DEVELOPING A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE TO NUCLEAR SECURITY EVENTS

DRAFT IMPLEMENTING GUIDE

INTERNATIONAL ATOMIC ENERGY AGENCY

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FOREWORD

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The IAEA’s principal objective under its Statute is “to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world.” Our work involves both preventing the spread of nuclear weapons and ensuring that nuclear technology is made available for peaceful purposes in areas such as health and agriculture. It is essential that all nuclear and other radioactive materials, and the facilities in which they are held, are managed in a safe manner and properly protected against criminal or intentional unauthorized acts.

Nuclear security is the responsibility of each individual country, but international cooperation is vital to support States in establishing and maintaining effective nuclear security regimes. The central role of the IAEA in facilitating such cooperation, and providing assistance to States, is well recognized. The Agency’s role reflects its broad membership, its mandate, its unique expertise and its long experience of providing technical assistance and specialist, practical guidance to States.

Since 2006, the IAEA has issued Nuclear Security Series publications to help States to establish effective national nuclear security regimes. These publications complement international legal instruments on nuclear security, such as the Convention on the Physical Protection of Nuclear Material and its Amendment, the International Convention for the Suppression of Acts of Nuclear Terrorism, United Nations Security Council Resolutions 1373 and 1540, and the Code of Conduct on the Safety and Security of Radioactive Sources.

Guidance is developed with the active involvement of experts from IAEA Member States, which ensures that it reflects a consensus on good practices in nuclear security. The IAEA Nuclear Security Guidance Committee, established in March 2012 and made up of Member States’ representatives, reviews and approves draft publications in the Nuclear Security Series as they are developed.

The IAEA will continue to work with its Member States to ensure that the benefits of peaceful nuclear technology are made available to improve the health, well-being and prosperity of people world-wide.
CONTENTS

1. INTRODUCTION ......................................................................................................................... 1
  BACKGROUND ......................................................................................................................... 1
  OBJECTIVE .............................................................................................................................. 3
  SCOPE ....................................................................................................................................... 4
  STRUCTURE .............................................................................................................................. 5

2. BASIS FOR A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE TO
  NUCLEAR SECURITY EVENTS ...................................................................................................... 5
  OVERVIEW .................................................................................................................................. 5
  THREAT ASSESSMENT AND RISK-INFORMED APPROACH ...................................................... 6
  GRADED APPROACH .................................................................................................................. 7
  DETECTION SYSTEMS AND MEASURES ..................................................................................... 7

3. TYPES OF NUCLEAR SECURITY EVENT AND PLANNING OF RESPONSE RESOURCES ... 8
  GENERAL ...................................................................................................................................... 8
  TYPES OF NUCLEAR SECURITY EVENT ..................................................................................... 9
    Type 1 Nuclear Security Event .................................................................................................. 9
    Type 2 Nuclear Security Event ................................................................................................ 10
    Type 3 Nuclear Security Event ................................................................................................ 11
  RESOURCES .................................................................................................................................. 13
    Local resources .......................................................................................................................... 14
    National resources .................................................................................................................... 14
    International resources .............................................................................................................. 14

4. DESIGNING A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE TO
  NUCLEAR SECURITY EVENTS ...................................................................................................... 15
  STRATEGIC AIMS ..................................................................................................................... 16
  KEY ACTIVITIES ......................................................................................................................... 17
  ORGANIZATIONS, ROLES AND RESPONSIBILITIES .................................................................. 19
  PLANS AND PROCEDURES ........................................................................................................ 21
  MULTI-AGENCY COMMAND, CONTROL AND COORDINATION ........................................... 21
  NATIONAL COORDINATION ...................................................................................................... 24

5. INFRASTRUCTURE FOR A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE
  TO NUCLEAR SECURITY EVENTS ............................................................................................... 24
  AUTHORITY .............................................................................................................................. 24
  CAPABILITIES AND RESOURCES ............................................................................................. 25
  TRAINING AND EXERCISING .................................................................................................... 26

6. INTERNATIONAL COOPERATION AND ASSISTANCE .......................................................... 26
  GENERAL ...................................................................................................................................... 26
  ARRANGEMENTS FOR INTERNATIONAL COOPERATION AND ASSISTANCE FOR
  NUCLEAR SECURITY EVENTS .................................................................................................... 27

7. SUSTAINABILITY ....................................................................................................................... 29
1. INTRODUCTION

BACKGROUND

1.1 Nuclear security events may be very complex, and are likely to have national and international implications that need to be addressed by the State or States affected. Although the nature and magnitude of such events may initially be unclear, the State needs to be prepared in order to clarify the situation and respond appropriately, whether or not the nuclear security event leads to a nuclear or radiological emergency. It is the State’s responsibility to establish whether a criminal or unauthorized act involving or directed at nuclear material, other radioactive material, an associated facility or associated activity (shortened to “criminal or intentional unauthorized act” in the remainder of this publication) is taking place, and to provide an effective, coordinated response.

1.2 States need to ensure that their national capability to respond to a nuclear security event and any resulting emergency includes the ability to rapidly assess and categorize the event based on factors such as the threat, potential human and environmental consequences, economic impact and the nature of the nuclear or other radioactive material involved. The response to a nuclear security event should also support any subsequent legal proceedings associated with the event, including the apprehension and prosecution or extradition of alleged offenders.

1.3 In managing the response to a nuclear security event a State is recommended to establish a mechanism to coordinate the various activities undertaken by a range of competent authorities and associated entities [1, 2] including those relevant to response to a nuclear or radiological emergency. A national framework for managing the response to a nuclear security event (hereinafter “national framework”) is an important part of a State’s overall framework for response to all emergencies¹, enabling a State to plan and prepare for such events.

1.4. The development of such a national framework creates a structure and a set of principles and agreements around which a State can frame its detection and response functions, which should be implemented through a detailed plan. Some response organizations might not be specifically trained or equipped to deal with the nuclear or other radioactive material, relying on specialist agencies with whom they may not routinely work and whose capabilities they may not fully understand. A national framework can address the interfaces and the potential inter-agency conflicts which may result from this lack of understanding by ensuring that the various response organizations have clearly defined and understood roles and responsibilities, properly coordinated through the implementation of an effective multi-agency command, control and coordination structure.

¹ As indicated by the definitions in the glossary, the term “emergency” refers generally to situations and events involving all types of hazard, whereas a “nuclear or radiological emergency” is a specific type of emergency.
Concept about Security Events, Nuclear or Radiological Emergencies and All Types of Emergencies
1.5. A national framework benefits States by creating a single point of reference for all issues related to the response to nuclear security events. When such events lead to a nuclear or radiological emergency, the response should be integrated into the national emergency management system [7]. Such a framework can also encourage flexibility in a State’s response to nuclear security events, by enabling the State to respond on a scale appropriate to the event, through proper categorization of the different types of nuclear security event that it may face.

1.6. A national framework can ensure that States, when planning for response to nuclear security events, consider all relevant factors, including national and international implications, public perceptions and issues related to the identification and safe and secure handling of nuclear or other radioactive material. Such a response is in the interests, not only of the State directly affected, but of the wider international community, as nuclear security events can have significant effects beyond State borders.

1.7 When a nuclear security event has actual or potential consequences it is a nuclear or radiological emergency, the response to the nuclear security event should be integrated in the overall national emergency management system [7]. It is expected that this emergency response will provide suitable arrangements for the implementation of the necessary security response measures and protective actions and other actions in response to the nuclear or radiological emergency in an integrated manner, while allowing the specific aspects relevant for security (such as interdiction, forensic and radiological crime scene management) to be properly addressed.

