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(GC/47)/1)

# Measures to Strengthen International Co- operation in Nuclear, Radiation and Transport Safety and Waste Management Revision of the Code of Conduct on the Safety and Security of Radioactive Sources

*Report by the Director General*

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**Summary**

- The purpose of this document is to seek adoption by the Board of Governors of the revised Code of Conduct on the Safety and Security of Radioactive Sources that is contained in Annex 1 to this document.

**Background**

- In September 1999, the Board approved an Action Plan for the Safety of Radiation Sources and Security of Radioactive Materials (see document GOV/1999/46-GC(43)/10 and Corr.1) and requested the Secretariat to implement it. The Action Plan included the following action: “to initiate a meeting of technical and legal experts for exploratory discussions relating to an international undertaking in the area of the safety of radiation sources and the security of radioactive materials.” Statements made in the Board at that time suggested that the development of a code of conduct would be the most generally acceptable way of proceeding.

- Early in 2000, the Secretariat convened an open-ended group of technical and legal experts to undertake exploratory discussions on a possible Code of Conduct on the Safety of Radiation Sources and the Security of Radioactive Materials. The group met in March and July 2000 and produced a Code of Conduct on the Safety and Security of Radioactive Sources (see document GOV/2000/34-GC(44/7) which was taken note of by the Board in September 2000.<sup>1</sup> In taking note of the Code of Conduct, the Board also took note of an accompanying report by the Chairman of the open-ended group – Mr. S. McIntosh (Australia) - and requested the Director General “to organize consultations

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<sup>1</sup> The Agency published the Code of Conduct (in Arabic, Chinese, English, French, Russian and Spanish) in 2001 under the symbol IAEA/CODEOC/2001.

on decisions which the Agency's policy-making organs may wish to take, in the light of the report of the Chairman of the Open-ended Meeting, regarding – inter alia – the application and implementation of the *Code of Conduct on the Safety and Security of Radioactive Sources* and to make recommendations thereon to the Board.”

- In May 2002, the Secretariat requested from Member States information about how they were implementing the Code of Conduct and in August 2002, it convened an open-ended group of technical and legal experts to consider how the Code of Conduct might be strengthened, particularly in response to security concerns and to questions arising from the responses to the Secretariat's May 2002 request for information, and to examine previously unresolved issues. The group met, under the chairmanship of Mr. S. McIntosh (Australia), again in March and July 2003, and agreed on the revised Code of Conduct on the Safety and Security of Radioactive Sources that is contained in Annex 1 to this document. Annex 2 contains the report on the last meeting by the Chairman of the open-ended group.

#### **Recommended Action by the Board**

- It is recommended that the Board approve the revised Code of Conduct on the Safety and Security of Radioactive Sources and transmit it to the General Conference with a recommendation that the Conference adopt it and encourage its wide implementation.

Draft revised Code of  
Conduct on the Safety and Security  
of Radioactive Sources

International Atomic Energy Agency

## **The IAEA's Member States**

Noting that radioactive sources are used throughout the world for a wide variety of beneficial purposes, e.g. in industry, medicine, research, agriculture and education,

Aware that the use of these radioactive sources involves risks due to potential radiation exposure,

Recognizing the need to protect individuals, society and the environment from the harmful effects of possible accidents and malicious acts involving radioactive sources,

Noting that ineffective, interrupted or sporadic regulatory or management control of radioactive sources has led to serious accidents, or malicious acts, or to the existence of orphan sources,

Aware that the risks arising from such incidents must be minimized and protected against through the application of appropriate radiation safety and security standards,

Recognizing the importance of fostering a safety and security culture in all organizations and among all individuals engaged in the regulatory control or the management of radioactive sources,

Recognizing the need for effective and continuous regulatory control, in particular to reduce the vulnerability of radioactive sources during transfers, within and between States,

Recognizing that States should take due care in authorizing exports, particularly because a number of States may lack appropriate infrastructure for the safe management and secure protection of radioactive sources, and that States should make efforts to harmonize their systems of export control of radioactive sources,

Recognizing the need for technical facilities, including appropriate equipment and qualified staff, to ensure the safe management and secure protection of radioactive sources,

Noting that the International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources contain recommendations for protection against exposure to ionizing radiation and for the safety and security of radioactive sources,

Recalling the IAEA's Safety Requirements document on Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety,

