type (type A or type B) is necessary;
b) radioactive source shall be installed in the shielded position and the key has to be removed (to be in the possession of the operator);
c) dose rate measured at the container envelope and at 1 m far from it shall be within the limits provided by the regulations in force, otherwise the package shall not be transported;
d) transport labels adequately filled in to be available;
e) transport of radioactive sources which do not possess valid certification for the absence of surface unfixed contamination is forbidden;
f) package shall be well secured and properly anchored in the means of transportation;
g) means of transportation shall be equipped with labels and posters in accordance with Fundamental Norms for the Safe Transport of Radioactive Materials;
h) transport documents shall be prepared in accordance with the ADR requirements and shall contain the intervention plan in case of transport accident, documents attesting source origin, certificate attesting the professional training of the driver, level 1 exercising permit issued by the authorization holder for the field of transport of radioactive materials and the transport authorization issued by the Romanian Road Authority.

Art. 123. – Transport of radiological installations with radioactive sources inside the perimeter being under the administrative control of the authorization holder is performed only by adequately trained staff.

CHAPTER VI
Radiological Emergencies
Intervention Planning and Preparedness

Art. 124. – (1) Authorization holder has the responsibility of identifying incidents/accidents which could affect the occupational exposed workers and/or public and of preparing an emergency procedure.

(2) Emergency procedure shall contain intervention plans for the identified radiological emergencies.

(3) Authorization holder can contract the carrying out of intervention in case of radiological emergency with an unit authorized for intervention. The contract shall clearly stipulate the responsibilities of the two parties.

Art. 125. – Events for which emergency plans shall be elaborated are fire, natural disasters (flooding, earthquakes) and, as applicable, the following:

1. For installations with sealed radioactive sources:
a) radioactive source does not completely return into the container;
b) radioactive source remains blocked outside the protection shield of the container, either in the irradiation head, or on the transfer tube, or at the container entrance;
c) disconnection of source or of carrying source from the remote control cable or the exit from the transfer tube or the irradiation head;
d) theft or lost of source/container with source;
e) source or container deterioration (mechanical warping or as a result of an accident during transportation);

f) radioactive contamination as a result of use of a damaged or deteriorated source;
g) bad operation or deliberately putting out of operation of the warning or safety system;
h) detachment of the capsule with source from the flanging system on carrying source, source getting out from the carrying source and its stopping on the guidance cables.

For installations with X ray generators:

a) breaking down of system for the control of exposure time;
b) accidentally supply of radiogen tube with high voltage;
c) operator negligence regarding stopping of the manual controlled exposure;
d) breaking down of inter-conditioning system, warning, safety or deliberately putting out of their operation;
e) oil leakage from the installation;
f) installation or shielding breaking down.

Intervention Plan

Art. 126. – (1) A radiological protection expert shall be consulted for elaboration of the intervention plan.

(2) Radiological protection expert shall approve the intervention plan.

Art. 127. – Intervention plan shall include, at least, the following:

a) identification of potential accidents and of other events which could occur during performance of Non-Destructive Testing practice with ionizing radiation and assessment of related potential risks;
b) identification of all persons authorized to participate in different phases of intervention;
c) identification of all persons or organizations which shall be notified in case of an incident, including the possibility of contacting them (telephone, fax, e-mail, mailing address);
d) indications on the way of recognizing the moment in which a certain intervention plan is necessary to be implemented;
e) specific instructions for each identified emergency situation;
f) special instructions that shall be complied with in case there is the risk of losses of human lives;
g) identification and purchase of means and equipment necessary for intervention;
h) instructions on removal panic, forbiddance of touching the source by hand, refuge at distance, planning of the next steps and their implementation, restriction only to intervention measures which are in accordance with the available experience degree and competence, requirement for technical support or assistance.

Art. 128. – Radiological safety officer is responsible for the specific application of the approved intervention plan.

Art. 129. – Prior to performing the intervention, participants to intervention shall be warned on the risk for health and to accept, in writing, their participation at intervention.

Identification and purchasing of means and equipment necessary for intervention

Art. 130. – Minimum endowment necessary for the intervention in case of radiological installations with radioactive source is:

a) appropriate dosimetric control device;
b) individual digital dosimeters with alarming threshold;
c) physical barriers and adequate warning signs;
d) lead shields for the used sources;
e) adequate means for handling the radioactive sources at distance;
f) adequate container for storage of the recovered radioactive source;
g) telecommunication equipment;
h) spare supply battery for the dosimetric control device;
i) means for demarcation and light and sound warning of intervention area.

Training of personnel on the implementation of intervention plan

Art. 131. – All individuals designated to participate in interventions shall be nominated in writing and adequately trained in order to understand the content of the intervention plan and to correctly use the means and equipment necessary for intervention.

Art. 132. – Knowledge of personnel designated to participate in interventions shall be verified at regular periods of time, which shall not exceed two months.

Planning of intervention drills

Art. 133. – Intervention drills shall be performed at regular periods of time established in terms of the size of the potential risk for incident generation, but no longer than two years.