1.8. Ref. 2 recommends that the State have a comprehensive national response plan for nuclear security events that is coordinated and consistent with, and when appropriate integrated into, other national plans, inter alia, the national nuclear or radiological emergency plans [GSR Part 7]. The national response plan for nuclear security events serves as:

(a) A basis for establishing compatible operational tools (e.g. communications systems) needed for prompt and effective response; and

(b) A guide for competent authorities to ensure that all necessary preparedness and response tasks are given appropriate resources and support [2].

OBJECTIVE

1.9. The objective of this publication is to provide guidance to a State on the development, implementation, maintenance and sustainment of a national framework for managing the response to nuclear security events. Such a national framework is intended to provide a basis for developing and implementing the State’s response to nuclear security events. As such the guidance is intended to help States in establishing and sustaining an important component of an effective national nuclear security
regime [1]. The guidance may also be of assistance to States in meeting their obligations under legal instruments related to nuclear security, such as Refs [3] and [4].

1.10. This publication is intended for national policy and decision makers, national and local competent authorities, facility operators and support organizations, as well as other entities and experts that are involved in developing a national framework for managing the response to nuclear security events.

1 SCOPE

1.11. This Implementing Guide addresses the development, implementation, maintenance and sustainment of a national framework for managing the response to a nuclear security event. Such a national framework provides the basis for managing the response to such nuclear security events as recommended in Ref. [2], but does not constitute a response plan in itself.

1.12. This Implementing Guide may therefore assist States in developing an appropriate national response plan for nuclear security events, but the details of such a plan are beyond its scope. The recommendations for measures that address the preparedness for, or response measures that are specific to, nuclear security events are provided in Refs [2], [5] and [6].

1.13. This publication is applicable to all nuclear security events, including those at regulated facilities using and storing nuclear and other radioactive material (nuclear facilities and other associated facilities) and those affecting associated activities, as well as those involving nuclear and other radioactive material out of regulatory control. It therefore supports and is consistent with the Nuclear Security Recommendations on:

(a) Physical Protection of Nuclear Material and Nuclear Facilities (INFCIRC/225/Revision 5) [5];

(b) Radioactive Material and Associated Facilities [6];

(c) Nuclear and Other Radioactive Material out of Regulatory Control [2].

1.14. A State’s nuclear security regime should include measures designed to prevent any nuclear security event from occurring, and to prevent nuclear material and other radioactive material from becoming out of regulatory control. However, such measures are outside the scope of this publication.

1.15. A major aim of the State should be to prevent any nuclear security event it may face from escalating: for example, where radioactive material has not been released, to prevent its release and to recover the material. This publication describes how to evaluate the resources needed by a State to prevent escalation by considering the likely consequences of various representative scenarios. It provides States with guidance on response actions and considerations which can be adapted to meet their specific circumstances, experience and priorities.
1.16. This publication does not address the response to any nuclear or radiological emergency that may result from a nuclear security event. However, coordination and integration between related authorities and relevant arrangements are crucial, not only to managing the response to nuclear security events but also to the management of any associated nuclear or radiological emergency. As such, this publication complements IAEA publications on emergency response [7–18, 24] and should be read in conjunction with these.

1.17. This publication does not set out predefined sets of actions for response to criminal or intentional unauthorized act, such as those described in a facility operator’s contingency plans [5] or security plan for radioactive material and associated facilities [6].

STRUCTURE

1.18. Following this introduction, Section 2 describes the basis for a national framework for managing the response to nuclear security events, describing the roles which threat assessment, risk-informed approach, graded approach and detection systems and measures play in developing the national framework. Section 3 describes a scheme to evaluate the resources needed to prevent a nuclear security event from escalating by considering representative types of nuclear security event and their potential consequences. Section 4 addresses the design considerations relevant to a State’s national framework, including design methodology, strategic aims, key activities and example response actions. Section 5 describes the infrastructure needed within a State’s framework to enable it to manage its response to nuclear security events effectively. Section 6 describes international cooperation and assistance requirements for responding to nuclear security events. Section 7 discusses sustainability of the national framework for managing the response to nuclear security events.

2. BASIS FOR A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE TO NUCLEAR SECURITY EVENTS

OVERVIEW

2.1. Across the spectrum of activities of nuclear security (Figure 1) a State needs to manage activities undertaken by a range of competent authorities and associated entities, all of which need to be coordinated effectively. The need to plan for a coordinated response to a nuclear security event is of particular importance. The development of a national framework for managing the response to a nuclear security event is an important step in this planning process, ensuring that a State is prepared to deal with such events.

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2 The specificities of a nuclear security event compared to a nuclear or radiological incident/accident are described in paragraph 3.2. The nature of the initiating event may influence the emergency response but in any case the response to an emergency, irrespective of its origin, should be carried out under a unified command and control system [7].
2.2. The agencies responsible for the response to criminal or intentional unauthorized acts typically have detailed plans for their response to such an act. However, in some States these plans are not shared with partner agencies, often on the grounds of information security. Wherever possible, information should be shared among agencies to the extent necessary for Agency-specific plans to adequately take into account their effect on partner agencies so that they do not hinder partner agencies in carrying out their own response functions.

2.3. The national framework discussed in this publication is designed to address the inter-agency issues by promoting national practices which fully recognize the importance of inter-agency cooperation and coordination when planning for and responding to nuclear security events.

THREAT ASSESSMENT AND RISK-INFORMED APPROACH

2.4. An effective national framework for managing the response to nuclear security events should provide for nuclear security systems and measures that are based on a State’s identification of threats, identification of targets and assessment of consequences, assessment of threats and risks, and use of a risk-informed approach to prioritize available resources and systems and measures to be developed and implemented [19].

2.5. Threat assessments consider the motivation, intentions and capabilities of potential adversaries, i.e. those individuals or groups (nuclear security threats) who may attempt to commit a criminal or intentional unauthorized act.

2.6. A detailed list of examples of such acts is set out in Section 3, which also explains the relationship between nuclear security threats and types of nuclear security event. The threat assessment may take into account the technical feasibility and experience from previous nuclear security events of the use of nuclear or other radioactive material in a criminal or intentional unauthorized act, either within that State or elsewhere.

2.7. A risk-informed approach assists States to evaluate options and prioritize nuclear security measures. It includes an iterative process of identifying and assessing risks; developing, evaluating
and implementing options for reducing risks; and monitoring the effectiveness of the resulting systems. In applying a risk-informed approach a State should consider what level of risk is considered to be acceptable and what level of response actions will be needed to keep any residual consequences within acceptable bounds. This approach can be used to guide effective response efforts and mitigation activities to minimize the more serious reducible risks through an integrated plan. An illustration of this process is presented in Figure 2.

**Fig. 2: Diagram illustrating the components of threat assessment and risk and their relationship with each other.**

**GRADED APPROACH**

2.8. The application of a graded approach involves the design and use of security measures that are proportionate to the assessed risk from the identified threat arising from criminal or intentional unauthorized acts, particularly with regard to the anticipated consequences of a nuclear security event on persons, property, society and the environment. The application of a graded approach allows resources to be focused more effectively on the more serious reducible risks.