Taking account of the provisions of the Convention on Early Notification of a Nuclear Accident (1986) and of the provisions of the Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency (1986),

Taking account of the provisions of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997), in particular those provisions which relate to the transboundary movement of radioactive waste and to the possession, remanufacturing or disposal of disused sealed sources,

Recognizing that, while unsealed radioactive material is excluded from this Code, there may be circumstances where it should be managed in accordance with the objectives of this Code,

Recognizing the global role of the IAEA in the area of the safety and security of radioactive sources,

Taking account of the IAEA's categorization of radioactive sources, currently found in IAEA-TECDOC-1344 entitled "Categorization of radioactive sources", while recognizing that TECDOC-1344 is based on deterministic health effects and does not fully take into account the range of impacts that could result from accidents or malicious acts involving radioactive sources, and

Taking account of the approval by the Board of Governors of the activities regarding protection against nuclear terrorism proposed to it in March 2002, including activities relating to the security of radioactive material other than nuclear material,

DECIDE that the following Code of Conduct should serve as guidance to States for - *inter alia* - the development and harmonization of policies, laws and regulations on the safety and security of radioactive sources.

## **I. DEFINITIONS**

1. For the purposes of this Code:

"authorization" means a permission granted in a document by a regulatory body to a natural or legal person who has submitted an application to manage a radioactive source. The authorization can take the form of a registration, a licence or alternative effective legal control measures which achieve the objectives of the Code.

"disposal" means the emplacement of radioactive sources in an appropriate facility without the intention of retrieval.

"disused source" means a radioactive source which is no longer used, and is not intended to be used, for the practice for which an authorization has been granted.

"management" means the administrative and operational activities that are involved in the manufacture, supply, receipt, possession, storage, use, transfer, import, export, transport, maintenance, recycling or disposal of radioactive sources.

"orphan source" means a radioactive source which is not under regulatory control, either because it has never been under regulatory control, or because it has been abandoned, lost, misplaced, stolen or transferred without proper authorization.

"radioactive source" means radioactive material that is permanently sealed in a capsule or closely bonded, in a solid form and which is not exempt from regulatory control. It also means any radioactive material released if the radioactive source is leaking or broken, but does not mean material encapsulated for disposal, or nuclear material within the nuclear fuel cycles of research and power reactors.

"regulatory body" means an entity or organization or a system of entities or organizations designated by the government of a State as having legal authority for exercising regulatory control with respect to radioactive sources, including issuing authorizations, and thereby regulating one or more aspects of the safety or security of radioactive sources.

“regulatory control” means any form of control or regulation applied to facilities or activities by a regulatory body for reasons related to radiation protection or to the safety or security of radioactive sources.

“safety” means measures intended to minimize the likelihood of accidents involving radioactive sources and, should such an accident occur, to mitigate its consequences.

“safety culture” means the assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance.

“security” means measures to prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources.

“security culture” means characteristics and attitudes in organizations and of individuals which establish that security issues receive the attention warranted by their significance.

“storage” means the holding of radioactive sources in a facility that provides for their containment with the intention of retrieval.

## **II. SCOPE AND OBJECTIVES**

2. This Code applies to all radioactive sources that may pose a significant risk to individuals, society and the environment, that is the sources referred to in the Annex to this Code. States should also devote appropriate attention to the regulation of other potentially harmful radioactive sources.
3. This Code does not apply to nuclear material as defined in the Convention on the Physical Protection of Nuclear Material, except for sources incorporating plutonium-239.
4. This Code does not apply to radioactive sources within military or defence programmes.
5. (a) The objectives of this Code are, through the development, harmonization and implementation of national policies, laws and regulations, and through the fostering of international co-operation, to:
  - (i) achieve and maintain a high level of safety and security of radioactive sources;
  - (ii) prevent unauthorized access or damage to, and loss, theft or unauthorized transfer of, radioactive sources, so as to reduce the likelihood of accidental harmful exposure to such sources or the malicious use of such sources to cause harm to individuals, society or the environment; and
  - (iii) mitigate or minimize the radiological consequences of any accident or malicious act involving a radioactive source.
- (b) These objectives should be achieved through the establishment of an adequate system of regulatory control of radioactive sources, applicable from the stage of initial production to their final disposal, and a system for the restoration of such control if it has been lost.