Planning of the periodic revisions of the intervention plan

Art. 134. – Intervention plan shall be revised at regular periods of time, as it follows:

a) annually, referring to the individuals nominated to participate in intervention, to the communication means and to the intervention means and equipment;
b) at each 6 months, in case of performing of Non-Destructive Testing practice with ionizing radiation outside of the special equipped enclosures;
c) at each 5 years, in case of performing of Non-Destructive Testing practice with X-rays inside of the special equipped enclosures:
d) any time when a new type of installation with radiation source is considered, for which there are no provisions in the intervention measures provided for in this plan.

CHAPTER VII
Accidents reporting

Art. 135 Report on accident development shall be elaborated by the radiological safety officer with the involvement of an approved expert in radiological protection.

Art. 136 The report shall include:

a) a detailed description of the accident;
b) identification of installations and of involved personnel;
c) causes of accidents where they are known;
d) measures taken in order to restore the situation;
e) doses received by the affected personnel;
f) recommendations regarding the measures that shall be taken for prevention the occurring of other similar situations.

Chapter VIII
Announcing and reporting

Art. 137 (1) The authorization holder has the responsibility to announce to CNCAN:

a) within 10 days from the date of accident occurring, through a report drawn up in accordance with the provisions of art. 40 para. (2), any external exposure to radiation exceeding the values provided in art. 11;
b) at once, any accident, through a report drawn up in accordance with the provisions of art. 135 and 136;
c) at once, any accident during transport that led to the damage of the container or to the release of radioactive material;
d) at once, any loss or embezzlement of radiological installations, through a report describing the involved radiological installations, circumstances in which they are lost or embezzled and the risks that might appear.

(2) The authorization holder has the responsibility to:

a) register in its own registry book the performed actions and the movements of radiological installations outside the special equipped enclosure;
b) include in the annual report to CNCAN an extract/excerpt from the evidences provided under para. a)

Art. 138 (1) Any radiological emergency situation which affects other areas than the controlled area and the supervised area shall be notified at once to:

a) the public health division on the territory where the event has been produced;
b) the civil protection command on the territory where the event has been produced.

(2) In case of loss, theft of radioactive source or radiological installation from laboratories or from the means of transportation, the notification provided under para. (1) shall be also made immediately to the police station situated on the territory where the event occurred.

Chapter IX
Transitory and final provisions

Art. 139 The model for the authorization application presented in Annex no. 1 of these norms can be used as alternative to the form no. 4 – Model for activity authorization application included in the Radiological Safety Norms – Authorisation procedures.

Art. 140 Within one year from the date of entry into force of these norms, the authorization holders have the responsibility to take the necessary measures for setting-up and implementation of the operational radiation protection system.

Art. 141 Starting with the date of entry into force of these norms, art. 106 – 113 of the Order CSEN no. 133/1976 on establishing the Nuclear safety republican norms related to the working regime with radiation sources and any other dispositions on safe performance of Non-Destructive Testing practice using ionizing radiation shall be repealed.

ANNEX No. 1
to Norms

TEMPLATE
for application and evaluation plan of the Non-Destructive Testing practice
with ionising radiation

Heading of the applicant N0./date of transmittal to CNCAN

Authorization type:
- Initial Authorization
- Modification of the authorization issued by CNCAN no. .....
- Prolongation of the validity period for the authorization issued by CNCAN no.. .....

Practice for which the authorization is requested:
- Siting (Chap. I-III shall be filled in)
- Construction (Chap. I and II shall be filled in)
- Use (Chap. I-IV shall be filled in)
- Transport

- Additions to the documentation registered at CNCAN no. ...../date .....

I. GENERAL INFORMATION

I.1. The name of applicant .....

Address of applicant:

Address of headquarters	Address of administrative entity	Address of the location of practice deployment

I.2. Approved expert in radiological protection
Name and Surname .....
No. of exercising permit .....
Phone .....
I.3. Person empowered for the legal liability of the applicant
Name and Surname .....
Phone ....., fax ....., e-mail .....
I.4. Date envisaged for starting the practice .....

II. SOURCES AND RADIOLOGICAL INSTALLATIONS

II.1. Radiological Installations with sealed radioactive sources

No.	Commercial name of installation/ type, serial no, manufacturing year	Manufacturer of installation	ASR no.	Radioactive source (model)	Radionuclide	Classification according SR ISO 2919	Manufacturer of radioactive source	Maximum activity (TBq)	Serial no/ Manufacturing year/ date of registration

II.2. X-Ray Generators

No.	Commercial name of installation, model	Manufacturer of installation	ASR no.	High radiogene voltage (kV)	Intensity of current in radiogene tube (mA)	Serial no./manufacturing date/ date of registration

II.3. Accelerators

No.	Commercial name of installation, model	Manufacturer of installation	ASR no.	Type of radiation	Maximum energy (MeV)	Maximum intensity of current (mA)	Serial no/manufacturing year/date of registration

III. ARRANGEMENTS

III.1. The location of arrangements

It will be briefly describe:

a) description of the location of the building and access roads;

b) general description of the place where the arrangements will be located, indicating on lay-out the number of floors and of the unfolded surfaces on each floor;

c) description of places designated for the deployment of related activities to Non-Destructive Testing Practice with ionising radiation, cu by indicating them in the lay-out;

d) description of the activities deployed in the other places and rooms, located both on the floor where the arrangements are located on the upper and bottom floors;

e) functional connection with the other activities under deployment;

f) the area around the building where the arrangements will be located, specifying the other activities under deployment.