**DETECTION SYSTEMS AND MEASURES**

2.9. A State’s ability to identify the nature of nuclear security events (other than those based purely on information alerts) will depend critically on its capability to detect and identify material and adversaries associated with such events. Physical protection alarms and material accounting system alerts in associated facilities and associated activities as well as alarms or alerts derived from nuclear or other radioactive material out of regulatory control [20], can identify in a timely manner that a
The representative scenarios have been grouped in this way since, in general, the potential consequences of the types of nuclear security events, and therefore the level of resources required to prevent escalation, increase as an event escalates from Type 3 towards Type 1. The potential consequences will, of course, depend on factors which include the nature of the criminal or intentional authoritarian act leading to dispersal of nuclear or other radioactive material, or harmful energy release from a nuclear reaction, or harmful radiation exposure of people due to nuclear or other radioactive material. This type of nuclear security event is always a nuclear or radiological emergency.

(b) Type 2: A criminal or intentional unauthorized act in which there is the confirmed unauthorized presence at a known location, of nuclear and/or other radioactive material, but without dispersal of the material, or without uncontrolled energy release from a nuclear reaction, or without uncontrolled radiation exposure. This type of nuclear security event is likely to be a nuclear or radiological emergency.

(c) Type 3: Information alerts are assessed to indicate a credible possibility of a criminal or intentional unauthorized act, but the location of the nuclear or other radioactive material or sabotage, or any planned target, may not be known. In some cases, this type of nuclear security event may also be a nuclear or radiological emergency.

3 In examples of scenarios of types of nuclear security event within this guidance, the term ‘sabotage’ should be taken to include cyber-attack.
an unauthorized act involved, the situation at the time the nuclear security event is detected and the
nature of the nuclear or other radioactive material involved. In general, however, a release of
radioactive material will increase the scale of response needed by the State in order to mitigate the
dispersal of that material or energy and will also be a nuclear or radiological emergency for the
associated risk to human life, health, property and the environment. At all times the State’s aim is to
prevent any type of nuclear security event from escalating. However, if an event of type 1 occurs,
initiating a nuclear or radiological emergency, or an escalation to type 1 or 2 occurs, resulting in a
nuclear or radiological emergency, then the response may go beyond those actions surrounding the
response to the nuclear security event (represented in Fig. 1 above). These additional actions are
addressed in EPR related Safety Standards [GSR Part 7, GSG-2, GS-G-2.1] and its supporting
technical guidance [11, 14, 15, 16, and 18].

3.3. Additionally, to facilitate the assessment of the type of nuclear security event, there is a need
to distinguish between the progress or success of the adversary’s execution of the attack versus the
State’s ability to counteract the adversary’s attempts. In the attempt to commit an attack the adversary
intends to have control of the device, the material and/or the intended exposure of the target. On the
other hand, the State’s intent is to counteract the adversary’s attempts to attack.

TYPES OF NUCLEAR SECURITY EVENT

3.4. The three types of nuclear security event are described in more detail in the following
paragraphs.

Type 1 Nuclear Security Event

3.5. A Type 1 nuclear security event is a criminal or intentional unauthorized act in which there is
dispersal of radioactive material, or harmful energy release from a nuclear reaction, or harmful
radiation exposure of people. A Type 1 nuclear security event will always be a nuclear or
radiological emergency.

3.6. For all but the most minor releases, such emergency is likely to have severe consequences on
persons, property, society and the environment and may call for the deployment of all available
resources (local, national and international resources, depending on a State’s capabilities). If such an
emergency is detected, or results from the escalation of a lower type of event, the State should take all
reasonable measures to minimize its consequences.

3.7. Examples of scenarios representative of this type of nuclear security events include, but are
not limited to:

(a) Sabotage of a nuclear facility or nuclear material resulting in a release of energy and/or
dispersal of radioactive material;
(b) Sabotage of an associated facility using or storing radioactive material or an associated activity (e.g. transport of radioactive material) resulting in dispersal of radioactive material;

c) Operation of a radiation exposure device (RED) or series of REDs, such as a high activity radioactive source, exposing people in its vicinity to radiation;

d) Operation of a radiological dispersal device (RDD) or series of RDDs resulting in dispersal of radioactive material, by means of explosives or other means of dispersal (e.g. an aerosol generator, via a building ventilation system, or manually);

e) Dispersal of nuclear material or energy release (and dispersal of radioactive material) from a detonation caused by a fission chain reaction in nuclear material;

(f) Introduction of radioactive contamination:

— at a strategic location, such as the venue of a major public event,

— into the food chain,

— into the water supply network, or

— into cosmetic, pharmaceutical or other products used by the public.

Type 2 Nuclear Security Event

3.8. A Type 2 nuclear security event is a criminal or intentional unauthorised act in which there is the confirmed unauthorized presence of/or material geometry/configuration, at a known location, of radioactive material, but without dispersal of the material, or without uncontrolled energy release from a nuclear reaction, or without uncontrolled radiation exposure. A Type 2 nuclear security event is likely also be a nuclear or radiological emergency.

3.9. Such scenarios could arise because an adversary has attempted a criminal or intentional unauthorized act that has been unsuccessful, or because an attempt to commit such an act is in progress. In the latter situation the State’s focus should be on preventing the successful completion of the act, thereby preventing escalation.

3.10. Such an event may call for the deployment of substantial resources (local and national resources and, in some cases, international resources, depending on a State’s capabilities) in order to prevent escalation (e.g. to render safe an RDD to prevent the release of radioactive material, or safely recover such material from an RED before it is used to expose people). Where such an event is detected, or results from escalation of a lower type event, the State should seek to minimize its consequences and take all reasonable measures to prevent it from escalating to a Type 1 event.

3.11. Examples of scenarios representative of this type of nuclear security events include, but are not limited to:
(a) Attempted sabotage of a nuclear facility or nuclear material without uncontrolled energy release from a nuclear reaction or dispersal of radioactive material;

(b) Attempted sabotage of an associated facility or associated activity (e.g. transport of radioactive material) without dispersal of radionuclides;

(c) Attempted operation of an RED without uncontrolled radiation exposure of people due to radioactive material;

(d) Attempted operation of an RDD without the dispersal of radioactive material;

(e) Detection of nuclear material with the potential for an intentional or unintentional assembly that could create a detonation caused by a fission chain reaction;

(f) Detection of radioactive material:
   — assessed to be intended for use in an RED or RDD,
   — assessed to be intended for use to cause radioactive contamination of a food chain, a water supply network, cosmetic or pharmaceutical products, or other products used by the public.
   — assessed to be intended for use to cause radioactive contamination or irradiation of a targeted individual in such a way that the impact may be more widespread.

(g) Detection of radioactive material out of regulatory control [23]:
   — at designated and undesignated points of entry and exit; or
   — within a State’s interior.

**Type 3 Nuclear Security Event**

3.12. A *Type 3 nuclear security event* is a criminal or intentional unauthorized act in which information alerts alone are assessed to indicate a credible possibility of criminal or intentional unauthorized use of nuclear or other radioactive materials or sabotage, but where the location of the nuclear or other radioactive material, or any planned target, may not be known. A Type 3 nuclear security event may also be a nuclear or radiological emergency.

3.13. In all cases, establishing the credibility of the information alert should be a priority for the State. A Type 3 nuclear security event may, in general, have moderate to significant consequences on persons, property, society and the environment, but if an information alert concerns, for example, the theft of high enriched uranium (HEU) or a Category 1 source [22] or the attempted or successful intrusion into a nuclear facility, the Type 3 event could escalate into a higher category event with potential consequences that are much more severe. A Type 3 event will therefore call for the deployment of at least local resources in order to prevent escalation (e.g. to investigate reports of
illicit trafficking or to provide a visible security presence to deter potential adversaries), but may also need the deployment of national and international resources, depending on the nature of the information and the State’s capabilities. Where such an event is detected, the State should always seek to prevent it from escalating to a Type 2 or Type 1 event.