6. This Code relies on existing international standards relating to nuclear, radiation, radioactive waste and transport safety and to the control of radioactive sources. It is intended to complement existing international standards in these areas.

### **III. BASIC PRINCIPLES**

#### **GENERAL**

7. Every State should, in order to protect individuals, society and the environment, take the appropriate measures necessary to ensure:
  - (a) that the radioactive sources within its territory, or under its jurisdiction or control, are safely managed and securely protected during their useful lives and at the end of their useful lives; and
  - (b) the promotion of safety culture and of security culture with respect to radioactive sources.
8. Every State should have in place an effective national legislative and regulatory system of control over the management and protection of radioactive sources. Such a system should:
  - (a) place the prime responsibility for the safe management of, and the security of, radioactive sources on the persons being granted the relevant authorizations;
  - (b) minimize the likelihood of a loss of control;
  - (c) include national strategies for gaining or regaining control over orphan sources;
  - (d) provide for rapid response for the purpose of regaining control over orphan sources;
  - (e) foster ongoing communication between the regulatory body and users;
  - (f) provide for measures to reduce the likelihood of malicious acts, including sabotage, consistent with the threat defined by the State;
  - (g) mitigate or minimize the radiological consequences of accidents or malicious acts involving radioactive sources; and
  - (h) provide for its own continuous improvement.
9. Every State should ensure that appropriate facilities and services for radiation protection, safety and security are available to, and used by, the persons who are authorized to manage radioactive sources. Such facilities and services should include, but are not limited to, those needed for:
  - (a) searching for missing sources and securing found sources;
  - (b) intervention in the event of an accident or malicious act involving a radioactive source;
  - (c) personal dosimetry and environmental monitoring; and

- (d) the calibration of radiation monitoring equipment.
10. Every State should ensure that adequate arrangements are in place for the appropriate training of the staff of its regulatory body, its law enforcement agencies and its emergency services organizations.
  11. Every State should establish a national register of radioactive sources. This register should, as a minimum, include Category 1 and 2 radioactive sources as described in the Annex to this Code. The information contained in that register should be appropriately protected. For the purpose of introducing efficiency in the exchange of radioactive source information between States, States should endeavour to harmonize the formats of their registers.
  12. Every State should ensure that information concerning any loss of control over radioactive sources, or any incidents, with potential transboundary effects involving radioactive sources, is provided promptly to potentially affected States through established IAEA or other mechanisms.
  13. Every State should:
    - (a) promote awareness among industry, health professionals, the public, and government bodies of the safety and security hazards associated with orphan sources; and
    - (b) encourage bodies and persons likely to encounter orphan sources during the course of their operations (such as scrap metal recyclers and customs posts) to implement appropriate monitoring programmes to detect such sources.
  14. Every State should encourage the reuse or recycling of radioactive sources, when practicable and consistent with considerations of safety and security.
  15. Every State should, in implementing this Code, emphasize to designers, manufacturers (both manufacturers of radioactive sources and manufacturers of devices in which radioactive sources are incorporated), suppliers and users and those managing disused sources their responsibilities for the safety and security of radioactive sources.
  16. Every State should define its domestic threat, and assess its vulnerability with respect to this threat for the variety of sources used within its territory, based on the potential for loss of control and malicious acts involving one or more radioactive sources.
  17. Each State should take appropriate measures consistent with its national law to protect the confidentiality of any information that it receives in confidence under this Code of Conduct from another State or through participation in an activity carried out for the implementation of this Code of Conduct. If any State provides information to international organizations in confidence, steps should be taken to ensure that the confidentiality of such information is protected. A State that has received information in confidence from another State should only provide this information to third parties with the consent of that other State. A State is not expected to provide any information that it is not permitted to communicate pursuant to its national law or which would jeopardize the security of that State.

## LEGISLATION AND REGULATIONS

18. Every State should have in place legislation and regulations that:
  - (a) prescribe and assign governmental responsibilities to assure the safety and security of radioactive sources;
  - (b) provide for the effective control of radioactive sources;
  - (c) specify the requirements for protection against exposure to ionizing radiation; and
  - (d) specify the requirements for the safety and security of radioactive sources and of the devices in which sources are incorporated.
  