III.2. Construction works

It will be presented:

a) description of irradiation enclosure, shielding, warning systems, materials used for finishing;

b) description designated for the permanent work of the occupational exposed workers;

c) description of the ventilation systems, indicating in the lay-out the aspiration and repression hole, ventilators, air cleaning systems, insured reserve capacities;

d) description of the water supply system, sewage system, heating;

e) description of the lighting system, signalization, warnings, communications.

III.3 Safety Assessment

The calculus of thickness of the radiation protection shields performed according to the requirements of these norms.

III.4. Storage of installations

It will be described:

a) necessary measures to impede the robbery of the installations;

b) measures to prevent and signalize fire and flood;

c) warning means;

d) calculus of the thickness of the radiation protection shields.

IV. OPERATIONAL RADIATION PROTECTION SYSTEM

IV.1. The structure of the activity

It will be presented:

a) the description of the organisation structure, clearly indicating the authority and responsibilities for radiation protection and radiological safety;

b) the training program that must include the description o the system radiation protection operational procedures, the risk on the human health associated with the deployed activity, significance of the warning means, instructions on the use of installations and dosimetric monitoring devices etc.;

c) records and accounts that must be kept;

d) decision on appointment of the radiation protection responsible;

e) appointment of the approved expert in radiological protection.

IV.2. Classificaton of areas. Radiological monitoring of environment and individual monitoring

It will be described:

a) procedure on ensuring the radiological monitoring of environment, indicating the periodicity for performing the measurement, used devices, measurement procedures and actions to be performed in case the measured values exceed the maximum admitted values;

b) criteria used for areas classification;

c) means for ensuring the individual monitoring of the occupational exposed workers;

d) marking the areas on the presented sketches;

e) access control in the controlled and supervised area and inter-conditionalties.

IV.3. Quality Assurance Program for the practice deployment

It will be described:

a) Quality Management Manual, according to the provisions of specific norms;

b) procedures revision program and control revision program;

c) procedure on ensuring periodical control of installations, radiation sources and of efficiency of equipment, protection devices and techniques, periodical calibration and checking of measurement devices as well as assessment of their use in appropriate conditions;

d) contractual arrangements with authorized authorities for checking and approved expert in radiological protection which supervises the manner of deploying the practice;

e) arrangements and intervention procedures in case of radiological emergency.

IV.4. Procedure on ensuring the carry out of transport under the provisions of the norms in force

IV.5. Description of intervention plan in case of incident

IV.6. Arrangements on final disposal as radioactive waste, in case of installations decommissioning

IV.7. Records and accounting

It will be described the applicable procedures for records on accounting related to:

a) monitoring of occupational exposed workers;

b) radiological monitoring of working environment;

c) checking of installations and metrological checking of dosimetric monitoring devices;

d) accounting for installations and radioactive sources and their movement or utilization;

e) checking on absence of contamination not fixed on the surface;

f) investigation and reporting of the incidents;

g) personnel training;

h) medical surveillance of the occupational exposed workers.

ANNEX No. 2
to norms

Name of the legally constituted unit: .....
Headquarters: .....
Legal act for the setting up of the unit : .....
Phone: .....
Fax: .....
Registration/date: .....

To
The National Commission for Nuclear Activities Control
Bd. Libertăţii nr. 14, Bucureşti, sectorul 5, P.O. Box 42-4

1. We notify the intention to deploy the work outside the specialenclosures equipped with:
• sealed radioactive sources
• X-ray generators
2. The name of applicant .....
- Headquarters: town…… ....., Sector/County .....,
street ..... nr. .....
- phone ....., fax .....
- No. Of valid authorization issued by CNCAN, owned by the applicant .....
.....
3. Radiological Installations with radioactive sources:
a) name of installation: .....
b) no. of installations .....
c) type ....., radionuclide .....,
activity (Bq) ....., at date .....
d) maximum level of installation characteristics:
- high radiogene voltage ..... kV
- current intensity/maximum power ..... mA/kW
- total filtering ....., bundle geometry .....
e) manufacturer ....., supplier .....
4. Area (location) where the workings will be performed.....
.....
.....
5. Period when the works will be performed .....
6. Responsible person: name and surname .....
Exercising permit no. ..., field ....., speciality .....
7. We attach the technical documentation for authorization that contain a no. of ..... sheets, summary and is signed by the approved expert in radiological protection ....., level 3 exercising permit issued by CNCAN no. .....

The Person empowered to represent the legally constituted unit,
name .....
position .....
signature .....