3.14. Examples of scenarios representative of this group of nuclear security events include, but are not limited to:

(a) Information indicating planned or attempted unauthorized removal of nuclear or other radioactive material;

(b) Report of a theft or loss of or missing radioactive material, where the whereabouts of that material have not been established;

(c) Information indicating planned or attempted sabotage of nuclear or other radioactive material or associated facilities and activities (e.g. transport of radioactive material);

(d) Information that there is an RED, RDD or fission detonation device in a place in which it could cause harm to persons, property, society or the environment and/or disruption;

(e) Operational information from intelligence services, such as an illicit trafficking warning or information on a known adversary;

(f) Information on regulatory non-compliance, such as missing material, discrepancies in accounting for nuclear material or in a register of radioactive material, or other unauthorized acts.

3.15. Figure 3 illustrates how a State may determine into which type a scenario for a nuclear security event may fit. This algorithm should be reviewed regularly by the State as the response to a nuclear security event progresses to ensure that, if the type of nuclear security event changes, either due to the event evolving, or more information becoming available, this can be quickly recognized and the response adjusted accordingly to prevent, where possible, further escalation of the event.
FIG. 3: Flowchart to illustrate the process to determine the nuclear security event type.

RESOURCES

3.16. In general, the level of resources needed to respond to nuclear security events will depend on the assessment of the potential consequences of the event. When all of the consequences of the event are assessed, appropriated response resources should be assigned. For Type 1 nuclear security events, which will always be a nuclear or radiological emergencies and for Type 2 and Type 3 nuclear security events that are also nuclear or radiological emergencies, the response should follow the national emergency management system.

3.17. The assessment of the potential consequences of a nuclear security event provides a basis for the State to plan the resourcing needed to respond effectively to that event, using associated resourcing scales. The use of these resourcing scales may assist a State in determining (i) the potential resources required to deal effectively with the nuclear security event and (ii) whether the State itself can meet the scale of resources required for the event, or whether it may need to seek external assistance from other countries or international organizations. While the scale of resourcing needed for response typically increases in proportion to the anticipated or potential consequences of an event, there may be exceptions; for example, circumstances in which an event may need the deployment of
international resources, even if the potential consequence was initially categorized as minor. Examples of such circumstances include:

— The use of a radiation detection instrument that had generated ambiguous results leading the State to immediately request international reach-back support to interpret the measurement, or

— The detection and seizure of a very small amount of nuclear material may not have immediate security implications and be graded as minor, but the investigations could reveal that the seized item is a sample of a large quantity of material out of regulatory control and is available for use in a nuclear security event with international implications.

3.18. For most nuclear security events, the level of response resources can be described by three groups that indicate the magnitude of resources necessary: local, national and international.

3.19. Guidance on planning the resources needed for response to a nuclear or radiological emergency, whether triggered by a nuclear security event or an accident, is provided in other IAEA publications [7, 11, and 24].

**Local resources**

3.20. Local resources include those security elements, such as law enforcement personnel and military forces, as well as, where appropriate, those associated with the emergency response, such as emergency medical services, civil protection and fire and rescue services from which local personnel and equipment will be available to the State for the response to a nuclear security event at a given location. These may be supported, where necessary, by specialist resources from the national level within a State, to provide specific support and assistance, for example, technical support to assist in the search for, identification of and safe handling of nuclear or other radioactive material.

**National resources**

3.21. National resources are all of the resources available to a State for the response to a nuclear security event, including specialist scientific teams and other national response agencies. This level of resources involves the mobilization of all relevant response resources within a State in order to be able to deal with the nuclear security event.

**International resources**

3.22. International resources are the additional resources available to a State from responding agencies or specialist teams from other countries, or from international organizations such as the IAEA.
3.23. In most States, the initial response to any type of nuclear security event will be provided by local resources. In many cases, local resources will be able to manage the response to a Type 3 event and in some cases to a Type 2 or Type 1 event (depending on the scale and nature of the event and the capabilities of local resources). In some situations, however, local resources may need to be supported by national resources, for example, to provide technical support or assistance to search for or identify radioactive material safely. In some cases international assistance may be needed by a State to effectively manage the response to a nuclear security event, such as support from specialist teams from other States or the IAEA.

4. DESIGNING A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE TO NUCLEAR SECURITY EVENTS

4.1. An important step in designing an effective national framework for managing the response to nuclear security events is to secure the engagement of all stakeholders early in the process. The national framework should be designed with the involvement of all relevant competent authorities, responding agencies and other relevant organizations such as facility operators. The national framework for managing the response to nuclear security events should use the all-hazards approach and should be integrated into the national emergency management system.

4.2. One of the first steps in designing a national framework should therefore be to organize stakeholder meetings with all of the organizations involved in the planning for, and response to, nuclear security events. Such meetings should involve senior representatives from all of the competent authorities, responding agencies, government ministries and other institutions and organizations that have relevant roles and responsibilities, in order to ensure agreement from these organizations at an appropriate national level.

4.3. An effective way of engaging with stakeholders in designing a national framework is to run a series of workshops during which stakeholders are presented with a range of nuclear security event scenarios, based on the State’s national threat and risk assessment. Such scenario-based workshops can be very effective as they provide stakeholders with an agreed context in which to frame their discussions.

4.4. The design of a national framework should address the following key elements. These elements are:

(a) The types of nuclear security event which the State is likely to face (based on the national threat and risk assessment);

(b) The State’s strategic aims and priorities in responding to nuclear security events;
(c) The key activities underpinning those aims, and the response actions associated with those activities;
(d) The competent authorities, facility operators and other agencies or organizations who will carry out those activities;
(e) The roles and responsibilities of those organizations;
(f) Single and multi-agency response plans and procedures;
(g) The infrastructure that a State needs in order to respond effectively to nuclear security events; and
(h) The existing capabilities and any residual gaps.

Several of these elements will be discussed in more detail below.

STRATEGIC AIMS

4.6 A key element of a State’s national framework for managing the response to nuclear security events is a statement of its strategic aims when managing such a response. These strategic aims, once agreed, should drive all of the activities by the State’s competent authorities, facility operators and other responding agencies, ensuring a coherent multi-agency response in which all stakeholders work towards the same outcome.

4.7 Each State should determine its own strategic aims and their relative priority, taking account of their particular circumstances. It should be recognised that these strategic aims will often replicate those related to resulting nuclear or radiological emergencies covered in separate guidance, and that nuclear security and nuclear safety have in common the aim of protecting persons, property, society and the environment. An example of a State’s strategic aims for the response to nuclear security event is as follows:

(a) Preserve life and protect people;
(b) Mitigate and minimize the impact of the nuclear security event;
(c) Inform the public and maintain public confidence;
(d) Prevent, deter and detect criminal or unauthorized acts;
(e) Promote an early return to normality;
(f) Ensure the health and safety of responders;
(g) Protect the environment;
(h) Facilitate legal proceedings and other forms of enquiry;
(i) Review the response and identify lessons learned.

KEY ACTIVITIES

4.8. Once a State has agreed its strategic aims for managing its response to nuclear security events, it should then consider which key activities will be needed to achieve those aims. These key activities should be agreed between the State and responding agencies.

4.9. The key activities play an important role within the national framework, setting out the measures that a State considers as essential to enable its competent authorities and other responding agencies to respond effectively to nuclear security events. An example of the key activities, which may not be sequential, needed for a State to manage the law enforcement, intelligence, and investigative response to nuclear security events is as follows:

(a) Information gathering;
(b) Information analysis;
(c) Notification, activation and deployment;
(d) Interdiction (counteraction);
(e) Criminal investigation;
(f) Public information; and
(g) Mitigation of consequences.