19. Such legislation and/or regulations should provide for, in particular:
  - (a) the establishment of a regulatory body whose regulatory functions are effectively independent of other functions with respect to radioactive sources, such as the management of radioactive sources or the promotion of the use of radioactive sources. This body should have the powers and characteristics listed in paragraphs 20 to 22;
  - (b) measures to protect individuals, society and the environment from the deleterious effects of ionizing radiation from radioactive sources;
  - (c) administrative requirements relating to the authorization of the management of radioactive sources;
  - (d) provisions for exemption, as appropriate, from the administrative requirements referred to in paragraph (c) above;
  - (e) administrative requirements relating to notifications to the regulatory body of actions involved in the management of radioactive sources that may engender a significant risk to individuals, society or the environment;
  - (f) managerial requirements relating in particular to the establishment of adequate policies, procedures and measures for the control of radioactive sources;
  - (g) requirements for security measures to deter, detect and delay the unauthorized access to, or the theft, loss or unauthorized use or removal of radioactive sources during all stages of management;
  - (h) requirements relating to the verification of the safety and security of radioactive sources, through safety and security assessments, monitoring and verification of compliance, and the maintenance of appropriate records; and
  - (i) the capacity to take appropriate enforcement actions.

## REGULATORY BODY

20. Every State should ensure that the regulatory body established by its legislation has the authority to:
  - (a) establish regulations and issue guidance relating to the safety and security of radioactive sources;

- (b) require those who intend to manage radioactive sources to seek an authorization, and to submit:
  - (i) a safety assessment; and
  - (ii) a security plan or assessment as appropriatefor the source and/or the facility in which the source is to be managed, if deemed necessary in the light of the risks posed and, in the case of security, the current national threat assessment;
- (c) obtain all relevant information from an applicant for an authorization;
- (d) issue, amend, suspend or revoke, as necessary, authorizations for the management of radioactive sources.
- (e) attach clear and unambiguous conditions to the authorizations issued by it, including conditions relating to:
  - (i) responsibilities;
  - (ii) minimum operator competencies;
  - (iii) minimum design and performance criteria, and maintenance requirements for radioactive sources and the devices in which they are incorporated;
  - (iv) minimum performance criteria and maintenance requirements for equipment and systems used to ensure the safety and security of radioactive sources;
  - (v) requirements for emergency procedures and communication links;
  - (vi) work procedures to be followed;
  - (vii) the safe and secure management of disused sources, including, where applicable, agreements regarding the return of disused sources to a supplier;
  - (viii) measures to determine, as appropriate, the trustworthiness of individuals involved in the management of radioactive sources; and
  - (ix) the confidentiality of information relating to the security of sources;
- (f) obtain any relevant and necessary information from a person with an authorization, in particular if that is warranted by revised safety or security assessments;
- (g) require those supplying or transferring radioactive sources or devices incorporating radioactive sources to provide the recipient with all relevant technical information to permit their safe and secure management.
- (h) enter premises in order to undertake inspections for the verification of compliance with regulatory requirements;
- (i) enforce regulatory requirements;

- (j) monitor, or request other authorized bodies to monitor, at appropriate checkpoints for the purpose of detecting orphan sources;
  - (k) ensure that corrective actions are taken when a radioactive source is in an unsafe or non-secure condition;
  - (l) provide, on a case-by-case basis, to a person with an authorization and the public any information that is deemed necessary in order to protect individuals, society and the environment;
  - (m) liaise and co-ordinate with other governmental bodies and with relevant non-governmental bodies in all areas relating to the safety and security of radioactive sources;
  - (n) liaise with regulatory bodies of other countries and with international organizations to promote co-operation and the exchange of regulatory information;
  - (o) establish criteria for intervention in emergency situations;
  - (p) ensure that radioactive sources are stored in facilities appropriate for the purpose of such storage; and
  - (q) ensure that, where disused sources are stored for extended periods of time, the facilities in which they are stored are fit for that purpose.
21. Every State should ensure that its regulatory body:
- (a) is staffed by qualified personnel;
  - (b) has the financial resources and the facilities and equipment necessary to undertake its functions in an effective manner; and
  - (c) is able to draw upon specialist resources and expertise from other relevant governmental agencies.
22. Every State should ensure that its regulatory body:
- (a) establishes procedures for dealing with applications for authorization;
  - (b) ensures that arrangements are made for the safe management and secure protection of radioactive sources, including financial provisions where appropriate, once they have become disused;
  - (c) maintains appropriate records of persons with authorizations in respect of radioactive sources, with a clear indication of the type(s) of radioactive sources that they are authorized to use, and appropriate records of the transfer and disposal of the radioactive sources on termination of the authorizations. These records should be properly secured against unauthorized access or alteration, and back-up copies should be made;
  - (d) promotes the establishment of a safety culture and of a security culture among all individuals and in all bodies involved in the management of radioactive sources;