4.10. Each key activity for managing the response to nuclear security events should be underpinned by a detailed set of response actions. These actions provide the detail behind the key activities and will often be broken down into single-agency actions within a State’s national response plans. Many single-agency response plans will contain some of the key activities and actions listed below, but by including them as part of its national framework, a State can ensure that they form part of the State’s multi-agency response to nuclear security events.

4.11. Table 1 lists, in the first column, examples of key activities that a State should consider when constructing its national framework for managing the response to nuclear security events, and in the second column, response actions that might be included in each of those key activities. States may choose to adopt these key activities and response actions, add to them or amend them as appropriate to suit their particular circumstances.

<table>
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<th>KEY ACTIVITIES</th>
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<td>KEY ACTIVITIES</td>
<td>EXAMPLE RESPONSE ACTIONS</td>
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| Information gathering       | — Collect information on alarms and alerts.  
— Collect information about material, adversary and/or target.  
— Confirm status of event: e.g. ongoing; stand-off; adversaries neutralized.  
— Confirm amount and nature of nuclear or other radioactive material. |
| Information analysis         | — Assess, confirm and validate alarms and alerts.  
— Assess potential adversaries and associated networks.  
— Protect sensitive information.  
— Share appropriate information with partners.  
— Assess the initial situation (adversary, method, nature of material involved, material stationary or in transport).  
— Determine nuclear security event type (i.e. Type 1, Type 2 or Type 3).  
— Monitor and review the ongoing nuclear security event.  
— Estimate potential consequences (health, economic, societal and environment, as overall goals of the response).  
— Assess possibility of multiple events or escalation of event type.  
— Assess potential international impact (e.g. impact on shipping and cross-border movement of goods or people).  
— Identify appropriate response resources to deploy (considering graded approach).  
— Reassess as more information is received. |
| Notification, activation and deployment | — Notify relevant organizations.  
— Activate relevant organizations.  
— Activate relevant response plans (e.g. contingency plan, emergency plans and/or national response plan).  
— Deploy radiation monitoring teams.  
— Establish predetermined multi-agency integrated response command |

4 Taking into account references [7, 8, 9, 16, 24] and point 1.7, as applicable

5 In case of a nuclear or radiological emergency triggered by a nuclear security event, the following references apply for identifying respective emergency response actions related to notification and activation: [8], [12], [16] and [24]. In this case, notification may also be a necessary emergency response action on an international level within the framework of Early Notification Convention [26] and its operational tool- EPR-IEComm [10].
### KEY ACTIVITIES | EXAMPLE RESPONSE ACTIONS
--- | ---
| structure at all levels (strategic, tactical and operational levels)  
Deploy appropriate resources.  
— Reinforce security measures and activities at strategic locations.  
— Create awareness and share information on the status of the event with all response organizations.  
— Request international cooperation and assistance as necessary  
3, 4. |  
**Counteraction**  
— Disrupt an ongoing nuclear security event.  
— Reinforce security measures at the scene.  
— Obtain functional control of device, material and/or adversary.  
— Render safe the device (as applicable).  
— Take necessary steps to establish control of seized material.  
— Take necessary steps to protect target set equipment and vital areas.  
3, 4. |  
**Criminal investigations**  
— Collect evidence associated with the nuclear security event.  
— Implement radiological crime scene management [25] (as applicable).  
— Obtain eyewitness and expert witness testimony.  
— Maintain integrity of evidence, and ensure chain of custody.  
— Conduct conventional and nuclear forensics as needed.  
— Support prosecution.  
5. |  
**Public information**  
— Release information to the public as appropriate [17].  
— Gather and analyse information from the public.  
— Provide advice to the public  
6.  
— Reassure the public  
5. |  
**Mitigate consequences**  
— Restrict public access to scene(s).  
— Package, transport and store radioactive material.  
— Restore normality.  
7. |  

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1. **ORGANIZATIONS, ROLES AND RESPONSIBILITIES**

2. 4.12. Once a State has identified its key activities and response actions and agreed them with stakeholders, it should clearly identify which specific agency or agencies at the local and national

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6 Taking into account also references [7, 8, 24, 17].

7 Refs [7], [9–18] and [24] provide guidance on emergency response actions related to managing the consequences of a nuclear or radiological emergency triggered by a nuclear security event.
level is/are responsible for each action. If the State does not have the local or national capability to undertake a particular action, it should consider seeking international assistance.

4.13. The clear allocation of roles and responsibilities to the organizations responsible for the response to nuclear security events is a key component of a national framework, reducing the risk of duplication of effort or omission by organizations during the response. Understanding which organizations are responsible for undertaking which response actions enables planners to develop focused, effective response plans and decision-makers, at all levels of command, to make better informed decisions, balancing priority actions with the resources available at any given time during the response.

4.14. The competent authorities and other organizations involved in the response to nuclear security events may include, but are not limited to:

(a) Police and law enforcement agencies;

(b) Fire and rescue services;

(c) Health agencies;

(d) Environmental agencies

(e) Intelligence agencies;

(f) Nuclear regulatory bodies;

(g) Border guards;

(h) Coastguards;

(i) Customs officers;

(j) Military units;

(k) Ministries of the interior and/or foreign affairs, or their agencies;

(l) Technical and scientific support organizations;

(m) Operators of nuclear facilities;

(n) Operators of associated facilities (e.g. radioactive material storage facilities, facilities with radioactive sources) and activities (e.g. transport of radioactive material);

(o) Carriers of nuclear or other radioactive material; and

(p) Utility service providers (e.g. telecommunications, transport, gas, electricity, water and waste management).
PLANS AND PROCEDURES

4.15. The above organizations will have their own response plans and procedures, and arrangements as part of the overall national emergency management system. These plans and procedures should include the relevant response actions discussed above, as well as other actions appropriate to the State’s circumstances and each organization’s capabilities. If organizations develop specific plans and procedures for activities directly associated with nuclear security events they should, where possible, make them complementary with existing plans and procedures, to maintain synergies and to prevent conflicts. All such plans and procedures should be developed recognizing the roles and needs of partner agencies.

4.16. The grouping of nuclear security event types outlined above may help organizations preparing such plans and procedures to develop plans that have the flexibility to adapt as the type of nuclear security event changes. The State should determine which of these plans and procedures need to be prioritized based on the national threat and risk assessment, and the State’s judgement of acceptable risk.

4.17. States with nuclear facilities or nuclear material, and those with radioactive material, associated facilities or associated activities, should have specific response plans for events involving sabotage of these materials or facilities, but in most of the cases these plans will not be the same as those for events involving RDDs, REDs or other events involving material out of regulatory control. When developing their national response framework, all types of nuclear security event should be considered, and response plans developed appropriate to the State’s circumstances.

MULTI-AGENCY COMMAND, CONTROL AND COORDINATION

4.18. As indicated in footnote 2, if the nuclear security event results in the initiation of a nuclear or radiological emergency, all the organizations referred to in para. 4.14 will act under a unified command and control system [7], under the national emergency management system. The following paragraphs should be considered applicable only to the response to nuclear security events that are not nuclear or radiological emergencies.

4.19. When defining the roles and responsibilities of the various organizations involved in the response to a nuclear security event, a State should ensure that the relationships between these organizations are clearly defined through formal protocols such as written agreements or memoranda of understanding. This is particularly important in view of the potential need for a significant number of different organizations to work together in managing the response who do not normally work together. These relationships are best defined and managed by the use of integrated, multi-agency command, control and coordination structures, which should be regularly tested and exercised to ensure their effectiveness.
4.20. The national framework should therefore facilitate appropriate multi-agency command, control and coordination for each type of nuclear security event. The extent and complexity of these arrangements may need to be flexible to allow for the escalation or de-escalation of command, control and coordination structures depending on the type of nuclear security event faced, and taking into account any arrangements already established for command, control and coordination for managing other situations, such as nuclear or radiological emergencies [8, 11, 24].

4.21. An integrated command, control and coordination structure for responding to a nuclear security event may include the following components depending on the type of event being faced:

(a) A policy level;

(b) A strategic (national) level;

(c) A tactical (local) level; and

(d) An operational (on-scene) level and associated off-scene activities [25].

4.22. The policy level should include those individuals and the highest level of those organizations with overall responsibility for managing the response to a nuclear security event. A high level coordination body — comprising, for example, the Head of Government and a board of relevant ministers — should be established, as appropriate to the State’s circumstances. This coordination body should make decisions on the overall management of the nuclear security event, and be fully integrated with the coordinating structure for any required emergency response.

4.23. At the strategic level, a Security Strategic Centre (or similar) should be established and staffed, for example, by senior officials from relevant national authorities, and be fully integrated with the coordinating structure for any required emergency response. Depending on the type and anticipated potential consequences of the event being faced, the strategic level should:

(a) Provide advice to the policy level when decisions need to be taken;

(b) Ensure that there is an appropriate command, control and coordination structure, and effective communication within it;

(c) Assist and provide direction to the tactical level;

(d) Determine the need for, and provide coordination of, international cooperation and assistance;

(e) Manage public information and provide guidance to the tactical level;

(f) Secure necessary human and financial resources, and logistic support.

4.24. At the tactical level, a local command post should be established and staffed, for example, by a multidisciplinary group of experts, capable of providing technical advice on conducting field operations associated with the nuclear security event, and be fully integrated with the coordinating
structure for any required emergency response. Depending on the type and potential consequences of
the event being faced, the tactical level should:

(a) Perform, and keep updated, technical assessments of relevant threats, including consideration
of potential consequences;
(b) Make decisions on the implementation of field operations;
(c) Establish tactical directions for the operational level;
(d) Ensure that the strategic level is regularly informed on the status of the nuclear security event;
(e) Establish a decision making structure to ensure that directions received from the strategic
level with respect to public information are followed;
(f) Allocate resources for the operational level; and
(g) Request additional support for operations, as needed.

The operational level should comprise teams of individuals responsible for performing
specific on-scene operations, such as law enforcement, fire services, radiation survey and assessment
teams, facility operator staff and other technical support organizations, military, medical, and
paramedical services. Depending on the type and potential consequences of the event being faced, the
operational level should:

(a) Provide on-scene direction to the personnel responding to the nuclear security event on
carrying out their security related tasks in a manner such that their health and safety are
adequately protected;
(b) Ensure that the tactical level is regularly informed on the progress and magnitude of the
nuclear security event;
(c) Follow directions received from the tactical level; and
(d) Ensure that information relevant to the developing criminal investigation is reported in a
timely manner.

Effective communication within each level of the command, control and coordination
structure, between levels, and including all relevant organizations, is critical to the efficiency,
effectiveness and coherence of the response. Effective, planned and well-defined communication
protocols within and between each level of command should ensure that the different organizations’
resources are effectively coordinated during the response. Such protocols should be contained within
the national framework.

Figure 5 shows an illustrative example of an integrated command, control and coordination
structure.
NATIONAL COORDINATION

4.28. The State should establish coordination arrangements to promote the effective, timely and secure exchange of information between organizations involved in the response to a nuclear security event and between the various command levels. This coordination should be achieved and evaluated through formal arrangements, such as agreements and protocols.

4.29 The State should establish, as part of its national arrangements, plans and procedures for the provision of information to the public in the event of a nuclear security event, taking into account the need to protect the confidentiality of sensitive information. The provision of public reassurance and public health information, where appropriate, are components of any State’s national response plans. These arrangements should be included within the national framework.

5. INFRASTRUCTURE FOR A NATIONAL FRAMEWORK FOR MANAGING THE RESPONSE TO NUCLEAR SECURITY EVENTS

AUTHORITY

5.1. The State should identify a body to coordinate the development and maintenance of the national framework for managing the response to nuclear security events. This body should also be responsible for coordinating the development and maintenance of the multi-agency plans and procedures for managing nuclear security events within the national framework and for integrating with the State’s overall emergency response arrangements. This coordination responsibility should be
clearly defined in accordance with appropriate legislation, policies and procedures. A competent
authority should be assigned responsibility for leading the response to nuclear security events:
whether this authority is the body responsible for coordinating the response framework or another
body is a decision for the State.

5.2. Where a nuclear security event may result in a nuclear or radiological emergency, the
infrastructure for the response to nuclear security events should be integrated with the infrastructure to
provide the capability for performing emergency response functions in accordance with relevant
Safety Requirements [7] and related guidance [24].

CAPABILITIES AND RESOURCES

5.3. Within its national response framework, the State should identify the capabilities and
resources that are needed to respond to the different types of nuclear security event outlined above,
describing through appropriate plans and procedures how these will be obtained and sustained during
the response. The State should identify the types of nuclear security event for which it has adequate
capabilities and/or resources to respond, including human resources with specialized knowledge,
skills and abilities to take appropriate actions to deal with the nuclear security event. Where a State
identifies that it does not have sufficient capabilities or resources to deal with a type of nuclear
security event, its plans should describe how it will obtain the necessary additional capabilities or
resources, for example through a Memorandum of Understanding with a neighbouring State, or from
an international organization (such as the IAEA) or under the Assistance Convention [29].

5.4. Capabilities and resources that should be available to a State may include, but are not limited
to:

(a) Specialist law enforcement capabilities (such as fully trained responders and specialist
    investigators);
(b) Technical and scientific support;
(c) Specialized rescue capabilities;
(d) Medical support;
(e) Nuclear forensics support;
(f) Equipment and personnel for site survey and search operations (e.g. for aerial, terrestrial or
    maritime survey); 
(g) Equipment for secure communications;
(h) Media contact points and public information specialists;
(i) Specialized equipment, such as explosives detectors or pyrophoric material handling equipment, and personnel able to use it;

(j) Criticality control procedures and equipment;

(k) Radiation detection instruments (mobile and stationary);

(l) Personal protective equipment;

(m) Sample analysis (including delivery of samples and communication of results);

(n) Information on radioactive materials for responders which do not have radiation knowledge.

5. TRAINING AND EXERCISING

5.5. All individuals and organizations with defined roles in the response to nuclear security events should be appropriately prepared. This preparation should give them a clear understanding of their single-agency and relevant multi-agency plans and procedures, their roles and responsibilities within the response and those of their partner agencies. All such individuals and organizations should be given the opportunity to test their preparedness through regular exercising. For example, since timely response to a nuclear security event is very important, the time taken during the exercise by different stakeholders to respond should be measured and reviewed.

5.6. Those organizations likely to be involved in the response to nuclear security events should regularly train and exercise together. Training, drills and exercises should address all aspects of plans and procedures, and be conducted at local and national levels [12]. Within the national response framework a State should specify the frequency and extent of required national level training and exercising.

5.7. Organizations should identify and make available the relevant capabilities and resources to ensure that they can comply with such national training and exercising requirements.

5.8. Special attention should be given to training of non-specialist response organizations on specific nuclear security and safety aspects that may be relevant to their involvement in response to nuclear security events.