- (e) establishes systems for ensuring that, where practicable, both radioactive sources and their containers, are marked by users with an appropriate sign to warn members of the public of the radiation hazard, but where this is not practicable, at least the container is so marked;
- (f) establishes systems for ensuring that the areas where radioactive sources are managed are marked by users with appropriate signs to warn workers or members of the public, as applicable, of the radiation hazard;
- (g) establishes systems for ensuring that, where practicable, radioactive sources are identifiable and traceable, or where this is not practicable, ensures that alternative processes for identifying and tracing those sources are in place;
- (h) ensures that inventory controls are conducted on a regular basis by persons with authorizations;
- (i) carries out both announced and unannounced inspections at an appropriate frequency taking into account past performance and the risks presented by the radioactive source;
- (j) takes enforcement actions, as appropriate, to ensure compliance with regulatory requirements;
- (k) ensures that the regulatory principles and criteria remain adequate and valid and take into account, as applicable, operating experience and internationally endorsed standards and recommendations;
- (l) requires the prompt reporting by authorized persons of loss of control over, and of incidents in connection with, radioactive sources;
- (m) provides guidance on appropriate levels of information, instruction and training on the safety and security of radioactive sources and the devices or facilities in which they are housed, to manufacturers, suppliers and users of radioactive sources;
- (n) requires authorized persons to prepare emergency plans, as appropriate;
- (o) is prepared, or has established provisions, to recover and restore appropriate control over orphan sources, and to deal with radiological emergencies and has established appropriate response plans and measures;
- (p) is prepared in respect of orphan sources that may have originated within the State to assist in obtaining technical information relating to their safe and secure management.

## IMPORT AND EXPORT OF RADIOACTIVE SOURCES

23. Every State involved in the import or export of radioactive sources should take appropriate steps to ensure that transfers are undertaken in a manner consistent with the provisions of the Code and that transfers of radioactive sources in Categories 1 and 2 of the Annex to this Code take place only with the prior notification by the exporting State and, as appropriate, consent by the importing State in accordance with their respective laws and regulations.

24. Every State intending to authorize the import of radioactive sources in Categories 1 and 2 of the Annex to this Code should consent to their import only if the recipient is authorized to receive and possess the source under its national law and the State has the appropriate technical and administrative capability, resources and regulatory structure needed to ensure that the source will be managed in a manner consistent with the provisions of this Code.
25. Every State intending to authorize the export of radioactive sources in Categories 1 and 2 of the Annex to this Code should consent to its export only if it can satisfy itself, insofar as practicable, that the receiving State has authorized the recipient to receive and possess the source and has the appropriate technical and administrative capability, resources and regulatory structure needed to ensure that the source will be managed in a manner consistent with the provisions of this Code.
26. If the conditions in paragraphs 24 and 25 with respect to a particular import or export cannot be satisfied, that import or export may be authorized in exceptional circumstances with the consent of the importing State if an alternative arrangement has been made to ensure the source will be managed in a safe and secure manner.
27. Every State should allow for re-entry into its territory of disused radioactive sources if, in the framework of its national law, it has accepted that they be returned to a manufacturer authorized to manage the disused sources.
28. Every State which authorizes the import or export of a radioactive source should take appropriate steps to ensure that such import or export is conducted in a manner consistent with existing relevant international standards relating to the transport of radioactive materials.
29. Although not subject to the authorization procedures outlined in paragraphs 24 and 25 above, the transport of radioactive sources through the territory of a transit or transshipment state should be conducted in a manner consistent with existing relevant international standards relating to the transport of radioactive materials, in particular paying careful attention to maintaining continuity of control during international transport.

#### ROLE OF THE IAEA

30. The IAEA should:
  - (a) continue to collect and disseminate information on laws, regulations and technical standards relating to the safe management and secure protection of radioactive sources, develop and establish relevant technical standards and provide for the application of these standards at the request of any State, inter alia by advising and assisting on all aspects of the safe management and secure protection of radioactive sources;
  - (b) disseminate this Code and related information widely; and
  - (c) in particular, implement the measures approved by its policy-making organs.

## DISSEMINATION OF THE CODE

31. Every State should, as appropriate, inform persons involved in the management of radioactive sources, such as industry, health professionals, and government bodies, and the public, of the measures it has taken to implement this Code, and should take steps to disseminate that information.

## **Annex: List of sources covered by the Code**

Category 1 sources, if not safely managed or securely protected would be likely to cause permanent injury to a person who handled them, or were otherwise in contact with them, for more than a few minutes. It would probably be fatal to be close to this amount of unshielded material for a period of a few minutes to an hour. These sources are typically used in practices such as radiothermal generators, irradiators and radiation teletherapy.

Category 2 sources, if not safely managed or securely protected, could cause permanent injury to a person who handled them, or were otherwise in contact with them, for a short time (minutes to hours). It could possibly be fatal to be close to this amount of unshielded radioactive material for a period of hours to days. These sources are typically used in practices such as industrial gamma radiography, high dose rate brachytherapy and medium dose rate brachytherapy.

Category 3 sources, if not safely managed or securely protected, could cause permanent injury to a person who handled them, or were otherwise in contact with them, for some hours. It could possibly — although it is unlikely — be fatal to be close to this amount of unshielded radioactive material for a period of days to weeks. These sources are typically used in practices such as fixed industrial gauges involving high activity sources (for example, level gauges, dredger gauges, conveyor gauges and spinning pipe gauges) and well logging.

Table I provides a categorization by activity levels for radionuclides that are commonly used. These are based on D-values which define a dangerous source i.e.: a source that could, if not under control, give rise to exposure sufficient to cause severe deterministic effects. A more complete listing of radionuclides and associated activity levels corresponding to each category, and a fuller explanation of the derivation of the D-values, may be found in TECDOC-1344, which also provides the underlying methodology that could be applied to radionuclides not listed. Typical source uses are noted above for illustrative purposes only.

In addition to these categories, States should give appropriate attention to radioactive sources considered by them to have the potential to cause unacceptable consequences if employed for malicious purposes, and to aggregations of lower activity sources (as defined by TECDOC 1344) which require management under the principles of this Code.

Table I. Activities corresponding to thresholds of Categories

Radionuclide	Category 1		Category 2		Category 3	
	1000 x D		10 x D		D	
	(TBq)	(Ci) <sup>a</sup>	(TBq)	(Ci) <sup>a</sup>	(TBq)	(Ci) <sup>a</sup>
Am-241	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00
Am-241/Be	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00
Cf-252	2.E+01	5.E+02	2.E-01	5.E-00	2.E-02	5.E-01
Cm-244	5.E+01	1.E+03	5.E-01	1.E+01	5.E-02	1.E+00
Co-60	3.E+01	8.E+02	3.E-01	8.E+00	3.E-02	8.E-01
Cs-137	1.E+02	3.E+03	1.E+00	3.E+01	1.E-01	3.E+00
Gd-153	1.E+03	3.E+04	1.E+01	3.E+02	1.E+00	3.E+01
Ir-192	8.E+01	2.E+03	8.E-01	2.E+01	8.E-02	2.E+00
Pm-147	4.E+04	1.E+06	4.E+02	1.E+04	4.E+01	1.E+03
Pu-238	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00
Pu-239 <sup>b</sup> /Be	6.E+01	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00
Ra-226	4.E+01	1.E+03	4.E-01	1.E+01	4.E-02	1.E+00
Se-75	2.E+02	5.E+03	2.E+00	5.E+01	2.E-01	5.E+00
Sr-90 (Y-90)	1.E+03	3.E+04	1.E+01	3.E+02	1.E+00	3.E+01
Tm-170	2.E+04	5.E+05	2.E+02	5.E+03	2.E+01	5.E+02
Yb-169	3.E+02	8.E+03	3.E+00	8.E+01	3.E-01	8.E+00
Au-198*	2.E+02	5.E+03	2.E+00	5.E+01	2.E-01	5.E+00
Cd-109*	2.E+04	5.E+05	2.E+02	5.E+03	2.E+01	5.E+02
Co-57*	7.E+02	2.E+04	7.E+00	2.E+02	7.E-01	2.E+01
Fe-55*	8.E+05	2.E+07	8.E+03	2.E+05	8.E+02	2.E+04
Ge-68*	7.E+02	2.E+04	7.E+00	2.E+02	7.E-01	2.E+01
Ni-63*	6.E+04	2.E+06	6.E+02	2.E+04	6.E+01	2.E+03
Pd-103*	9.E+04	2.E+06	9.E+02	2.E+04	9.E+01	2.E+03
Po-210*	6.E+02	2.E+03	6.E-01	2.E+01	6.E-02	2.E+00
Ru-106 (Rh-106)*	3.E+02	8.E+03	3.E+00	8.E+01	3.E-01	8.E+00
Tl-204*	2.E+04	5.E+05	2.E+02	5.E+03	2.E+01	5.E+02