6. INTERNATIONAL COOPERATION AND ASSISTANCE

6.0 The response to nuclear security events may require request for the use of international assistance, for example where a State lacks the specialist capabilities or resources to deal with the type of event being faced. In such cases, the international assistance should be coordinated with the
States should describe within their national framework for managing the response to nuclear security events how they intend to exchange information with other States, directly or through the IAEA and/or other relevant international organizations. Bilateral and/or multilateral arrangements for cooperation and assistance should be established, as necessary, within the national framework, to ensure that international assistance can be obtained promptly if requested.

6.1. If a nuclear security event initiates a nuclear or radiological emergency, international cooperation and assistance should take place within international emergency preparedness and response framework. A State’s arrangements for exchange of information on law enforcement issues should take into account national requirements for the confidentiality of sensitive information.

6.2. States should share lessons learned and best practices in developing and implementing a national framework for managing the response to nuclear security events (to the extent allowed by confidentiality requirements).

ARRANGEMENTS FOR INTERNATIONAL COOPERATION AND ASSISTANCE FOR NUCLEAR SECURITY EVENTS

6.3. International cooperation and assistance for response to any nuclear security event may involve a wide range of organizations, capabilities and resources.

6.4. Arrangements for obtaining international cooperation and assistance should be established in advance and form a key element of a State’s national framework. The mechanisms for such cooperation and assistance should be planned and exercised to ensure that they can be implemented effectively when a nuclear security event occurs.

6.5. National legal arrangements should be in place to facilitate requests to other States or international organizations for assistance and, if relevant, provision of assistance to other States at their request.

6.6. Several international legal instruments and other international initiatives impose obligations on aspects of the response to nuclear security events. These should be identified and incorporated into the national framework and, where appropriate, into national response plans. Examples of such binding and non-binding instruments and initiatives include:

(a) The Convention on the Physical Protection of Nuclear Material [3], and the 2005 Amendment thereto [28];
(b) International Convention for the Suppression of Acts of Nuclear Terrorism [4];
(c) Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency [29];
(d) Convention on Early Notification of a Nuclear Accident [26]
(e) IAEA Incident and Trafficking Database (ITDB);

(f) Operational Manual for Incident and Emergency Communications (EPR-IEComm) [10];

(g) IAEA Response and Assistance Network (RANET) [13]; and

(h) INTERPOL Operation Failsafe.

These instruments and initiatives have each established distinct objectives and protocols for receiving and exchanging relevant information with and between States. States should understand these when considering how they may be included as resources in a national framework for managing response to nuclear security events.

6.7. A State’s obligations in relation to international cooperation and assistance, arising from bilateral and/or international treaties and conventions to which they are parties, may include the following:

(a) Reporting cases of unauthorized removal or sabotage. In such a case, or a credible threat thereof, the State should provide information as soon as possible to other States that may be affected and to the IAEA and other relevant international organizations;

(b) In the case of theft of nuclear material or credible threat thereof, informing other States that may be affected as soon as possible.

If these are not obligations under a binding legal instrument, they may nevertheless be considered good practice.

6.8. In relation to the reporting of, and sharing of, information in relation to nuclear security events a State’s arrangements should include predefined policies, procedures and protocols at the national and international levels in order to make the exchange of information between States, and where relevant between States and international organizations, as effective as possible in the event of a nuclear security event. Such policies, procedures and protocols should be contained within the national framework. Policies, procedures and protocols should include:

(a) Information sharing and intelligence cooperation;

(b) A process for sharing information with organizations which are outside of a State’s national response structure where necessary;

(c) Points of contact for regional and international response assistance;

(d) Contact information for regional and international expertise, special training or services needed for response;
(e) Requirements for the identification and handling of sensitive information, and measures to ensure that critical information is available and understandable to all those who need it for their response role.

(f) Exchange of lessons learned following nuclear security events.

6.9. Other areas in which a State may have obligations in relation to international cooperation and assistance, arising from bilateral and/or international treaties and conventions, to which they are parties, include:

(a) Recovery and return of seized items;

(b) Rendering of assistance where requested;

(c) Technical cooperation and assistance;

(d) Agreements to provide transport assets and actions to ensure continued capability to respond during a nuclear security event; and

(e) Coordination of law enforcement investigations and prosecutions.

6.10. States are encouraged to establish and maintain dialogue at the international level in order to benefit from, and contribute to, the provision of assistance during the response to a nuclear security event. States should seek to interact on a regular basis, to develop and conduct exercises and to test their international preparedness and response. States should also seek to take advantage of international training, such as that available at nuclear security support centres, to build capacity and develop human resource capabilities.

6.11. International assistance arrangements should be tested through regular drills and exercises involving regional and/or international components as appropriate.

7. SUSTAINABILITY

7.1. A national framework for managing the response to nuclear security events should be sustained to ensure that it continues to meet the evolving needs of the State. Sustainability involves continuously maintaining and reviewing, and periodically updating and improving systems and processes, including equipment, personnel, procedures, protocols and cooperative arrangements. Sustainability needs continued investment in resources by a State to ensure that systems and processes remain effective and improve to meet new and evolving threats. Key actions to support sustainability include:

(a) Providing strong and continuing leadership support;

(b) Establishing and maintaining adequate funding dedicated to response planning;
(c) Periodic exercising and evaluation of capabilities to maintain assurance of the ability to respond effectively;

(d) Maintaining adequate human resources and keeping their competences up to date;

(e) Establishing and maintaining mechanisms\(^8\) to guide preparedness and response programmes for nuclear security events;

(f) Establishing and maintaining reliable points of contact at the local, national, regional and international levels for all aspects of the national framework and national response plan. Contacts should include entities responsible for:

- Resources and equipment;
- Plans and procedures;
- Notification;
- Drills and exercises;
- Identification and processing of lessons learned;
- Addressing questions and resolving conflicts;
- Regional and international cooperation and arrangements; and
- Maintaining continuity within and between entities.

(g) Establishing and maintaining national, regional and international funding arrangements.

(h) Establishing and maintaining strong links with stakeholders, in particular those involved in emergency response.

(i) Establishing and maintaining strong links with the media.

(j) Establishing and maintaining an evaluation process.

PERIODIC REVIEW OF THREAT ASSESSMENT

7.2. The Nuclear Security Series of publications provides guidance on how threat assessments should be conducted [19]. Sustaining the threat assessment involves regular reviews and updates to ensure that the national response plan remains relevant to the evolving threats. Awareness of the nature and level of threats needs to be maintained at all levels (local, national and international) to

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\(^8\) These mechanisms should be the responsibility of the coordinating body discussed in Section 5. This body should provide a central point of contact responsible for identifying, disseminating and prioritizing needs for maintenance or improvement and guiding efforts to meet those needs. It should also provide a framework to address specific aspects of local, national, regional and international needs for improvement.
enable the timely sharing of pertinent threat assessment information with others and to ensure that the national response plan is based on the most up-to-date information.

7.3. The scenarios and planning assumptions used in designing response plans should be based on current national, regional and international threat assessment information.

PERIODIC REVIEW OF NATIONAL, REGIONAL AND INTERNATIONAL ARRANGEMENTS

7.4. Once national, regional and international cooperation and assistance arrangements have been defined, a schedule and procedure for periodic reviews should be established. Such schedules may include routine regular reviews (for example, annually or biennially), but should also provide for a review to be triggered by any major changes to arrangements and/or the threat assessment.