\* These radionuclides are very unlikely to be used in individual radioactive sources with activity levels that would place them within Categories 1, 2 or 3 and would therefore not be subject to the paragraph relating to national registries (11) or the paragraphs relating to import and export control (23 to 26).

<sup>a</sup> The primary values to be used are given in TBq. Curie values are provided for practical usefulness and are rounded after conversion.

<sup>b</sup> Criticality and safeguard issues will need to be considered for multiples of D.

**Open-ended Meeting of Technical and  
Legal Experts to Review a Draft Revised  
Code of Conduct on the Safety and  
Security of Radioactive Sources**

**Vienna, 14-18 July 2003**

**Report of the Chairman**

1. An open-ended meeting of technical and legal experts to review and finalize a draft revised Code of Conduct on the Safety and Security of Radioactive Sources\* met from 14 to 18 July 2003 at the IAEA Headquarters in Vienna under the chairmanship of Mr S. McIntosh (Australia). The meeting was attended by representatives from 21 Member States (Argentina, Australia, Belgium, Canada, China, the Czech Republic, Egypt, Ethiopia, France, Germany, India, Israel, Japan, Malaysia, Mexico, the Russian Federation, the Slovak Republic, Turkey, Ukraine, the United Kingdom and the United States of America) and an observer from the NEA/OECD. The meeting was opened by Mr T. Taniguchi, DDG-NS, followed by introductory remarks by Mr A. Gonzalez, NSRW.

2. At the outset, the Chairman recalled the discussions undertaken and decisions made at the Group's previous meetings of 19-23 August 2002 and 3-7 March 2003. Building on those discussions and decisions, the Group made a number of amendments to the draft revised Code. These included, inter alia, changes to some of the definitions in the Code and the addition of language concerning the establishment of systems for mitigating or minimizing the radiological consequences of accidents or malicious acts involving radioactive sources.

3. As foreshadowed in the report of the meeting of 3-7 March 2003, the Group gave priority to consideration of the scope of the Code. That consideration was carried out in the light of the recent finalization of the revisions to the IAEA's Categorization of Radioactive Sources, published as IAEA-TECDOC-1344. The Group confirmed that the Code – with the exception of paragraphs relating to national registers and export/import control - should apply, with some modification, to sources in Categories 1 to 3 of the categorization developed in TECDOC-1344. This approach is now reflected in the Annex to the Code. Sources containing radionuclides which, although included in TECDOC-1344, do not meet the definition of "radioactive source" in the Code – for example because they are not in a solid form, or are unsealed sources – are outside the scope of the Code, and are therefore excluded from Table I in the Annex. Additionally, radionuclides that are unlikely to be used in radioactive sources with activity levels that would place them within Categories 1, 2 or 3 were marked with an asterisk, in order to indicate that the Code is not currently applicable to individual sources of these types.

4. At the same time, the Group agreed that States should also devote appropriate attention to the regulation, in accordance with the Code, of other potentially harmful radioactive sources. Such sources include those considered by them to have the potential to cause

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\* The IAEA Board of Governors took note of an earlier version of the Code of Conduct on 11 September 2000, published as IAEA/CODEOC/2001.

unacceptable consequences if employed for malicious purposes, and aggregations of lower activity sources.

5. The Group recalled that the scope of the Code excluded unsealed radioactive sources. The Group agreed that, although the content of the Code could not be precisely applied to unsealed radioactive sources, States should be encouraged to regulate them under similar principles in some circumstances. A paragraph to that effect was inserted in the preamble to the Code.

6. The Group agreed that the Code did not apply to radioactive sources within military or defence programmes, although some states expressed the opinion that such sources should be managed in accordance with the objectives of the Code and that the Code's principles should apply to such sources during and after transfer to civilian programmes. The vulnerability of sources during any form of transfer was highlighted in the preamble.

7. The Group agreed on further enhancements to the paragraphs concerning the export and import of radioactive sources. In particular, it was agreed that the scope of these paragraphs should be restricted to sources within Categories 1 and 2 of the classification structure contained in the Annex to the Code. The Group considered that the implementation of these paragraphs would be assisted if the Secretariat could take responsibility for the compilation, maintenance and publication of a list of contact details of competent national regulatory bodies, and for the development of a standardised format for importing States to use in indicating that prospective users were properly authorized. Some experts considered that the Secretariat should also take responsibility for providing information concerning the degree of implementation by importing States of the Code, with the consent of the States involved. The Group noted the importance of developing further guidance on the full implementation of the paragraphs dealing with export and import control. In particular, the guidance should include understandings on how an exporting State would assess the degree to which an importing State has implemented the Code. As in the draft developed in March 2003, the revised draft Code includes language permitting the export of a source other than in accordance with these paragraphs only "in exceptional circumstances". The Group noted that the guidance referred to above should include a common understanding as to the scope of the term "exceptional circumstances". The Group encouraged supplier states to consult on the harmonization of their export control systems.

8. The Group gave further consideration to the issue of security of sources, and inserted additional language concerning assessment of domestic threats and vulnerability, sabotage, mitigation and minimisation of consequences, and confidentiality. The Group noted that interim guidance on the security of radioactive sources had recently been published as TECDOC-1355, and that further guidance on this issue will be published by the Agency. The Group also noted that a TECDOC regarding security during transport was currently under development elsewhere in the Agency, and that there was therefore no need to include detailed language in this regard in the Code. Some states expressed concern that the strict application of the Code should not impede international initiatives directed at securing or recovering sources in an unsafe or insecure condition.

9. The Group noted that the Agency's revised draft Action Plan for Safety and Security of Radioactive Sources, to be submitted to the September meeting of the IAEA's Board of Governors, would contain a number of actions relevant to the implementation of the Code. The Group looked forward to the Board's consideration of this issue. The Chairman also

noted the importance of the implementation of the Code by developing states, and the role which the Agency's technical co-operation programme might play in assisting that process.

10. The Group agreed that the finalized draft Code should be submitted to the September meeting of the IAEA's Board of Governors and to the subsequent General Conference for their adoption.

11. The Group further considered whether, and if so by what means, the commitment of States to the Code could be reinforced. That consideration was assisted by the circulation of a Chairman's paper on the subject prior to the meeting. The Group agreed that decisions and guidance on this issue were properly matters for the Agency's policy-making organs. However, some States expressed a preference for a political commitment. Further, several experts considered that, in addition to endorsement by the General Conference, States should be encouraged to make individual political commitments concerning their implementation of the Code. Options for the wording of such a commitment that were proposed were:

- “[State] declares that it will fully implement the terms of the Code of Conduct on the Safety and Security of Radioactive Sources. Consistent with the non-legally binding status of the Code, this declaration does not create any legal obligations.”
- “[State] fully supports and endorses the IAEA's efforts to create international standards for the safety and security of radioactive sources. [State] is working toward full implementation of the IAEA Code of Conduct on the Safety and Security of Radioactive Sources and encourages other countries to do the same.”
- “[State] affirms its determination to uphold the principles of safe and secure management of radioactive sources, as are stated in the Code of Conduct on the Safety and Security of Radioactive Sources. Consistent with the non-legally binding status of the Code, this declaration does not create any legal obligations or any specific reporting system.”
- “[State] affirms its support for the IAEA's work on the safety and security of radioactive sources, including the completion of the recently revised IAEA Code of Conduct on the Safety and Security of Radioactive Sources, which is non-legally binding in nature. [State] will implement the IAEA Code of Conduct on the Safety and Security of Radioactive Sources and urges other countries to do the same. This declaration does not create any legal obligations or any specific reporting systems.”

12. The experts agreed that the Code as revised by the Group provides the basis for significant enhancements of the control of radioactive sources. Such control would be a significant step towards enhancing both the safety and the security of radioactive sources.

Steven McIntosh  
Chairman  
18 July 2003