SHARING OF EXPERIENCE

7.5. The effective sharing of knowledge and experience between States can help to sustain a State’s ability to manage its response to nuclear security events, by ensuring that good practices are recognized and adopted by responding agencies. As a part of the national framework for managing the response to nuclear security events, local, national and international organizations with responsibility for, or experience of, nuclear security events are encouraged to develop protocols to enable appropriate sharing of knowledge and experience with other organizations, to the extent compatible with confidentiality requirements.

7.6. Considerations when sharing experience include:

(a) Establishing and using appropriate information sharing tools (e.g. secure communication networks, early warning systems, databases);

(b) Establishing regular meetings specifically for the sharing of knowledge and experience regarding nuclear security events;

(c) Sharing of plans, procedures and updates, as appropriate; and

(d) Summarizing experience from responding to nuclear security events in peer reviewed journals and other appropriate publications.

INCORPORATION OF LESSONS LEARNED, EVALUATION AND GAP ANALYSIS

7.7. Lessons learned from the response to nuclear security events, together with evaluations of the outcomes of training and exercising, should be made available to relevant local, national and international organizations, subject to the requirements of confidentiality. Such information is valuable in the identification of good practices, corrective actions and procedural enhancements. Organizations receiving such information should review it to determine what, if any, information
applies to their response activities. When such information is applicable it should be taken into account when developing and updating plans and procedures.

7.8. Gap analyses and risk assessments should be kept up to date and changes in technology and procedures reviewed to determine whether changes to existing practices would enhance capabilities. Gap analyses compare expected outcomes against actual outcomes to identify where gaps exist. These gaps should be reviewed to determine their cause, identify how to address them and, as appropriate, identify good practices and/or opportunities for improvement.

8 MAINTENANCE AND ENHANCEMENT

7.9. Plans for response to nuclear security events should be maintained, and enhanced when appropriate. Examples of maintenance may include routine documentation updates (on, for example, protocols, plans, agreements, procedures, threat assessments and training documents), database management, contact updates, facility and equipment management activities, and other actions that are needed to ensure ongoing readiness.

7.10 Enhancements to improve the performance of routine activities may be identified as a result of changes in organizational leadership or programme direction, availability of new technologies, changes in the threat assessment, reviews lessons learned, experience from actual nuclear security events or results of evaluations and gap analyses.

7.11. Maintenance may be performed routinely at scheduled times, but the nature of nuclear security events means that maintenance of the components of a national response framework may often need to be undertaken outside of a regular cycle, for example when the threat assessment changes and the State needs to update its national response plans to reflect this.

7.12. States may therefore need to allocate funding both for routine maintenance activities and for ad hoc reactive maintenance as the need arises. Where circumstances dictate that several enhancements are needed to the national framework’s components, they may need to be prioritized so that limited funds can be used to implement the most important enhancements first.
REFERENCES


[8] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, PAN AMERICAN HEALTH ORGANIZATION, WORLD HEALTH ORGANIZATION.


Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, INFCIRC/336, IAEA, Vienna (1986).
GLOSSARY

**associated activity.** The possession, production, processing, use, handling, storage, disposal or transport of nuclear material or other radioactive material.

**associated facility.** A facility (including associated buildings and equipment) in which nuclear material or other radioactive material is produced, processed, used, handled, stored or disposed of and for which an authorization is required.

**authorization.** The granting by a competent authority of written permission for operation of an associated facility or for carrying out an associated activity, or a document granting such permission.

**competent authority.** A governmental organization or institution that has been designated by a State to carry out one or more nuclear security functions. Example: Competent authorities may include regulatory bodies, law enforcement, customs and border control, intelligence and security agencies, health agencies, etc.

**contingency plan.** Predefined sets of actions for response to unauthorized acts indicative or attempted unauthorized removal or sabotage, including threats thereof, designed to effectively counter such acts.

**emergency.** A non-routine situation or event that necessitates prompt action, primarily to mitigate a hazard or adverse consequences for human life, health, property or the environment.

□ This includes nuclear and radiological emergencies and conventional emergencies such as fires, releases of hazardous chemicals, storms or earthquakes.

□ This includes situations for which prompt action is warranted to mitigate the effects of a perceived hazard.

**nuclear or radiological emergency.** An emergency in which there is, or is perceived to be, a hazard due to:

(a) The energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction;

(b) Radiation exposure

**emergency response.** The performance of actions to mitigate the consequences of an emergency for human life, health, property and the environment.

□ The emergency response also provides a basis for the resumption of normal social and economic activity

**graded approach.** The application of nuclear security measures proportionate to the potential consequences of criminal or intentional unauthorized acts involving or directed at nuclear material, other radioactive material, associated facilities or associated activities, or other acts determined by the state to have an adverse impact on nuclear security.
**nuclear facility.** A facility (including associated buildings and equipment) in which nuclear material is produced, processed, used, handled, stored or disposed of and for which an authorization or licence is required.

**nuclear material.** Any material that is either special fissionable material or source material as defined in Article XX of the IAEA Statute.

**nuclear security event.** An event that has potential or actual implications for nuclear security that must be addressed.

**nuclear security regime.** A regime comprising:

- The legislative and regulatory framework and administrative systems and measures governing the nuclear security of nuclear material, other radioactive material, associated facilities and associated activities;
- The institutions and organizations within the State responsible for ensuring the implementation of the legislative and regulatory framework and administrative systems of nuclear security;
- Nuclear security systems and nuclear security measures for the prevention of, detection of and response to nuclear security events.

**operator.** Any person, organization, or government entity licensed or authorized to undertake the operation of an associated facility or to perform an associated activity.

**other radioactive material.** Radioactive material that is not nuclear material.

**out of regulatory control.** See regulatory control.

**radiation exposure device (RED).** A device with radioactive material designed to intentionally expose members of the public to radiation.

**radioactive material.** Any material designated in national law, regulation, or by a regulatory body as being subject to regulatory control because of its radioactivity. In the absence of such a designation by a State, any material for which protection is required by the current version of the International Basic Safety Standards⁹.

**radiological dispersal device (RDD).** A device to spread radioactive material using conventional explosives or other means.

**regulatory control.** Any form of institutional control applied to nuclear material or other radioactive material, associated facilities, or associated activities by any competent authority as required by the legislative and regulatory provisions related to safety, security, or safeguards. Explanation: The phrase

⁹ Currently Ref. [9].
‘out of regulatory control’ is used to describe a situation where nuclear or other radioactive material is present in sufficient quantity that it should be under regulatory control, but control is absent, either because controls have failed for some reason, or they never existed.

**risk.** The potential for an unwanted outcome resulting from a nuclear security event as determined by its likelihood and the associated consequences.

**risk assessment.** The overall process of systematically identifying, estimating, analysing and evaluating risk for the purpose of informing priorities, developing or comparing courses of action, and informing decision making.

**sabotage.** Any deliberate act directed against an associated facility or associated activity that could directly or indirectly endanger the health and safety of personnel, the public or the environment by exposure to radiation or release of radioactive substances.

**sensitive information.** Information, in whatever form, including software, the unauthorized disclosure, modification, alteration, destruction, or denial of use of which could compromise nuclear security.

**strategic location.** A location of high security interest in the State which is a potential target for terrorist attacks using nuclear material or other radioactive material, or a location at which nuclear material or other radioactive material that is out of regulatory control is located.

**target.** Nuclear material, other radioactive material, associated facilities, associated activities, or other locations or objects of potential exploitation by a nuclear security threat, including major public events, strategic locations, sensitive information, and sensitive information assets.

**threat assessment.** An evaluation of the threats — based on available intelligence, law enforcement and open source information — that describes the motivations, intentions and capabilities of these threats.

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10 Radioactive substance and radioactive material have the same meaning.